

Learner's Technical English Dictionary

Your essential guide to professional English



Interdisciplinary and Technological College,
Doi Saket, Chiang Mai



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Your essential guide
to Professional English

ITC Editorial Team



Interdisciplinary and Technological College,
Rajamangala University of Technology Lanna
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Learner's Technical English Dictionary

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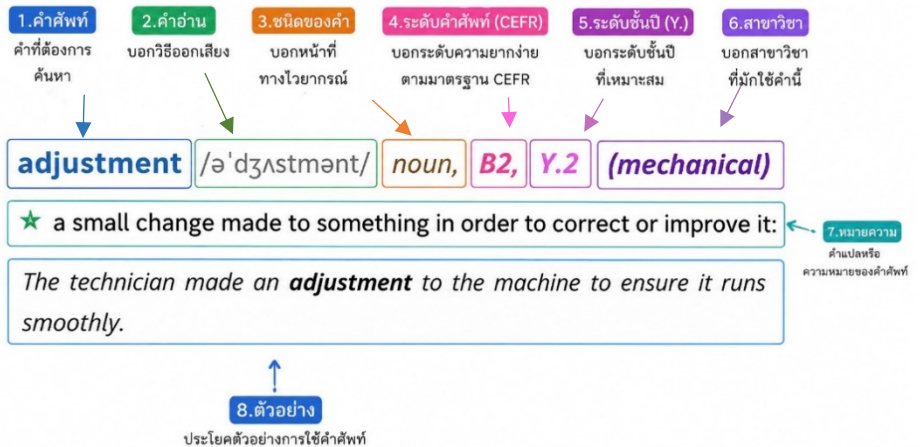
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Guide to the Dictionary

ส่วนประกอบของคำศัพท์



analog input /'ænə,lɒg 'ɪn.pʊt/ **noun**, **Y.3 (mechatronics)**
 ★ a signal going into a device that can vary smoothly in value: *The sensor sends an **analog input** to the microcontroller to measure temperature changes.*

คำศัพท์ที่เป็นนามผสม จะเรียงอยู่ไปตามลำดับ เช่นเดียวกับคำปกติ แต่ถ้านามผสมนั้นมีตัวสะกดและมีความหมายเดียวกับคำศัพท์ จะจัดเรียงต่อไปจากคำศัพท์นั้น

amplitude /'æm.plɪ.tju:d/

★(Math.) the maximum function reaches from its mid
 $y = 3 \sin(x)$ is 3.

★(Physics) the maximum of equilibrium position: *The **amplitude** of the wave determines its loudness.*

หมวดคณิตศาสตร์
 และวิทยาศาสตร์
 จะระบุชื่อรายวิชาไว้

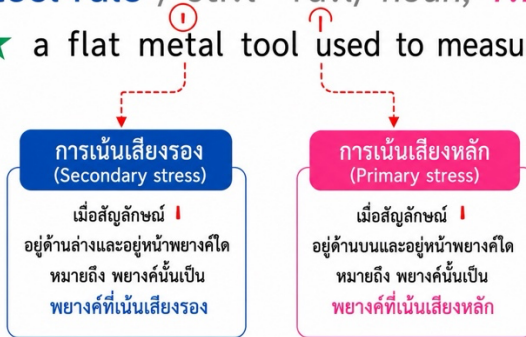
Stress

การออกเสียงคำศัพท์ในภาษาอังกฤษ ใช้การเน้นเสียง (stress) เพื่อความชัดเจน บอกหน้าที่ของคำศัพท์ และความหมาย

ตำแหน่งการเน้นเสียงจะบอกหน้าที่ของคำศัพท์นั้น ๆ (noun, verb, adjective, etc.) การเน้นเสียงมีสองแบบ ได้แก่ การเน้นเสียงหลัก และการเน้นเสียงรอง หลักการการเน้นเสียงมีรายละเอียดดังรูป

steel rule / sti:l ^①ru:l/ noun, **Y.1 (civil)**

★ a flat metal tool used to measure length



สรุป

❶ (อยู่ด้านบน) = เน้นเสียงหลัก

❷ (อยู่ด้านล่าง) = เน้นเสียงรอง

Pronunciation Symbols

Vowels

	Symbol	Example
Short	ɪ	sit, big
	e / ɛ	bed, head
	æ / ʌ	cat, bad
	ɒ / ɑ	hot, saw
	ʊ	put, book
	ʌ	cup, mother
	ə / ɜ	teacher, problem, mother

Long

ɑ:	far, arm
i: / ɪ	see, tea
ɔ:	force
u:	too
ɜ: / ɜr	bird

Diphthongs

eɪ	day
aɪ / aɪ	fine
ɔɪ	boy, toy
əʊ / oʊ	note, road
aʊ	now, out
ɪə / iə / ɪr	hear
eə / ɛr	hair, care
ʊə / ʊr	tour, sure

Consonants

Symbol	Example
p	p it
b	b it
t	t en
d	d ay
k	k ey, c an
g	g et
tʃ	ch at, nat ure
dʒ	j ump
f	f at
v	v iew
θ	th ing, mat h
ð	th en, mot her
s	s ay
z	z oo
ʃ	sh ip
ʒ	pleas ure
h	h ot
m	su m
n	su n
ŋ	sing g
l	l ong
r	r ed
w	w et
j	y ear, u se
x	lo ch



Social

and



Everyday Life



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abandon /ə'bændən/ verb, **B1**

★ to stop doing something before it is finished, or to leave a place or thing behind: *We had to **abandon** our picnic plans when it started pouring rain.*

ability /ə'bɪləti/ noun, **A2**

★ the physical or mental skill needed to do something: *I love her **ability** to make everyone laugh, even on a bad day.*

accept /ək'sept/ verb, **A2**

★ to say yes to an invitation, a gift, or an apology: *She was happy to **accept** his invitation to the birthday party.*

access /'ækses/ noun, **B1**

★ the ability or right to enter a place or look at something: *You need a special keycard to get **access** to the gym after midnight.*

accessibility /ək'sesə'bɪləti/ noun, **C1**

★ how easy a place or thing is to reach, enter, or use: *The park is great because its ramps make it easy for stroller **accessibility**.*

accident /'æksɪdənt/ noun, **A2**

★ something bad or unexpected that happens by chance, like spilling a drink: *Don't worry, spilling the milk was just a clumsy **accident**.*

accommodation /əˌkɑːməˈdeɪʃn/ *noun*, **B2**

★ A place to stay, like a hotel, apartment, or house: *We booked our vacation **accommodation** through a popular home-sharing website.*

accuracy /'ækjərəsi/ *noun*, **B2**

★ being completely correct or exact: *The weather app's **accuracy** has been terrible lately; it predicted sun but rained all day.*

accurate /'ækjərət/ *adjective*, **B1**

★ correct, true, and without mistakes: *Is your watch **accurate**, or do we still have a few minutes before the movie starts?*

achieve /ə'tʃiːv/ *verb*, **A2**

★ to successfully finish or get something you worked hard for: *He finally managed to **achieve** his goal of running a full marathon.*

achievement /ə'tʃiːvmənt/ *noun*, **B1**

★ a proud success or something great that you did: *Learning to cook a three-course meal by yourself is a wonderful **achievement**.*

acquire /ə'kwəɪər/ *verb*, **B1**

★ to get, buy, or learn something new: *Over the weekend, I managed to **acquire** a rare vinyl record for my collection.*

action /'ækʃn/ *noun*, **A2**

★ doing something to fix a problem or handle a situation: *We need to take **action** and clean up the kitchen before Mom gets home.*

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adapt /əˌkɑːməˈdeɪʃn/ verb, **B1**

★ to change your behavior so it is easier to live or work in a new situation: *It took me a few weeks to **adapt** to waking up early for my new school schedule.*

adaptation /ˌædæpˈteɪʃn/ noun, **B2**

★ a change made to something so it fits a new purpose, or a movie made from a book: *The new movie is a fantastic **adaptation** of my favorite childhood novel.*

admire /ədˈmaɪər/ verb, **B1**

★ to respect or look at someone or something with pleasure: *I really **admire** the way she always stays positive during tough times.*

admit /ədˈmɪt/ verb, **B1**

★ to agree that something is true, especially when you are embarrassed: *I have to **admit** that I forgot to water your plants while you were away.*

advice /ədˈvaɪs/ noun, **A2**

★ a helpful suggestion about what someone should do: *My older brother gave me some great **advice** on how to fix my bicycle chain.*

advise /ədˈvaɪz/ verb, **A2**

★ to tell someone what you think they should do in a situation: *Doctors always **advise** people to drink plenty of water every day.*

affect /əˈfekt/ verb, **A2**

★ to cause a change in someone or something: *The loud music from next door started to **affect** my sleep.*

afford /ə'fɔ:rd/ verb, **A2**

★ to have enough money or time to buy or do something: *I can't **afford** to buy those expensive concert tickets this month.*

agree /ə'gri:z/ verb, **A2**

★ to have the same opinion as someone else: *We all **agree** that ordering pizza is the best idea for dinner tonight.*

agreement /ə'gri:mənt/ noun, **A2**

★ a shared promise or decision between friends or family: *My roommate and I have an **agreement** about who cleans the bathroom each week.*

airport /'erpɔ:rt/ noun, **A1**

★ a place where people go to catch a flight: *My friends came to the **airport** to wave goodbye before my big trip.*

allow /ə'laʊ/ verb, **A2**

★ to give permission to someone or let something happen: *My parents do not **allow** pets on the living room sofa.*

alternative /ɔ:l'tɜ:rnətɪv/ noun, **B1**

★ another choice or option you can pick: *If the cafe is too crowded, our best **alternative** is to grab coffee down the street.*

ambition /æm'bɪʃn/ noun, **B1**

★ a strong hope or dream to do something big in life: *Her childhood **ambition** was to travel around the world and see the oceans.*

amount /ə'maʊnt/ noun, **A2**

★ how much of something there is: *You put a huge **amount** of sugar in your tea this morning!*

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analyze /'ænəlaɪz/ verb, **B1**

★ to look at something very closely to understand it better:
*Let's **analyze** the map together so we don't get lost on the hiking trail.*

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announce /ə'naʊns/ verb, **A2**

★ to tell a group of people about a piece of news: *They chose the dinner party to **announce** that they were getting married.*

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announcement /ə'naʊnsmənt/ noun, **B1**

★ something told to people to give them information: *The principal made a loudspeaker **announcement** about the school field trip.*

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answer /'ænsər/ verb, **A1**

★ to reply to a question, phone call, or text message: *Please **answer** your phone when I call you later this evening.*

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anxious /'æŋkʃəs/ adjective, **A2**

★ feeling worried, nervous, or uneasy: *I always feel a bit **anxious** right before I have to give a speech in class.*

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apologize /ə'pɒ:lədʒaɪz/ verb, **A2**

★ to say that you are sorry for a mistake or for hurting someone: *You should **apologize** to your sister for breaking her favorite mug.*

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appear /ə'pɪr/ verb, **A2**

★ to suddenly come into sight, or to seem a certain way: *Rainbows usually **appear** in the sky right after a heavy rainstorm.*

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appointment /ə'pɔɪntmənt/ *noun*, **A2**

★ a planned time to meet someone, like a doctor or hair stylist: *I need to cancel my dentist **appointment** because I have a soccer game.*

appreciate /ə'pri:ʃiɪt/ *verb*, **A2**

★ to be thankful for someone's help or kindness: *I really **appreciate** you driving me home when it was dark.*

approve /ə'pru:v/ *verb*, **A2**

★ to think that someone or something is good, acceptable, or right: *My grandmother does not **approve** of people using phones at the dinner table.*

argue /'ɑ:rgju:/ *verb*, **A2**

★ to speak angrily to someone because you disagree with them: *The kids always **argue** over who gets to sit in the front seat of the car.*

arrange /ə'reɪndʒ/ *verb*, **A2**

★ to plan an event or put items into a neat order: *Let's **arrange** a time to meet up at the park this weekend.*

article /'ɑ:rtɪkl/ *noun*, **A2**

★ a piece of writing found in a magazine, newspaper, or website: *I read a funny **article** online about why cats love cardboard boxes.*

assessment /ə'sesmənt/ *noun*, **B1**

★ an opinion or judgment about a person or situation after looking at them closely: *In my **assessment**, we have enough snacks to last through the entire movie night.*

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assignment /ə'saɪnmənt/ *noun*, **B1**

★ a piece of work or homework given to you to finish: *Our teacher gave us a fun weekend **assignment** to plant a small seed.*

attend /ə'tend/ *verb*, **A2**

★ to go to an event, party, or meeting: *Are you going to **attend** the neighborhood block party this Saturday?*

attendance /ə'tendəns/ *noun*, **B1**

★ being present at a place like school, church, or an event: *My teacher keeps a chart to track our daily **attendance** in class.*

attitude /'ætɪtu:d/ *noun*, **A2**

★ the way you think, feel, or behave toward life and others: *If you keep a positive **attitude**, learning to play the guitar will be much easier.*

attract /ə'trækt/ *verb*, **A2**

★ to pull something closer or grab someone's interest: *Bright flowers in the backyard always **attract** beautiful butterflies.*

available /ə'veɪləbl/ *adjective*, **A2**

★ free to do something, or ready to be used or bought: *Are you **available** to hang out on Friday afternoon after school?*

average /'ævərɪdʒ/ *adjective*, **A2**

★ normal, ordinary, or standard: *On an **average** day, I usually spend about an hour playing video games.*

avoid /ə'vɔɪd/ *verb*, **A2**

★ to stay away from a person, place, or bad situation: *I try to **avoid** the main street during rush hour because it is too noisy.*

aware /ə'wer/ adjective, **A2**

★ knowing or noticing that something is happening around you: *I wasn't **aware** that you had changed your phone number until yesterday.*

B

bake /beɪk/ verb, **A1**

★ to cook food in an oven using dry heat: *We decided to **bake** a chocolate cake for my brother's birthday party.*

balance /'bæləns/ noun, **B1**

★ a state where things are of equal weight, amount, or importance; to keep steady: *It can be hard to find a good **balance** between schoolwork and hanging out with friends.*

beach /bi:tʃ/ noun, **A1**

★ an area of sand or small stones next to the sea or a lake: *We spent the whole afternoon building sandcastles at the **beach**.*

behave /bi'heɪv/ verb, **A2**

★ to act or conduct oneself in a particular way, especially in a good or polite manner: *The children promised to **behave** well while their grandparents were visiting.*

behavior /bi'heɪvjər/ noun, **A2**

★ the way that someone acts or functions: *The puppy's playful **behavior** made everyone in the room smile.*

A

B

belief /bɪ'li:f/ *noun*, **B1**

★ a feeling that something is true, real, or exists: *It is my firm **belief** that kindness always makes the world a better place.*

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belong /bɪ'lɔ:ŋ/ *verb*, **A2**

★ to be in the right or suitable place; to be owned by someone: *Does this blue jacket **belong** to you, or did someone leave it behind?*

benefit /'benɪfɪt/ *noun*, **A2**

★ an advantage or profit gained from something: *Regular exercise has the added **benefit** of giving you much more energy.*

bill /bɪl/ *noun*, **A1**

★ a piece of paper that shows how much money you have to pay for goods or services: *After we finished our dinners, we asked the waiter to bring the **bill**.*

bitter /'bɪtə/ *adjective*, **B1**

★ having a sharp, pungent taste or smell; not sweet: *The dark coffee tasted quite **bitter** because I forgot to add any sugar.*

blame /bleɪm/ *verb*, **B1**

★ to think or say that a certain person or thing is responsible for something bad: *Please don't **blame** your sister for dropping the vase; it was a total accident.*

blanket /'blæŋkɪt/ *noun*, **A2**

★ a large piece of warm cloth used as a covering on a bed or during a picnic: *She pulled a warm wool **blanket** over herself while watching the movie.*

block /blɑ:k/ verb, A2

★ to stop something from moving or flowing: *A large fallen tree branch managed to **block** the path through the park.*

blood /blʌd/ noun, A2

★ the red liquid that flows through the bodies of people and animals: *He scraped his knee on the playground, but luckily there wasn't much **blood**.*

board /bɔ:rd/ verb, A2

★ to get onto a ship, aircraft, or train: *The couple **boarded** the train for New York.*

boil /bɔɪl/ verb, A2

★ to heat a liquid until it bubbles and turns into gas: *We need to **boil** some water before we can cook the pasta.*

bond /bɑ:nd/ noun, B1

★ a strong connection or feeling of friendship between people: *Sharing a long road trip together created a close **bond** between the two cousins.*

borrow /'bɔ:roʊ/ verb, A2

★ to take and use something that belongs to someone else, with the promise to return it: *May I **borrow** your umbrella for an hour since it started raining outside?*

bottle /'bɔ:tl/ noun, A1

★ a glass or plastic container with a narrow neck, used for storing liquids: *Don't forget to bring a reusable water **bottle** with you to the gym.*

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bowl /boʊl/ *noun*, **A1**

★ a round, deep dish used for holding food or liquid: *He poured a large **bowl** of cereal and milk before leaving for school.*

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brainstorm /ˈbreɪnstɔːrm/ *verb*, **B2**

★ to sit down and suggest a lot of creative ideas very quickly for a project or problem: *Let's all get together tonight to **brainstorm** some fun themes for our friend's party.*

branch /bræntʃ/ *noun*, **A2**

★ a part of a tree that grows out from the main trunk: *A little bird sat peacefully on the highest **branch** of the oak tree.*

break /breɪk/ *verb/noun*, **A1**

★ to smash or divide into parts by accident; a short rest period from an activity: *Be careful with that glass ornament because it will **break** easily if dropped.*

breakfast /ˈbrekfəst/ *noun*, **A1**

★ the very first meal eaten in the morning after waking up: *I usually eat toast and fruit for **breakfast** around seven o'clock.*

breathe /briːð/ *verb*, **B1**

★ to take air into your lungs and send it out again: *It feels wonderful to walk into the pine forest and **breathe** the clean, fresh air.*

brief /briːf/ *adjective*, **B1**

★ lasting for only a short period of time; using few words: *We had a very **brief** conversation at the grocery store because she was in a rush.*

bright /braɪt/ *adjective*, **A2**

★ giving out a lot of light; intelligent or smart: *The sunshine was so **bright** that I had to put on my sunglasses.*

budget /'bʌdʒɪt/ *noun*, **B1**

★ a plan showing how much money you have and how you will spend it: *We made a strict monthly **budget** to make sure we could save up for our summer vacation.*

building /'bɪldɪŋ/ *noun*, **A1**

★ a structure with a roof and walls, such as a house, school, or factory: *The new library is the tallest **building** on our entire school campus.*

business /'bɪznəs/ *noun*, **A1**

★ the activity of making, buying, or selling goods or services for money: *My uncle owns a small **business** that repairs bicycles in our neighborhood.*

C

calm /kɑ:m/ *adjective*, **A2**

★ peaceful, quiet, and not worried or excited: *Taking deep breaths helps me stay **calm** before a big school presentation.*

campus /'kæmpəs/ *noun*, **B1**

★ the grounds and buildings of a university or college: *We took a long walk around the beautiful **campus** before our afternoon lecture.*

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cancel /'kænsəl/ verb, A2

★ to decide that a planned event will not take place: *We had to **cancel** our beach trip because a huge thunderstorm started.*

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candidate /'kændɪdət/ noun, B1

★ a person who is trying to be elected or chosen for a position or job: *She is a strong **candidate** for class president because everyone likes her ideas.*

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capable /'keɪpəbl/ adjective, B1

★ having the ability, fitness, or necessary skills to do something: *Don't worry about fixing the bicycle; he is completely **capable** of doing it himself.*

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capacity /kə'pæsəti/ noun, B1

★ the total amount that something can contain or hold: *The stadium was filled to **capacity** for the final championship game.*

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capture /'kæptʃər/ verb, B1

★ to catch a person or animal; to accurately record an event using a camera or words: *Try to **capture** the beautiful sunset in a photo before the light disappears.*

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career /kə'riə(r)/ noun, A2

★ a job or profession that someone does for a long period of their life: *She wants to pursue a **career** in science because she loves doing experiments.*

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cash /kæʃ/ noun, A2

★ money in the form of physical coins or paper bills: *I didn't have my card with me, so I paid for the ice cream with cash.*

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catch /kætʃ/ verb, **A1**

★ to intercept and hold something moving through the air; to board a bus or train on time: *Run fast if you want to **catch** the bus before it drives away!*

cause /kɔːz/ verb, **A2**

★ to make something occur: *Ice on the sidewalk can easily **cause** people to slip and fall.*

celebrate /ˈselɪbreɪt/ verb, **A2**

★ to do something fun to mark an important day, holiday, or event: *Our whole family got together to **celebrate** my grandfather's eightieth birthday.*

challenge /ˈtʃælɪndʒ/ verb, **B1**

★ something new and difficult which requires a lot of effort to accomplish: *Learning how to play the piano is a big **challenge**, but it is very fun.*

chance /tʃæns/ noun, **A2**

★ a possibility or opportunity to do something: *This weekend is our last **chance** to see the art exhibit before it closes.*

change /tʃeɪndʒ/ verb, **A1**

★ to make or become different: *You should **change** your wet clothes before you catch a cold.*

charity /ˈtʃærəti/ noun, **A2**

★ an organization set up to provide help and raise money for those in need: *We donated our old winter coats to a local **charity** that helps families.*

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check /tʃek/ verb, A1

★ to examine something to see if it is correct, safe, or in good condition: *Please **check** the oven to see if the cookies are finished baking.*

choice /tʃɔɪs/ noun, A2

★ an act of choosing between two or more possibilities: *The menu has a lot of options, but my top **choice** is always the pepperoni pizza.*

claim /kleɪm/ verb, B1

★ to say that something is true, typically without providing proof: *He loves to **claim** that he can run faster than anyone else in our school.*

climate /'klaɪmət/ noun, A2

★ the general weather conditions in an area over a long period: *Thailand has a tropical **climate**, so it stays warm and sunny for most of the year.*

collect /kə'lekt/ verb, A2

★ to bring items together from different places; to gather things as a hobby: *The kids love to **collect** unique seashells whenever we visit the beach.*

combine /kəm'baɪn/ verb, B1

★ to join or mix two or more things together to form a single unit: *If you **combine** yellow paint and blue paint, you will get green.*

comfort /'kʌmfərt/ *noun*, **B2**

★ a state of physical ease and freedom from pain or worry: *I always find great **comfort** in sitting by a warm fireplace on a freezing day.*

command /kə'mænd/ *noun/verb*, **B2**

★ an authoritative order; to tell someone exactly what they must do: *The dog instantly sat down when it heard its owner give the **command**.*

comment /'kɑːment/ *noun*, **A2**

★ a verbal or written note expressing an opinion or remark: *She left a very kind **comment** underneath her friend's new photo online.*

communicate /kə'mjuːnɪkeɪt/ *verb*, **A2**

★ to share information, news, or ideas with other people using words or signs: *Even though they live far apart, they **communicate** every single day via text.*

compare /kəm'peə(r)/ *verb*, **A2**

★ to look at two or more things to see how they are similar or different: *It is interesting to **compare** the book version of a story to the movie version.*

complain /kəm'pleɪn/ *verb*, **A2**

★ to say that you are annoyed, unhappy, or dissatisfied with something: *I try not to **complain** when the weather gets too hot during the summer.*

complete /kəm'pliːt/ *verb*, **A1**

★ to finish making or doing something: *It took us three hours to finally **complete** the massive thousand-piece puzzle.*

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concentrate /'kɑːnsntreɪt/ verb, **B1**

★ to give all your attention to the thing you are currently doing: *Turn off the television so you can **concentrate** on finishing your homework.*

concept /'kɑːnsept/ noun, **B2**

★ an abstract principle, idea, or mental image of something: *Virtual reality is an exciting **concept** that changes how we play video games.*

concern /kəm'sɜːrn/ noun, **B1**

★ a feeling of worry: *The sudden drop in temperature is a major **concern** for the farmers' crops.*

condition /kəm'dɪʃn/ noun, **A2**

★ the physical state or quality of a person, animal, or object: *Even though the bicycle is twenty years old, it is still in perfect **condition**.*

confidence /'kɑːnfɪdəns/ noun, **B2**

★ a feeling of trust or belief in your own abilities or in someone else: *Practicing your guitar chords every day will give you the **confidence** to perform on stage.*

confident /'kɑːnfɪdənt/ adjective, **A2**

★ feeling certain about your own abilities or that something will happen successfully: *She practiced her speech so many times that she felt completely **confident** on stage.*

conflict /'kɑːnflɪkt/ noun, **B2**

★ a serious disagreement or argument between people or groups: *The roommates sat down together to talk through their **conflict** over who cleans the kitchen.*

confirm /kəm'fɜːrm/ verb, **B1**

★ to state that something is definitely true, correct, or officially arranged: *Please text me tonight to **confirm** what time we are meeting at the park tomorrow.*

confuse /kəm'fjuːz/ verb, **B1**

★ to mix up things or ideas; to make someone unable to think clearly or understand: *Having identical twins in the same class can easily **confuse** the teacher.*

connect /kə'nekt/ verb, **A2**

★ to join or link two or more things together: *Use this long blue cord to **connect** your laptop computer directly to the TV screen.*

consider /kəm'sɪdər/ verb, **A2**

★ to think deeply and carefully about something before making a final choice: *Take a few days to **consider** his invitation before you give your final answer.*

construct /kəm'strʌkt/ verb, **B2**

★ to build or make a large physical structure like a house, bridge, or road: *The birds use tiny twigs and soft dry grass to **construct** their nests in the spring.*

consume /kəm'suːm/ verb, **B2**

★ to eat, drink, buy, or use up resources like energy or food: *Large families usually **consume** several gallons of milk over a typical week.*

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contract /'kɑ:ntɹækt/ *noun*, **B2**

★ a formal, written legal agreement between two or more parties: *They signed a rental **contract** before moving into their beautiful new apartment.*

contrast /'kɑ:ntɹæst/ *noun*, **B1**

★ a clear difference that is easy to see when two things are compared: *The bright red flowers create a beautiful **contrast** against the dark green grass.*

contribution /,kɑ:ntɹɪ'bju:ʃn/ *noun*, **B2**

★ an item, amount of money, or action given to help achieve a shared goal: *Every small cash **contribution** helps us buy supplies for the neighborhood dog shelter.*

conversation /,kɑ:nvər'seɪʃn/ *noun*, **A1**

★ an informal talk between two or more people where ideas or news are shared: *We had a long, pleasant **conversation** about our favorite childhood video games.*

costume /'kɑ:stu:m/ *noun*, **B1**

★ a special set of clothes worn by an actor or someone dressing up for a party or holiday: *He put on a funny pirate **costume** for the neighborhood Halloween party.*

cough /kɔ:f/ *verb*, **A2**

★ to suddenly force air out of your throat with a sharp, noisy sound: *Smoke from the campfire made everyone **cough** and rub their eyes.*

country /'kʌntri/ *noun*, **A1**

★ an area of land that has its own independent government and laws; a nation: *France is a beautiful **country** known around the world for its delicious bread and pastries.*

create /kri'eɪt/ *verb*, **A1**

★ to make something completely new happen or exist using your skills: *I want to **create** a handmade photo album as a holiday gift for my grandparents.*

creativity /ˌkriːɪ'tɪvəti/ *noun*, **B1**

★ the ability to use your imagination to produce original and inventive ideas: *Drawing, painting, and writing stories are great ways to express your personal **creativity**.*

credit /'kredɪt/ *noun*, **B1**

★ praise or approval given to someone; an arrangement to buy now and pay later: *You should give her **credit** for working so hard to plan this beautiful dinner party.*

culture /'kʌltʃər/ *noun*, **B1**

★ the customs, arts, social institutions, and achievements of a particular group of people: *Trying traditional dishes is a fun way to learn about a brand new **culture**.*

cure /kjər/ *verb*, **B1**

★ to make a person or animal healthy again after an illness: *Getting plenty of bed rest and drinking hot tea helped **cure** my bad winter cold.*

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curiosity /ˌkjʊəriˈɑːsəti/ *noun*, **B2**

★ a strong desire to know, discover, or learn about something new: *Children have a natural **curiosity** about how bugs and insects live in the backyard.*

custom /ˈkʌstəm/ *noun*, **B1**

★ an established, traditional way of behaving or doing something that is unique to a society: *It is a local **custom** to remove your shoes before stepping inside someone's home.*

D

damage /ˈdæmɪdʒ/ *noun*, **A2**

★ physical harm caused to something, making it less attractive, useful, or broken: *The heavy hailstorm caused some minor **damage** to the roof of our car.*

dance /dæns/ *verb*, **A1**

★ to move your body to the rhythm of music: *Everyone stood up to **dance** when the band started playing my favorite song.*

danger /ˈdeɪndʒər/ *noun*, **A2**

★ the possibility of suffering harm, injury, or death: *The warning sign on the fence tells people there is a **danger** of falling rocks.*

deadline /ˈdedlaɪn/ *noun*, **B1**

★ a specific time or date by which a task must be completely finished: *I need to stay up a bit later tonight to finish my school project before tomorrow's **deadline**.*

deal /di:l/ *noun*, **A2**

★ an agreement, arrangement, or bargain between people: *My roommate and I made **a deal** that I would cook dinner if he washed the dishes.*

debate /dɪ'beɪt/ *noun*, **B1**

★ a formal discussion on a particular topic where people express different opinions: *My friends and I had a long, playful **debate** over whether cats or dogs make better pets.*

debt /det/ *noun*, **B1**

★ an amount of money that you owe to a person, bank, or company: *Once he paid off his college **debt**, he started saving up money to buy a house.*

decade /'dekeɪd/ *noun*, **B1**

★ a period of ten years: *My grandparents have lived in the exact same quiet neighborhood for over a **decade**.*

decide /dɪ'saɪd/ *verb*, **A2**

★ to choose one option out of several possibilities after thinking carefully: *We need to **decide** whether we want to go to the beach or the park this weekend.*

decision /dɪ'sɪʒn/ *noun*, **A2**

★ a choice or judgment that you make after thinking about different options: *Choosing to adopt a puppy from the local shelter was the best **decision** we ever made.*

declare /dɪ'kleə(r)/ *verb*, **B1**

★ to announce something clearly, firmly, and publicly: *The young boy stood up on the chair to proudly **declare** himself the winner of the board game.*

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decorate /'dekəreɪt/ verb, A2

★ to make something look more attractive by adding pretty things or ornaments to it: *The whole family gathered in the living room to **decorate** the tree for the winter holidays.*

delicious /dɪ'liʃəs/ adjective, A2

★ having a very pleasant and wonderful taste or smell: *My dad baked a fresh batch of chocolate chip cookies that tasted absolutely **delicious**.*

delight /dɪ'laɪt/ noun, B2

★ a feeling of great pleasure, joy, or happiness: *To the toddler's complete **delight**, a beautiful butterfly landed right on his shoe.*

deliver /dɪ'lɪvər/ verb, A2

★ to take letters, packages, or goods to a specific person's house or building: *The mail carrier arrived at noon to **deliver** a large birthday package from my aunt.*

demand /dɪ'mænd/ noun, B1

★ a very firm request that shows you expect to be obeyed immediately: *The angry landlord made a firm **demand** for the overdue rent money.*

demonstrate /'demənstreɪt/ verb, B1

★ to show clearly how something works or how to do a specific task by doing it yourself: *The baking instructor will **demonstrate** how to roll out the dough perfectly.*

describe /dɪ'skraɪb/ verb, **B1**

★ to say or write what someone or something is like using descriptive words: *Can you **describe** what your missing backpack looks like so I can help you find it?*

design /dɪ'zaɪn/ noun, **A2**

★ a drawing or plan that shows how something will look or be made before it is built: *I really love the colorful flower **design** on the front of your new t-shirt.*

deserve /dɪ'zɜːrv/ verb, **B1**

★ to have earned something or be worthy of it because of your actions or qualities: *After working hard in the garden all afternoon, you definitely **deserve** a big scoop of ice cream.*

desire /dɪ'zaɪər/ noun, **B2**

★ a strong hope, wish, or want for a particular thing or outcome: *Her lifelong **desire** has always been to travel across the ocean and visit Italy.*

detail /'diːteɪl/ noun, **A2**

★ a small, single, specific fact or feature about something: *She remembered every tiny **detail** of the movie, even the colors of the characters' clothes.*

detect /dɪ'tekt/ verb, **B2**

★ to notice, discover, or find the presence of something that is hidden or hard to see: *The dog's sharp nose can easily **detect** the scent of treats hidden inside my pocket.*

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develop /dɪ'veləp/ verb, A2

★ to grow, change, or become more advanced, larger, or stronger over time: *If you practice every single day, you will quickly **develop** your skills at playing the guitar.*

development /dɪ'veləpmənt/ noun, B1

★ the steady growth, progress, or advancement of a person, project, or idea: *Reading books to young children is wonderful for the **development** of their vocabulary.*

diet /'daɪət/ noun, A2

★ the food and drink that a person or animal usually consumes every day: *A healthy **diet** should include plenty of fresh vegetables, fruits, and water.*

difference /'dɪfrəns/ noun, A2

★ the way or state in which two or more people or things are not the same: *The only major **difference** between the twin puppies is that one has a white paw.*

difficult /'dɪfɪkəlt/ adjective, A1

★ not easy to do, understand, or solve; requiring a lot of hard work or effort: *The puzzle was so **difficult** that it took our whole family three days to finish it.*

direction /də'rekʃn/ or /daɪ'rekʃn/ noun, A2

★ the line or course along which something moves, points, or faces: *We got confused at the trail fork and accidentally walked in the wrong **direction**.*

disappear /ˌdɪsəˈpiə(r)/ verb, **A2**

★ to go out of sight suddenly so that you can no longer see it: *We watched the big cargo ship slowly **disappear** over the ocean horizon.*

disaster /dɪˈzæstər/ noun, **A2**

★ a sudden, terrible event that causes an immense amount of damage or suffering: *The dinner party was a complete **disaster** because I accidentally burned the entire meal.*

discipline /ˈdɪsəplɪn/ noun, **B2**

★ the practice of training people or yourself to obey rules and remain controlled: *It takes a lot of personal **discipline** to wake up early and run every single morning.*

discount /ˈdɪskaʊnt/ noun, **A2**

★ a reduction in the normal price of a product or service: *The clothing store offered a twenty percent **discount** on all jackets this weekend.*

disagree /ˌdɪsəˈɡriː/ verb, **A2**

★ to have a completely different opinion from someone else on a topic: *My brother and I love each other, but we often **disagree** on what movie to watch.*

discussion /dɪˈskʌʃn/ noun, **B1**

★ a conversation about something where people share their different ideas or opinions: *We sat around the dining table and had a long **discussion** about our next vacation.*

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diversity /daɪ'vɜːrsəti/ or /dɪ'vɜːrsəti/ *noun*, **B2**

★ a range of many different people, things, types, or ideas mixed together: *Our local neighborhood has a wonderful **diversity** of cultures, languages, and foods.*

divide /dɪ'vaɪd/ *verb*, **B1**

★ to separate or split something into two or more parts, sections, or groups: *Let's use a sharp knife to **divide** the large pizza equally among the four of us.*

donate /'doʊneɪt/ *verb*, **B1**

★ to give money, clothes, or food to help a person or a charity organization: *Every winter, we **donate** our old, warm coats to families who need them.*

donation /doʊ'neɪʃn/ *noun*, **B1**

★ money, goods, or clothes given to a charity or organization to help others: *We dropped off a box of books as a **donation** to the neighborhood library.*

dormitory /'dɔːmɪtri/ or /'dɔːrmətɔːri/ *noun*, **B1**

★ a large campus building with many bedrooms for university or college students: *She made a lot of wonderful lifelong friends while living in her university **dormitory**.*

doubt /daʊt/ *noun*, **B1**

★ a feeling of being uncertain or unsure about something: *There is no **doubt** in my mind that tomorrow's soccer game will be very exciting.*

drug /drʌɡ/ *noun*, **A2**

★ a chemical substance or medicine used to treat an illness or injury: *The doctor prescribed a specific **drug** to help lower my grandfather's blood pressure.*

E

early /'ɜːli/ *adjective/adverb*, **A1**

★ near the beginning of a period of time, an event, or a piece of work: *We caught an **early** train to avoid the rush hour traffic.*

earn /ɜːn/ *verb*, **A2**

★ to receive money as payment for work that you do: *She works long hours to **earn** a living wage.*

edit /'edɪt/ *verb*, **B1**

★ to prepare written material, photos, or video for publication by correcting, condensing, or modifying it: *You need to **edit** this essay to make your argument clearer.*

effect /ɪ'fekt/ *noun*, **A2**

★ a change which is a result or consequence of an action or other cause: *The new medicine had a positive **effect** on her health.*

effort /'efət/ *noun*, **B1**

★ physical or mental activity needed to achieve something: *It takes a lot of time and **effort** to learn a new language.*

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embarrassed /ɪm'bærəst/ *adjective*, **B1**

★ feeling ashamed, self-conscious, or uncomfortable about what people think of you: *He felt deeply **embarrassed** when he forgot his boss's name.*

emerge /ɪ'mɜːdʒ/ *verb*, **B2**

★ to move out of or away from something and become visible: *The sun began to **emerge** from behind the dark clouds.*

emergency /ɪ'mɜːdʒənsi/ *noun*, **B1**

★ a serious, unexpected, and often dangerous situation requiring immediate action: *Please call this number only in the event of an **emergency**.*

emotion /ɪ'məʊʃn/ *noun*, **B1**

★ a strong feeling deriving from one's circumstances, mood, or relationships with others: *Love, anger, and fear are all basic human **emotions**.*

employ /ɪm'plɔɪ/ *verb*, **B1**

★ to give work to someone and pay them for it: *The factory plans to **employ** an additional 50 workers next month.*

employment /ɪm'plɔɪmənt/ *noun*, **B1**

★ the state of having paid work: *She is currently seeking full-time **employment**.*

empty /'empti/ *adjective*, **A1**

★ containing nothing; not filled or occupied: *The box was completely **empty** when it arrived.*

encounter /ɪn'kaʊntə(r)/ *verb*, **B2**

★ to unexpectedly experience or face something (usually a problem or opposition): *We didn't expect to **encounter** so many difficulties during the project.*

encourage /ɪn'kʌrɪdʒ/ *verb*, **B1**

★ to give support, confidence, or hope to someone: *My parents always **encourage** me to try my best.*

energy /'enədʒi/ *noun*, **A2**

★ the strength and vitality required for sustained physical or mental activity: *Children seem to have an endless amount of **energy**.*

engage /ɪn'geɪdʒ/ *verb*, **B2**

★ to attract or interest someone, or to become involved in an activity: *The speaker struggled to **engage** the audience's attention.*

enjoy /ɪn'dʒɔɪ/ *verb*, **A1**

★ to take delight or pleasure in an activity or occasion: *I really **enjoy** listening to classical music in the evening.*

enroll /ɪn'rəʊl/ *verb*, **B2**

★ to officially register as a member of an institution or a student on a course: *You must **enroll** in your classes before the semester begins.*

enough /ɪ'nʌf/ *adjective*, **A1**

★ as much or as many as required or necessary: *Do we have **enough** food for all the guests?*

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entertain /,entə'teɪn/ verb, B1

★ to provide someone with amusement or enjoyment: A clown was hired to **entertain** the children at the party.

entertainment /,entə'teɪnmənt/ noun, B1

★ films, music, or other performances that provide amusement or enjoyment: The resort offers a wide variety of evening **entertainment**.

entire /ɪn'taɪə/ adjective, B1

★ whole or complete, with nothing missing: She spent the **entire** day reading a novel on the couch.

environment /ɪn'vaɪrənmənt/ noun, B1

★ the surroundings or conditions in which a person, animal, or plant lives or operates: We must work together to protect the natural **environment**.

equality /i'kwɒləti/ noun, B2

★ the state of being equal, especially in status, rights, or opportunities: The organization campaigns for racial and gender **equality**.

establish /ɪ'stæblɪʃ/ verb, B2

★ to set up an organization, system, or set of rules on a firm or permanent basis: The company was **established** in 1995.

evaluate /ɪ'væljuet/ verb, B2

★ to form an idea of the amount, number, or value of something; assess: The committee will **evaluate** your performance at the end of the year.

evaluation /ɪˌvæljʊ'eɪʃn/ *noun*, **B2**

★ the making of a judgment about the amount, number, or value of something: *A thorough **evaluation** of the new software is necessary before launch.*

evacuation /ɪˌvækju'eɪʃn/ *noun*, **C1**

★ the action of moving a person or people from a place of danger to a safer place: *The police ordered an immediate **evacuation** of the building due to the gas leak.*

event /ɪ'vent/ *noun*, **A1**

★ a thing that happens, especially one of importance: *The annual music festival is the biggest **event** in our town.*

evidence /'eɪdɪəns/ *noun*, **B1**

★ the available body of facts or information indicating whether a belief or proposition is true or valid: *There is no clear **evidence** to prove that he committed the crime.*

exam /ɪg'zæm/ *noun*, **A1**

★ a formal test of a person's knowledge or proficiency in a particular subject: *I need to study tonight because I have a math **exam** tomorrow.*

example /ɪg'zɑːmpl/ *noun*, **A1**

★ a thing characteristic of its kind or illustrating a general rule: *Can you give me an **example** of how this word is used?*

excellent /'eksələnt/ *adjective*, **A2**

★ extremely good; outstanding: *She did an **excellent** job on her science presentation.*

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exercise /'eksəsaɪz/ noun, **A1**

★ activity requiring physical effort, carried out to sustain or improve health and fitness: *Regular **exercise** is essential for maintaining a healthy lifestyle.*

exist /ɪg'zɪst/ verb, **A2**

★ to have objective reality or being: *Do you believe that life could **exist** on other planets?*

expand /ɪk'spænd/ verb, **B1**

★ to become or make larger or more extensive: *The company hopes to **expand** its business into European market*

expect /ɪk'spekt/ verb, **A2**

★ to think or believe something will happen or someone will arrive: *We **expect** the package to arrive by Thursday afternoon.*

explain /ɪk'spleɪn/ verb, **A2**

★ to make something clear or easy to understand by describing it in more detail: *Could you please **explain** how this machine works?*

explanation /ˌeksplə'neɪʃn/ noun, **A2**

★ a statement or account that makes something clear: *The teacher gave a detailed **explanation** of the math problem.*

explore /ɪk'splɔː/ verb, **A2**

★ to travel through an unfamiliar area in order to learn about it: *They decided to **explore** the ancient ruins during their vacation.*

express /ɪk'spres/ verb, **B1**

★ to convey a thought or feeling in words or by gestures and conduct: *It can be difficult to **express** your feelings when you are upset.*

F

facility /fə'sɪləti/ noun, **B1**

★ a place, amenity, or piece of equipment provided for a particular purpose: *The new sports **facility** includes a swimming pool and two gymnasiums.*

failure /'feɪljə/ noun, **B2**

★ lack of success in doing or achieving something: *The project was a total **failure** because of poor planning.*

fair /feə(r)/ adjective, **A2**

★ treating people equally without favoritism or discrimination; just: *It's not **fair** that some people have to work longer hours for less pay.*

family /'fæmɪli/ noun, **A1**

★ a group of one or more parents and their children living together as a unit: *He loves spending time with his **family** during the holidays.*

fashion /'fæʃn/ noun, **A2**

★ a popular trend, especially in styles of dress, ornament, or behavior: *Long coats are back in **fashion** this winter.*

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fasten /'fɑːsn/ verb, **B1**

★ to close or join securely together: Please **fasten** your seatbelts before the plane takes off.

fault /fɔːlt/ noun, **B1**

★ responsibility for an accident or misfortune: *It's not my **fault** that the train was delayed.*

favor /'feɪvə(r)/ noun, **B1**

★ an act of kindness beyond what is due or usual: *Could you do me a **favor** and carry these bags?*

fear /fɪə(r)/ noun, **A2**

★ an unpleasant emotion caused by the belief that someone or something is dangerous, likely to cause pain, or a threat: *She tried to overcome her **fear** of flying.*

feedback /'fiːdbæk/ noun, **B2**

★ information about reactions to a product, a person's performance of a task, etc. , used as a basis for improvement: *We welcome **feedback** from our customers to improve our services.*

feel /fiːl/ verb, **A1**

★ to experience an emotion or physical sensation: *I **feel** very happy today because the weather is beautiful.*

feeling /'fiːlɪŋ/ noun, **A1**

★ an emotional state or reaction: *She had a strange **feeling** that someone was watching her.*

festival /'festɪvl/ *noun*, **B1**

★ a day or period of celebration, typically a religious one or an organized series of cultural events: *The town holds a film **festival** every summer.*

fever /'fi:və(r)/ *noun*, **A2**

★ an abnormally high body temperature, usually accompanied by shivering and a fast pulse: *If you have a high **fever**, you should see a doctor.*

field /fi:ld/ *noun*, **A2**

★ an area of open land, especially one planted with crops or covered with grass: *The cows were grazing peacefully in the green **field**.*

field trip /'fi:ld trɪp/ *noun*, **A2**

★ a journey made by a group of people, typically students, to study something in its natural environment: *Our geography class went on a **field trip** to study the local river system.*

finish /'fɪnɪʃ/ *verb*, **A1**

★ to bring a task or activity to an end; complete: *I need to **finish** my homework before I can watch TV.*

firm /fɜ:m/ *adjective/noun*, **B1**

★ having a solid, unyielding surface or structure: *These apples are nice and **firm**.*

★ a business concern or company: *He works for a law **firm** in the city.*

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flexible /'fleksəbl/ *adjective*, **B2**

★ capable of bending easily without breaking; able to change or be changed easily according to the situation: *My working hours are **flexible**, so I can start earlier if I want.*

flight /flaɪt/ *noun*, **A2**

★ the action or process of flying through the air, or a journey made in an aircraft: *Our **flight** to New York was delayed by two hours.*

float /fləʊt/ *verb*, **B1**

★ to rest or move on or near the surface of a liquid without sinking: *Wood will usually **float** on water.*

flood /flʌd/ *noun*, **B1**

★ an overflowing of a large amount of water beyond its normal confines, especially over what is normally dry land: *Heavy rain caused a severe **flood** in the low-lying areas of the city.*

floor /flɔː(r)/ *verb*, **A1**

★ the lower surface of a room, on which one stands: *Please don't leave your books on the **floor**.*

focus /'fəʊkəs/ *verb*, **B1**

★ to adapt to the prevailing level of light and become able to see clearly; to pay close attention to something: *You need to **focus** on your studies if you want to pass the exam.*

follow /'fɒləʊ/ *verb*, **A1**

★ to move or travel behind someone or something; to go after: *The dog will **follow** you wherever you go.*

foreign /'fɒrən/ *adjective*, **A2**

★ from, in, or characteristic of a country or language other than one's own: *Learning a **foreign** language opens up new career opportunities.*

forest /'fɒrɪst/ *noun*, **A2**

★ a large area covered chiefly with trees and undergrowth: *We went for a long walk in the pine **forest**.*

forgive /fə'ɡɪv/ *verb*, **B1**

★ to stop feeling angry or resentful toward someone for an offense, flaw, or mistake: *It took her a long time to **forgive** him for lying.*

formal /'fɔːml/ *adjective*, **B1**

★ done in accordance with rules of convention or etiquette; suitable for or constituting an official or important situation: *You need to wear **formal** clothes to the job interview.*

fortune /'fɔːtʃuːn/ *noun*, **B2**

★ chance or luck as an external, arbitrary force affecting human affairs; also a large amount of money: *By a stroke of good **fortune**, the rain stopped just before the game; That car costs a **fortune**.*

frame /freɪm/ *noun*, **B1**

★ a rigid structure that surrounds or supports something such as a picture, door, or window: *She bought a beautiful wooden **frame** for the family photograph.*

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freedom /'fri:dəm/ *noun*, **B2**

★ the power or right to act, speak, or think as one wants without hindrance or restraint: *The constitution guarantees **freedom** of speech for all citizens.*

freeze /fri:z/ *verb*, **B1**

★ to turn into ice or another solid as a result of extreme cold: *Water will **freeze** when the temperature drops below 0°C.*

friendship /'frendʃɪp/ *noun*, **A2**

★ a relationship of mutual affection between people: *Their close **friendship** has lasted for over twenty years.*

frighten /'fraɪtn/ *verb*, **B1**

★ to make someone afraid or anxious: *Loud thunderstorms always **frighten** the cat.*

fuel /'fju:əl/ *noun*, **B1**

★ material such as coal, gas, or oil that is burned to produce heat or power: *Wood is still used as a primary **fuel** for heating in many rural areas.*

function /'fʌŋkʃn/ *noun*, **B2**

★ an activity or purpose natural to or intended for a person or thing: *The main **function** of the heart is to pump blood around the body.*

fund /fʌnd/ *noun*, **B2**

★ a sum of money saved or made available for a particular purpose: *The school set up a special **fund** to buy new computers for the library.*

G

gain /geɪn/ *verb*, **B1**

★ to obtain or win something useful, advantageous, or necessary: *You will **gain** valuable work experience by doing this internship.*

gather /'gæðə(r)/ *verb*, **B1**

★ to come together or bring people or things together in one place: *A large crowd began to **gather** outside the town hall.*

general /'dʒenrəl/ *adjective*, **A2**

★ affecting or concerning all or most people, places, or things; not specific: *In **general** terms, the plan was approved by the entire committee.*

generation /,dʒenə'reɪʃn/ *noun*, **B1**

★ all of the people born and living at about the same time, regarded collectively: *My grandparents' **generation** lived through very difficult economic times.*

generous /'dʒenərəs/ *adjective*, **B1**

★ showing a readiness to give more of something, especially money or time, than is strictly necessary or expected: *It was very **generous** of you to pay for our entire dinner.*

glad /glæd/ *adjective*, **A2**

★ pleased and happy about something: *I am so **glad** to hear that you passed your driving test.*

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global /'gləʊbl/ *adjective*, **B1**

★ relating to the whole world; worldwide: *Climate change is a **global** problem that requires international cooperation.*

goal /gəʊl/ *noun*, **A2**

★ an aim or desired result that a person or organization envisions, plans, and commits to achieve: *Her primary career **goal** is to become a successful software engineer.*

government /'gʌvənmənt/ *noun*, **B1**

★ the group of people with the authority to govern a country or state: *The **government** announced new measures to lower local taxes.*

grab /græb/ *verb*, **B1**

★ to take hold of something or someone suddenly and roughly: *He had to **grab** the railing to prevent himself from falling down the stairs.*

grade /greɪd/ *noun*, **A2**

★ a specified level of quality, rank, or a mark given in an exam or school course: *She was delighted to get a high **grade** on her final history project.*

grain /greɪn/ *noun*, **B1**

★ wheat or other cultivated cereal crop used as food: *The farmers harvested tons of **grain** during the dry autumn months.*

grand /grænd/ *adjective*, **B1**

★ magnificent and imposing in appearance, size, or style: *The old palace has a **grand** staircase leading up to the ballroom.*

grant /graːnt/ verb/noun, **B2**

★ (verb) to agree to give or allow something requested: *The university decided to **grant** her a full scholarship based on her outstanding academic achievements*

★ (noun) a sum of money given by a government for a specific purpose: *The university received a government **grant** to fund its scientific research.*

grateful /'ɡreɪtfl/ adjective, **A2**

★ feeling or showing appreciation for something received or done; thankful: *I am incredibly **grateful** for all the help you gave me during the move.*

greet /ɡriːt/ verb, **A2**

★ to address someone with polite or friendly words when meeting them: *Our hosts were waiting at the door to **greet** us with a smile.*

greeting /'ɡriːtɪŋ/ noun, **A2**

★ a polite word or sign of welcome or recognition: *She sent a friendly holiday **greeting** to all her close friends.*

ground /graʊnd/ noun, **A2**

★ the solid surface of the earth: *We sat on the **ground** outside and enjoyed a beautiful summer picnic.*

group /ɡruːp/ noun, **A1**

★ a number of people or things that are located, gathered, or classed together: *A small **group** of students stayed behind after class to ask questions.*

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guarantee /ˌɡærən'tiː/ verb, **B2**

★ to promise or assure with certainty that something will happen, be done, or be secured: *The company cannot **guarantee** that the package will arrive by tomorrow morning due to the storm.*

★ to provide a formal promise to repair or replace a product if it breaks: *The manufacturer **guarantees** this washing machine against defects for up to five years.*

guard /ɡɑːd/ noun/verb, **B1**

★ (noun) a person who cares for or watches over something to protect it from danger or theft: *A security **guard** stands watch outside the bank entrance day and night.*

★ (verb) to watch over, protect, or keep safe from danger, harm, attack, or escape: *Two security officers were hired to **guard** the entrance of the museum overnight.*

guess /ges/ verb, **A1**

★ to estimate or conclude something without sufficient information to be certain: *Can you **guess** how many jellybeans are inside this glass jar?*

guest /gest/ noun, **A2**

★ a person who is invited to visit someone's home or attend a particular social event: *We prepared the spare bedroom for our weekend house **guest**.*

guide /ɡaɪd/ noun, **A2**

★ a person who shows the way to others, especially one employed to show tourists around: *The tour **guide** shared interesting historical facts about the ancient castle.*

guidance /'gaɪdn̩s/ *noun*, **B2**

★ advice or information aimed at resolving a problem or difficulty, especially given by someone in authority: *The new employee excelled under the direct **guidance** of her manager.*

H

habit /'hæbɪt/ *noun*, **A2**

★ a settled or regular tendency or practice, especially one that is hard to give up: *Getting up early in the morning soon became a regular **habit** for her.*

handle /'hændl/ *verb*, **B1**

★ to deal with, control, or manage a situation, person, or problem: *She knows exactly how to **handle** difficult customers with patience.*

happen /'hæpən/ *verb*, **A1**

★ to take place; to occur by chance or as a result of something: *Accidents can **happen** if you don't pay close attention to the road.*

hard /hɑːd/ *adjective/adverb*, **A1**

★ (adjective) solid, firm, and rigid: *The diamond is a very **hard** mineral.*

★ (adverb) requiring a great deal of endurance or effort: *He worked **hard** all afternoon.*

harm /hɑːm/ *noun/verb*, **B2**

★ physical injury or mental damage hurt: *Pollution causes serious **harm** to the local river ecosystem.*

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★ to cause damage to someone or something: *Don't worry, the dog is friendly and won't **harm** you.*

health /helθ/ noun, A2

★ the state of being free from illness or injury: *Regular exercise and a balanced diet are vital for good **health**.*

heavy /'hevi/ adjective, A1

★ of great weight; difficult to lift or move: *Could you please help me carry this **heavy** suitcase up the stairs?*

help /help/ verb, A1

★ to make it easier for someone to do something by offering one's services or resources: *She offered to **help** her brother study for his final math exam.*

hesitate /'hezɪteɪt/ verb, B2

★ to pause before saying or doing something, especially through uncertainty or reluctance: *Please do not **hesitate** to contact us if you have any questions.*

hide /haɪd/ verb, A2

★ to put or keep something out of sight; to prevent from being seen or discovered: *The little boy tried to **hide** behind the living room curtain.*

high /haɪ/ adjective, A1

★ extending far upward; of greater than average height: *They climbed a **high** mountain to see the sunrise over the valley.*

highlight /'haɪlaɪt/ verb, B1

★ to draw special attention to something or make it prominent: *The teacher used a marker to **highlight** the key terms in the text.*

hire /'haɪə/ verb, B1

★ to employ someone for wages or a salary; or to pay for the temporary use of something: *The company plans to **hire** three new software developers next month.*

hobby /'hɒbi/ noun, A1

★ an activity done regularly in one's leisure time for pleasure: *Her favorite **hobby** is painting colorful landscape scenes.*

hold /həʊld/ noun, A2

★ to grasp, carry, or support with one's hands or arms: *Please **hold** the railing carefully while walking down the steps.*

holiday /'hɒlədeɪ/ noun, A1

★ a day of festivity or recreation when no work is done: *They spent their summer **holiday** relaxing at a seaside resort.*

homework 'həʊmwɜːk/ noun, A1

★ schoolwork that a student is required to do at home: *He finished his English **homework** before dinner.*

honest /'ɒnɪst/ adjective, B1

★ free of deceit and untruthfulness; sincere and trustworthy: *Give me your **honest** opinion about my new business proposal.*

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hope /həʊp/ *verb*, **A1**

★ to want something to happen and think that it is possible: *I **hope** that the weather stays warm and clear for our picnic tomorrow.*

hotel /həʊ'tel/ *noun*, **A1**

★ an establishment providing accommodation, meals, and other services for travelers: *We booked a comfortable room at a **hotel** near the central station.*

household /'haʊshəʊld/ *noun*, **B2**

★ a house and its occupants regarded as a unit: *Managing a large **household** requires excellent budget planning.*

huge /hju:dʒ/ *adjective*, **A2**

★ extremely large in size, amount, or degree: *The concert attracted a **huge** crowd of enthusiastic music fans.*

humor /'hju:mə/ *noun*, **B2**

★ the quality of being amusing or comic, especially as expressed in literature or speech: *Everyone appreciated his sense of **humor** during the long meeting.*

I

idea /aɪ'diə/ *noun*, **A1**

★ a thought, plan, or suggestion about what to do: *I have a great **idea** for a new school project.*

identify /aɪ'dentɪfaɪ/ verb, **A2**

★ to recognize or be able to say who or what someone or something is: *Passengers were asked to **identify** their own bags before boarding.*

identity /aɪ'dentəti/ noun, **B1**

★ who or what a person or thing is: *The police are trying to establish the **identity** of the witness.*

illegal /ɪ'li:gl/ adjective, **B1**

★ not allowed by the law: *It is **illegal** to drive a car without a valid license.*

illness /'ɪlnəs/ noun, **A2**

★ a disease or period of sickness affecting the body or mind: *He missed two weeks of school because of a severe **illness**.*

imagine /ɪ'mædʒɪn/ verb, **A2**

★ to form a mental image or concept of something: *Can you **imagine** living on a desert island?*

impact /'ɪmpækt/ noun, **B1**

★ the powerful effect that something has on a situation or person: *The internet has had a huge **impact** on how we communicate.*

important /ɪm'pɔ:tnt/ adjective, **A1**

★ of great significance or value: *It is **important** to read the instructions before starting the exam.*

impress /ɪm'pres/ verb, **B2**

★ to make someone feel admiration and respect: *She tried hard to **impress** her new employers during the presentation.*

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improve /ɪm'pru:v/ verb, **A1**

★ to make or become better: *He practices the piano every day to **improve** his skills.*

income /'ɪnklʌm/ noun, **B2**

★ money received, especially on a regular basis, for work or through investments: *The family struggles to live on a single **income**.*

independence /,ɪndɪ'pendəns/ noun, **B2**

★ freedom from outside control or support: *The country gained its **independence** after a long struggle.*

individual /,ɪndɪ'vɪdʒuəl/ adjective, **B1**

★ single; separate; characteristic of a particular person or thing: *We must respect the needs of each **individual** student.*

industry /'ɪndəstri/ noun, **B1**

★ the production of goods or purified materials in factories; a particular branch of economic or commercial activity: *The tourism **industry** creates thousands of local jobs.*

influence /'ɪnfluəns/ noun, **B2**

★ the capacity to have an effect on the character, development, or behavior of someone or something: *My parents had a major **influence** on my career choice.*

information /,ɪnfə'meɪʃn/ noun, **A1**

★ facts provided or learned about something or someone: *You can find more **information** on our company website.*

ingredient /ɪn'ɡriːdiənt/ *noun*, **B1**

★ any of the foods or substances that are combined to make a particular dish: *Flour is the main **ingredient** needed to bake bread.*

initiative /ɪ'nɪʃətɪv/ *noun*, **B2**

★ the ability to assess and initiate things independently: *She showed great **initiative** by solving the issue without being asked.*

injury /'ɪndʒəri/ *noun*, **B1**

★ physical damage done to a person's or an animal's body: *He recovered quickly from his minor leg **injury**.*

innovation /,ɪnə'veɪʃn/ *noun*, **B2**

★ the introduction of something new, like a new method, idea, or product: *Technological **innovation** drives the growth of modern businesses.*

insight /'ɪnsaɪt/ *noun*, **C1**

★ a deep and accurate understanding of a complex issue or situation: *The book offers a fascinating **insight** into animal behavior.*

inspire /ɪn'spaɪə/ *verb*, **B2**

★ to fill someone with the urge or ability to do or feel something, especially something creative: *The coach tried to **inspire** his team to win the championship.*

instruction /ɪn'strʌkʃn/ *noun*, **A2**

★ detailed information on how to do or use something: *Follow the step-by-step **instruction** manual to build the bookshelf.*

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instrument /'ɪnstrəmənt/ *noun*, **A2**

★ an object or device used to produce musical sounds, or a tool used for precise work: *Do you play a musical **instrument**, like the guitar or violin?*

insurance /ɪn'ʃʊərəns/ *noun*, **B2**

★ an arrangement by which a company provides a guarantee of compensation for specified loss, damage, illness, or death: *It is wise to buy travel **insurance** before going abroad.*

intelligence /ɪn'telɪdʒəns/ *noun*, **B2**

★ the ability to acquire and apply knowledge and skills: *Dolphins are known for their high level of **intelligence**.*

intention /ɪn'tenʃn/ *noun*, **B1**

★ an aim or plan: *I have no **intention** of changing my mind about this project.*

interest /'ɪntrəst/ *noun*, **A1**

★ the feeling of wanting to know or learn about something or someone: *She showed a keen **interest** in learning ancient history.*

international /,ɪntə'næʃnəl/ *adjective*, **A2**

★ existing, occurring, or carried on between two or more nations: *The airport handles hundreds of **international** flights daily.*

internship /'ɪntɜːnʃɪp/ *noun*, **B1**

★ a period of work experience offered by an organization for a limited period of time: *He secured a summer **internship** at a major law firm.*

interview /'ɪntəvjuː/ *noun*, **A2**

★ a formal meeting in which one or more persons question, consult, or evaluate another person: *She has a job **interview** tomorrow morning at nine o'clock.*

introduce /ˌɪntrə'djuːs/ *verb*, **A1**

★ to make someone known by name to another person: *Let me **introduce** you to my colleague, Sarah.*

invent /ɪn'vent/ *verb*, **A2**

★ to create or design something that has not existed before: *Alexander Graham Bell is famous for his work to **invent** the telephone.*

invest /ɪn'vest/ *verb*, **B1**

★ to put money into financial schemes, shares, property, or a commercial venture with the expectation of achieving a profit: *They decided to **invest** their savings in the stock market.*

investigate /ɪn'vestɪgeɪt/ *verb*, **B2**

★ to carry out a systematic or formal inquiry to discover and examine the facts of an incident, allegation, or shared issue: *The police will thoroughly **investigate** the cause of the accident.*

invitation /ˌɪnvɪ'teɪʃn/ *noun*, **A2**

★ a written or spoken request inviting someone to go somewhere or to do something: *Thank you so much for the **invitation** to your birthday party.*

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invite /ɪnˈvaɪt/ verb, **A1**

★ to request the presence or participation of someone in a polite or formal way: *We want to **invite** all our neighbors to the backyard barbecue.*

island /ˈaɪlənd/ noun, **A2**

★ a piece of land surrounded by water: *They spent their summer vacation exploring a tropical **island**.*

issue /ˈɪʃuː/ noun, **B1**

★ an important topic or problem for debate or discussion: *Environmental protection is a critical **issue** that we must address.*

J

join /dʒɔɪn/ verb, **A2**

★ to connect or fasten things together; to become a member of an organization or group: *Would you like to **join** us for lunch this afternoon?*

journal /ˈdʒɜːnl/ noun, **B1**

★ a newspaper or magazine that deals with a particular subject or professional activity; also a daily record of news and events: *She publishes her scientific research in an international medical **journal**.*

journey /ˈdʒɜːni/ noun, **A2**

★ an act of traveling from one place to another: *The train **journey** across the mountains takes about four hours.*

judge /dʒʌdʒ/ verb, **B1**

★ to form an opinion about something after careful consideration: *It's difficult to **judge** whether the new policy is a success until we see the long-term data.*

juice /dʒuːs/ noun, **A1**

★ the liquid obtained from or present in fruit or vegetables: *I love to drink a glass of fresh orange **juice** with my breakfast.*

junior /'dʒuːniə(r)/ adjective, **B2**

★ of or for younger or less experienced people; holding a low rank in an organization: *As a **junior** software developer, he receives regular guidance from the team lead.*

justice /'dʒʌstɪs/ noun, **B2**

★ just behavior or treatment; the administration of law or authority in maintaining this: *The protestors gathered outside the court to demand **justice** for the victims.*

justify /'dʒʌstɪfaɪ/ verb, **B2**

★ to show or prove to be right or reasonable: *It is hard to **justify** spending so much money on a brand new car.*

K

keep /kiːp/ verb, **A1**

★ to have or hold something in your possession or in a particular place: *Please **keep** these important documents in a safe place.*

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key /ki:/ *noun*, **A1**

★ a small piece of shaped metal used to open or close a lock: *She turned the **key** in the lock and opened the door.*

kindness /'kaindnəs/ *noun*, **A2**

★ the quality of being friendly, generous, and considerate: *We will never forget the **kindness** and hospitality shown by our hosts.*

knife /naɪf/ *noun*, **A1**

★ an instrument or tool with a cutting edge or blade, used for cutting or as a weapon: *Use a sharp **knife** to slice the bread neatly.*

knock /nɒk/ *verb*, **A2**

★ to stike a surface sharply to attract attention, especially a door: *Please **knock** on the door before you enter the office.*

knowledge /'nɒlɪdʒ/ *noun*, **A2**

★ information, skills, and understanding acquired through experience or education: *She has an extensive **knowledge** of ancient Roman history.*



labor /'leɪbə(r)/ *noun*, **B2**

★ work, especially hard physical work: *The price of the repair includes both spare parts and manual **labor**.*

lack /læk/ noun, **B1**

★ the state of being without or not having enough of something: *The project was delayed due to a total **lack** of funding.*

lake /leɪk/ noun, **A1**

★ a large area of water surrounded by land: *We rented a small boat and spent the afternoon rowing across the **lake**.*

language /'læŋɡwɪdʒ/ noun, **A1**

★ the system of communication in speech and writing that is used by people of a particular country or area: *Learning a foreign **language** is a great way to experience another culture.*

late /leɪt/ adjective/adverb, **A1**

★ doing something or arriving after the expected, arranged, or usual time: *He apologized for being **late** to the morning staff meeting.*

launch /lɔːntʃ/ verb, **B1**

★ to start or introduce something new, such as a product, project, or service; to send a rocket or ship into motion: *The company plans to **launch** its new mobile app next month.*

law /lɔː/ noun, **A2**

★ the system of rules which a particular country or community recognizes as regulating the actions of its members: *The police are responsible for ensuring that citizens obey the **law**.*

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leader /'li:də(r)/ *noun*, **A2**

★ the person who leads or commands a group, organization, or country: *She is a natural **leader** who knows how to motivate her team.*

leave /li:v/ *verb*, **A1**

★ to go away from a person or a place: *What time does your train **leave** the central station?*

lecture /'lektʃə(r)/ *noun*, **B1**

★ an educational talk to an audience, especially to students in a university: *The professor gave a fascinating **lecture** on ancient civilizations.*

leisure /'leɜə(r)/ *noun*, **B1**

★ time when one is free from work or duties; ease or relaxation: *She enjoys playing tennis and gardening in her **leisure** time.*

lesson /'lesn/ *noun*, **A1**

★ a period of time which is used to teach someone a specific subject or skill: *I have an introductory guitar **lesson** scheduled for this evening.*

level /'levl/ *noun*, **A2**

★ a position or rank on a scale of amount, quality, or importance: *You need to pass this exam to move up to the next language **level**.*

license /'laɪns/ *noun*, **B1**

★ an official document or ticket that gives you permission to show, own, or do something: *You must carry your driving **license** with you whenever you operate a vehicle.*

lifestyle /'laɪfstɑɪl/ *noun*, **A2**

★ the way in which a person or a group of people lives: *Regular exercise and healthy eating are part of a balanced lifestyle.*

light /laɪt/ *noun/adjective*, **A1**

★ the natural agent that stimulates sight and makes things visible: *The morning **light** filtered through the bedroom window.*
 ★ something that is not heavy: *This jacket is very **light**.*

luggage /'lʌɡɪdʒ/ *noun*, **A2**

★ bags, cases, and suitcases containing personal belongings packed for a journey: *Passengers are responsible for watching their own **luggage** at the airport.*

luxury /'lʌkʃəri/ *noun*, **B1**

★ a state of great comfort or elegance, especially when involving great expense: *Staying at a five-star hotel on the coast was a pure **luxury**.*

M

machine /mə'ʃiːn/ *noun*, **A2**

★ an apparatus using mechanical power and having several parts, each with a definite function, together performing a particular task: *The factory installed a new **machine** to speed up the packaging process.*

maintain /meɪn'teɪn/ *verb*, **B1**

★ to cause or enable a condition or state of affairs to continue; to keep something in good condition: *It is*

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important to **maintain** a healthy balance between work and exercise.

major /'meɪdʒə(r)/ adjective, **B1**

★ important, serious, or significant: *The road was closed for several hours due to a **major** traffic accident.*

majority /mə'dʒɒrəti/ noun, **B2**

★ the greater number or part of something; more than half: *The vast **majority** of the students passed the final exam with ease.*

manage /'mænɪdʒ/ verb, **A2**

★ to be in charge of a business, team, or organization; to succeed in doing something difficult: *She was promoted last month and now has to **manage** a team of ten people.*

manner /'mænə(r)/ noun, **B2**

★ the way in which something is done or happens; a person's outward bearing or behavior: *He answered all the interview questions in a polite and professional **manner**.*

map /mæp/ noun, **A1**

★ a visual representation of an area—a symbolic depiction highlighting relationships between elements of that space: *We studied the **map** of the city carefully to find the quickest route to the museum.*

mark /mɑ:k/ noun, **A2**

★ a small area on a surface that is a different color from the rest, or a point/grade given for schoolwork: *The teacher put a red **mark** next to the incorrect answer on my test.*

market /'mɑːkɪt/ *noun*, **A1**

★ a regular gathering of people for the purchase and sale of provisions, livestock, and other goods: *We went to the local outdoor **market** to buy fresh fruits and vegetables.*

marriage /'mæɪdʒ/ *noun*, **B1**

★ the legally or formally recognized union of two people as partners in a personal relationship: *They celebrated their twenty-fifth year of **marriage** with a big family party.*

mass /mæs/ *noun*, **B2**

★ a large body of matter with no definite shape; a large number or amount: *Dark **masses** of clouds accumulated in the sky just before the thunderstorm.*

material /mə'tɪəriəl/ *noun*, **A2**

★ the matter from which a thing is or can be made: *Brick and wood are the primary building **materials** used for these houses.*

maximum /'mæksɪmə/ *adjective*, **B1**

★ as great, high, or intense as possible or permitted: *The **maximum** speed limit on this stretch of the highway is 110 kilometers per hour.*

meaning /'miːnɪŋ/ *noun*, **A1**

★ what is meant by a word, text, concept, or action: *If you do not know the **meaning** of a word, you should look it up in a dictionary.*

measure /'meʒə(r)/ *verb*, **B1**

★ to ascertain the size, amount, or degree of something by using an instrument or device: *Use a tape ruler to **measure** the exact width of the window frame.*

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media /'mi:diə/ *noun*, **B1**

★ the main means of mass communication (broadcasting, publishing, and the internet) regarded collectively: *The political campaign received a vast amount of coverage in the national **media**.*

medicine /'medsn/ or /'medisn/ *noun*, **A2**

★ a substance or preparation used in treating disease; the science or practice of medicine: *The doctor prescribed a liquid **medicine** to treat her persistent cough.*

medium /'mi:diəm/ *adjective*, **B1**

★ about halfway between two extremes of size, amount, quality, or degree; average: *He is of **medium** height and has short brown hair.*

meeting /'mi:tɪŋ/ *noun*, **A1**

★ an assembly of people for a particular purpose, especially for formal discussion: *All staff members are required to attend the morning **meeting** tomorrow.*

memorize /'meməraɪz/ *verb*, **B1**

★ to commit something to memory; learn by heart: *The actors had only two days left to **memorize** all their lines for the play.*

memory /'meməri/ *noun*, **A2**

★ the faculty by which the mind stores and remembers information: *She has a remarkably good **memory** for names and faces.*

mention /'menʃn/ verb, **B1**

★ to refer to something briefly and without going into detail: *Did he happen to **mention** what time he would be arriving tonight?*

mentor /'mentɔː(r)/ noun, **B2**

★ an experienced and trusted adviser who helps a less experienced person: *She served as a wonderful **mentor** during my first year at the law firm.*

menu /'menjuː/ noun, **A1**

★ a list of dishes available in a restaurant, or a list of options on a computer screen: *The waiter handed us the **menu** as soon as we sat down at the table.*

message /'mesɪdʒ/ noun, **A1**

★ a spoken, written, or electronic communication sent to or left for a recipient: *Please leave a brief **message** after the tone if I do not answer.*

method /'meθəd/ noun, **A2**

★ a particular procedure for accomplishing or approaching something, especially a systematic or established one: *This book outlines a brand new **method** for learning a foreign language rapidly.*

migration /maɪ'greɪʃn/ noun, **B2**

★ Movement of people or animals from one place to another: *Autumn is the time when the spectacular seasonal **migration** of birds takes place.*

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mild /maɪld/ *adjective*, **B1**

C

★ gentle and not severe, harsh, or sharp; pleasantly warm (weather): *We enjoyed a week of exceptionally **mild** weather during our winter vacation.*

E

mind /maɪnd/ *noun*, **A2**

F

★ the element of a person that enables them to be aware of the world and their experiences, to think, and to feel: *Keep an open **mind** when listening to alternative points of view.*

H

I

mindset /'maɪndset/ *noun*, **B2**

J

★ the established set of attitudes held by someone: *Developing a growth **mindset** helps people embrace new challenges.*

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minimum /'mɪnɪmə/ *adjective*, **B1****M**

★ the least or smallest amount or quantity possible, attainable, or required: *The **minimum** age required to enter this competitive event is eighteen.*

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minor /'maɪnə(r)/ *adjective*, **B1**

P

★ lesser in importance, seriousness, or extent: *Fortunately, she escaped from the car crash with only a few **minor** scratches.*

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minority /maɪ'nɒrəti/ *noun*, **B2**

S

★ the smaller number or part, especially a number or part that is less than half the whole number: *Only a tiny **minority** of the residents voted against the new community proposal.*

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mirror /'mɪrə(r)/ *noun*, **A2**

W

★ a surface, typically of glass coated with a metal amalgam, which reflects a clear image: *She paused briefly to look at her reflection in the hallway **mirror**.*

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mission /'mɪʃn/ *noun*, **B1**

★ an important assignment given to a person or group of people, typically involving travel abroad: *The astronauts successfully completed their space exploration **mission**.*

mistake /mɪ'steɪk/ *noun*, **A1**

★ an act or judgment that is misguided or wrong: *I made a careless **mistake** on my spelling test and lose one point.*

model /'mɒdl/ *noun*, **A2**

★ a three-dimensional representation of a person or thing or of a proposed structure, typically on a smaller scale than the original: *The architect showed us a miniature plastic **model** of the new office building.*

modify /'mɒdɪfaɪ/ *verb*, **B2**

★ to make minor changes to something, typically to improve it or make it more suitable: *We had to **modify** the project plan slightly to accommodate the lower budget.*

money /'mʌni/ *noun*, **A1**

★ a current medium of exchange in the form of coins and banknotes: *How much **money** do you need to buy a ticket for the concert?*

moral /'mɒrəl/ *adjective*, **B2**

★ concerned with the principles of right and wrong behavior and the goodness or badness of human character: *He felt it was his **moral** duty to tell the absolute truth to the police.*

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motivation /ˌməʊtɪ'veɪʃn/ noun, B2

★ the reason or reasons one has for acting or behaving in a particular way: *High praise from the teacher provided extra **motivation** for the students.*

mountain /'maʊntən/ noun, A1

★ a large natural elevation of the earth's surface rising abruptly from the surrounding level; a large steep hill: *They spent their weekend climbing the highest **mountain** peak in the region.*

movement /'mu:vmənt/ noun, B1

★ an act of changing physical location or position or of having this changed: *The dancer's fluid **movements** looked elegant on the stage.*

music /'mju:zɪk/ noun, A1

★ vocal or instrumental sounds (or both) combined in such a way as to produce beauty of form, harmony, and expression of emotion: *I like to relax on the couch while listening to classical **music**.*

musician /mju'zɪʃn/ noun, A2

★ a person who plays a musical instrument, especially when professionally, or writes music: *He is an incredibly talented **musician** who plays both the violin and piano.*

mystery /'mɪstəri/ noun, B1

★ something that is difficult or impossible to understand or explain: *The missing keys remained a complete **mystery** until we checked under the sofa.*

N

narrow /'nærəʊ/ *adjective*, **A2**

★ measuring a short distance from one side to the other, especially in comparison to length: *The car struggled to pass through the **narrow** village streets.*

nation /'neɪʃn/ *noun*, **B1**

★ a large body of people united by common descent, history, culture, or language, inhabiting a particular country or territory: *The president addressed the entire **nation** during the live broadcast.*

native /'neɪtɪv/ *adjective*, **B1**

★ associated with the place or circumstances of a person's birth: *She returned to her **native** country after living abroad for ten years.*

nature /'neɪtʃə(r)/ *noun*, **A2**

★ the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth: *We spent our weekend hiking and enjoying the beauty of **nature**.*

necessary /'nesəsəri/ *adjective*, **A2**

★ required to be done, achieved, or present; needed essential: *It is **necessary** to sign the document before submitting your application.*

negative /'negətɪv/ *adjective*, **A2**

★ consisting in or characterized by the absence rather than the presence of distinguishing features or expressions of

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criticism or pessimism: *Try not to let **negative** thoughts impact your confidence.*

negotiation /nɪˌɡəʊʃiˈeɪʃn/ noun, B2

★ discussion aimed at reaching an agreement: *The contract is currently under **negotiation** between the two companies.*

neighbor /ˈneɪbə(r)/ noun, A2

★ a person living next door to or very near the speaker or person referred to: *Our friendly **neighbor** offered to water our plants while we were away.*

nervous /ˈnɜːvəs/ adjective, A2

★ easily agitated or alarmed; anxious or apprehensive: *He felt incredibly **nervous** just before his first job interview.*

network /ˈnetwɜːk/ noun, B1

★ a group or system of interconnected people or things: *The company is expanding its global **network** of distribution centers.*

news /njuːz/ noun, A1

★ newly received or noteworthy information, especially about recent events: *I watched the evening **news** to see the latest global developments.*

noise /nɔɪz/ noun, A2

★ a sound, especially one that is loud or unpleasant or that causes disturbance: *The sudden loud **noise** from the street startled the sleeping dog.*

nothing /ˈnʌθɪŋ/ pronoun, A1

★ not anything; no single thing: *There was **nothing** left inside the pantry except an old box of crackers.*

note /nəʊt/ *noun*, **A1**

★ a brief record of facts, topics, or thoughts, written down as an aid to memory: *She left a quick **note** on the kitchen counter saying she would be back late.*

notice /'nəʊtɪs/ *verb*, **A2**

★ to become aware of something or someone; to see or hear them: *Did you **notice** whether the front door was locked when you walked past?*

notion /'nəʊʃn/ *noun*, **B2**

★ a conception of or belief about something: *The book challenges the traditional **notion** of how modern businesses operate.*

number /'nʌmbə(r)/ *noun*, **A1**

★ an arithmetical value, expressed by a word, symbol, or figure, representing a particular quantity: *Please write your phone **number** at the top of the registration form.*

numerous /'nju:mərəs/ *adjective*, **B1**

★ great in number; many: *The project was delayed because we encountered **numerous** technical difficulties.*

nutrition /nju'triʃn/ *noun*, **B2**

★ the process of providing or obtaining the food necessary for health and growth: *A basic understanding of **nutrition** is key to keeping a balanced diet.*

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obey /ə'beɪ/ verb, A2

★ to do what you are told to do by a person, a rule, or a law: *The dog was trained to **obey** basic commands like sit and stay.*

object /'ɒbdʒɪkt/ noun, A2 /əb'dʒekt/ verb, B2

★ a material thing that can be seen and touched: *There was a strange metallic **object** resting on the grass.*

★ to express disapproval or opposition: *Several residents **objected** to the new construction plans.*

objective /əb'dʒektɪv/ noun/adjective, B2

★ something that you plan to achieve; a goal or aim: *The primary **objective** of this meeting is to finalize next year's budget.*

★ not influenced by personal feelings or opinions: *The journalist tried to remain completely **objective** while reporting on the controversial election, keeping her personal opinions out of the article.*

obligation /ˌɒblɪ'geɪʃn/ noun, B2

★ a duty or commitment; something that you must do because of a law, rule, or promise: *Employers have a legal **obligation** to provide a safe working environment.*

observation /ˌɒbzə'veɪʃn/ noun, B2

★ the act of watching someone or something carefully, especially to learn something: *The scientist spent hours in the field making detailed **observations** of bird behavior.*

obtain /əb'teɪn/ *verb*, **B2**

★ to get something, especially by making an effort: *You must **obtain** a permit before you can park your car on this street.*

obvious /'ɒvɪəs/ *adjective*, **B1**

★ easy to see or understand; clear: *It was **obvious** from his smile that he had received some excellent news.*

occasion /ə'keɪʒn/ *noun*, **B1**

★ a particular time when something happens; or a special event or celebration: *We met on several **occasions** to discuss the details of the project.*

occur /ə'kɜ:(r)/ *verb*, **B1**

★ to happen or take place, especially unexpectedly or as a specific event: *Minor earthquakes **occur** frequently along this geographical fault line.*

odd /ɒd/ *adjective*, **B1**

★ strange or unusual: *She noticed an **odd** smell coming from the kitchen baseline.*

offense /ə'fens/ *noun*, **B2**

★ an illegal act or crime; or a feeling of resentment or hurt pride: *Driving without a seatbelt is a serious traffic **offense**; I'm sure he meant no **offense** by his remarks.*

offer /'ɒfə(r)/ *verb*, **A2**

★ to ask someone if they would like to have something or if they would like you to do something: *The company decided to **offer** her the position of project manager.*

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office /'ɒfɪs/ *noun*, **A1**

★ a room, suite, or building used as a place of business or work, especially for clerical or administrative tasks: *Her corporate **office** is located on the twelfth floor of the building.*

operate /'ɒpəreɪt/ *verb*, **B2**

★ to control the functioning of a machine or process; or to function or work in a specific way: *You need proper training before you can safely **operate** this heavy machinery.*

opinion /ə'pɪnjən/ *noun*, **A2**

★ a view or judgment formed about something, not necessarily based on fact or knowledge: *In my **opinion**, this is the most effective approach to solving the problem.*

opportunity /,ɒpə'tjuːnəti/ *noun*, **A2**

★ a time or situation that makes it possible to do something that you want to do or have to do: *Studying abroad is an incredible **opportunity** to learn a new language.*

opposite /'ɒpəzɪt/ *adjective*, **A2**

★ completely different; or facing or located on the other side of a particular space: *They walked in **opposite** directions.*

option /'ɒpʃn/ *noun*, **B1**

★ something that you can choose to have or do; a choice: *Students have the **option** to study either French or Spanish in their first year.*

order /'ɔːdə(r)/ *noun*, **A2**

★ the way in which people or things are arranged; an authoritative command; or a request for food or goods:

Please arrange these student files in alphabetical **order**; The waiter took our dinner **order**.

ordinary /'ɔːdnri/ adjective, **A2**

★ normal or usual; not different or special in any way: *It was just an **ordinary** day at work until the unexpected fire alarm went off.*

organization /,ɔːgənai'zeɪʃn/ noun, **B1**

★ an organized group of people with a particular purpose, such as a business or government department: *She works for a non-profit **organization** that helps protect marine environments.*

organize /'ɔːgənaɪz/ verb, **A2**

★ to arrange systematically; to plan or coordinate an event or activity: *We need to **organize** a meeting to discuss the details of the upcoming conference.*

outcome /'aʊtkʌm/ noun, **B2**

★ the final result or effect of an action, situation, or process: *The final **outcome** of the negotiation was beneficial for both corporate parties.*

outline /'aʊtlaɪn/ noun, **B2**

★ a general description or plan giving the essential features of something but not the detail: *Before writing your essay, it is helpful to create a clear structural **outline**.*

owner /'əʊnə(r)/ noun, **A2**

★ a person who owns something; the legal possessor of a piece of property or an item: *The proud **owner** of the new restaurant welcomed everyone at the grand opening.*

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pain /peɪn/ *noun*, **A2**

★ physical suffering or discomfort caused by illness or injury; mental suffering: *She took some medicine to help ease the sharp **pain** in her lower back.*

participant /pɑːˈtɪsɪpənt/ *noun*, **B2**

★ a person who takes part in something, such as an event, study, or activity: *Each **participant** in the research study was asked to fill out a detailed questionnaire.*

participate /pɑːˈtɪsɪpeɪt/ *verb*, **B1**

★ to take part in an action, event, or activity alongside others: *The teacher encouraged all the students to **participate** actively in class discussions.*

partner /ˈpɑːtnə(r)/ *noun*, **A2**

★ either of a pair of people engaged together in the same activity or business relationship: *You need to find a **partner** to work with on the chemistry lab assignment.*

passage /ˈpæsɪdʒ/ *noun*, **B1**

★ a narrow path or corridor; a short section of a book, speech, or piece of music: *The professor asked me to read a specific **passage** from the textbook aloud.*

passenger /ˈpæsɪndʒə(r)/ *noun*, **A2**

★ a person who is traveling in a automobile, bus, train, or airplane but who is not driving or operating it: *The bus was*

completely crowded, with every single seat occupied by a **passenger**.

passion /'pæʃn/ noun, B1

★ an intense desire or enthusiastic interest in an activity, subject, or cause: *She has always had a true **passion** for classical music and photography.*

patient /'peɪʃnt/ noun, A2

★ a person receiving or registered to receive medical treatment: *The doctor spent fifteen minutes explaining the treatment options to the **patient**.*

peace /piːs/ noun, A2

★ freedom from disturbance; tranquility, or the absence of war and conflict: *After a hectic day at the corporate office, she enjoyed the total **peace** and quiet of her home.*

peer /piə(r)/ noun, B2

★ a person of the same age, status, or ability as another specified person: *Children often experience heavy pressure to look and act like their school **peers**.*

percentage /pə'sentɪdʒ/ noun, B1

★ a rate, number, or amount in each hundred: *A high **percentage** of the student body voted in favor of the new sports fields.*

perform /pə'fɔːm/ verb, A2

★ to carry out, accomplish, or fulfill an action, task, or function; or to present entertainment to an audience: *The medical team is fully prepared to **perform** the surgery immediately.*

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performance /pə'fɔ:məns/ *noun*, **B1**

★ an act of staging or presenting a play, concert, or other entertainment; or how well a person or machine does a piece of work: *The audience erupted into loud applause at the end of the musical **performance**.*

permanent /'pɜ:mənənt/ *adjective*, **B1**

★ lasting or intended to last or remain unchanged indefinitely: *The catastrophic flood caused **permanent** damage to the structural foundations of the old bridge.*

permission /pə'mɪʃn/ *noun*, **A2**

★ approval to do something, given by someone in a position of authority: *You must obtain formal written **permission** before utilizing company equipment for personal tasks.*

permit /pə'mɪt/ *verb*, **B1**

★ to allow something to happen or make it possible: *The museum does not **permit** visitors to take photos with a flash.*

perseverance /,pɜ:'sɪ'vɪərəns/ *noun*, **C1**

★ persistence in doing something despite difficulty or delay in achieving success: *Through hard work and sheer **perseverance**, she finally completed her lengthy doctoral thesis.*

personality /,pɜ:sə'næləti/ *noun*, **A2**

★ the combination of characteristics or qualities that form an individual's distinctive character: *She has a very bright, cheerful **personality** that instantly fills the entire room with energy.*

perspective /pə'spektɪv/ *noun*, **B2**

★ a particular attitude toward or way of regarding something; a point of view: *Traveling to foreign countries gives you a brand new **perspective** on your own lifestyle.*

persuade /pə'sweɪd/ *verb*, **B1**

★ to convince someone to do something through reasoning or argument: *He tried to **persuade** his parents to buy him a new laptop computer for school.*

plagiarism /'pleɪdʒərɪzəm/ *noun*, **C1**

★ the practice of taking someone else's work or ideas and passing them off as one's own: *The university student was heavily penalized for committing **plagiarism** on his final research project.*

plan /plæn/ *noun*, **A1**

★ a detailed proposal for doing or achieving something; an intention or decision about what one is going to do: *We have a clear **plan** to expand our local business into international markets.*

plant /plɑːnt/ *noun*, **A1**

★ a living organism of the kind exemplified by trees, shrubs, herbs, grasses, ferns, and mosses: *Remember to water the house **plant** in the living room once every two days.*

pleasure /'pleɪzə(r)/ *noun*, **A2**

★ a feeling of happy satisfaction and enjoyment: *It was an absolute **pleasure** to work with your talented team on this project.*

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policy /'pɒləsi/ *noun*, **B1**

★ a course or principle of action adopted or proposed by an organization, business, or individual: *The corporate employee manual outlines the company **policy** regarding flexible working hours.*

polite /pə'laɪt/ *adjective*, **A2**

★ having or showing behavior that is respectful and considerate of other people: *The receptionist was extremely **polite** and answered all our questions with a smile.*

pollution /pə'luːʃn/ *noun*, **B1**

★ the presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects: *Industrial waste contributes heavily to the plastic **pollution** found in our rivers.*

population /ˌpɒpjʊ'leɪʃn/ *noun*, **A2**

★ all the inhabitants of a particular town, area, or country: *The **population** of the small village has doubled over the past ten years.*

portfolio /pɔːt'fəʊliəʊ/ *noun*, **B2**

★ a large, thin, flat case for loose sheets of paper such as drawings or maps; a compilation of an artist's or professional's work: *She brought her photography **portfolio** to show her creative style to the interviewers.*

positive /'pɒzətɪv/ *adjective*, **A2**

★ constructive, optimistic, or confident; showing pleasing progress or results: *Maintaining a **positive** attitude helps you manage difficult situations.*

possess /pə'zes/ verb, B2

★ to have as belonging to one; own or occupy: *Candidates for this technical job must **possess** strong communication skills.*

potential /pə'tenʃl/ noun, B1

★ having or showing the capacity to develop into something in the future: *The new software product has the **potential** to completely revolutionize the industry.*

poverty /'pɒvəti/ noun, B1

★ the state of being extremely poor; the state of being inferior in quality or insufficient in amount: *The organization works diligently to alleviate **poverty** in urban areas.*

practice /'præktɪs/ noun/verb, A1

★ the actual application or use of an idea, belief, or method, as opposed to theories relating to it; repeated exercise in an activity: *It takes years of constant **practice** to become an expert piano player; If you want to play the piano well, you need to **practice** every day.*

praise /preɪz/ verb, B2

★ express warm approval or admiration of something or someone: *The teacher was quick to **praise** the students for their incredible effort on the test.*

predict /prɪ'dɪkt/ verb, B1

★ say or estimate that a specified thing will happen in the future or will be a consequence of something: *Meteorologists use complex weather maps to **predict** whether it will rain tomorrow.*

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prepare /prɪ'peə(r)/ verb, **A1**

★ make something ready for use or consideration; get ready to do or deal with something: *You need to study hard tonight to **prepare** for your final history exam.*

present /'preznt/ noun, **A1** /prɪ'zent/ verb, **B1**

★ a gift: *They gave her a beautiful present for her birthday.*

★ to formally introduce or exhibit something to an audience: *He will **present** his research findings at nine o'clock.*

presentation /,prezn'teɪʃn/ noun, **B1**

★ a speech or talk in which a new product, idea, or piece of work is shown and explained to an audience: *She spent hours building slides for her corporate marketing **presentation**.*

preserve /prɪ'zɜ:v/ verb, **B2**

★ maintain something in its original or existing state; keep safe from harm or decay: *Steps are being taken to **preserve** the historic castle foundations from environmental erosion.*

pressure /'prefə/ noun, **B1**

★ continuous physical force exerted on or against an object; or psychological stress or urgency: *The liquid **pressure** inside the pipeline must be carefully monitored at all times.*

prevent /prɪ'vent/ verb, **A2**

★ keep something from happening or arising; stop someone from doing something: *Wearing a seatbelt is a simple way to **prevent** severe injury during a car crash.*

privilege /'prɪvəlɪdʒ/ noun, **C1**

★ a special right, advantage, or immunity granted or available only to a particular person or group: *It was an absolute **privilege** to speak with the world-renowned scientist.*

problem /'prɒbləm/ noun, **A1**

★ a matter or situation regarded as unwelcome or harmful and needing to be dealt with and overcome: *We worked together all afternoon to fix the unexpected technical **problem**.*

procedure /prə'si:dʒə/ noun, **B2**

★ an established or official way of doing something; a series of actions conducted in a certain order: *Please follow the standard safety **procedure** when entering the laboratory.*

product /'prɒdʌkt/ noun, **A2**

★ an article or substance that is manufactured or refined for sale: *The company is launching a brand new skin care **product** next month.*

proficiency /prə'fɪʃnsi/ noun, **C1**

★ a high degree of competence or skill; expertise: *Candidates must demonstrate a high level of **proficiency** in written English.*

progress /'prɒɡres/ noun, **B1**

★ forward or onward movement toward a destination; development or improvement: *The students are making excellent **progress** in their language learning classes.*

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project /'prɒdʒekt/ *noun*, **A2**

★ an enterprise carefully planned to achieve a particular aim; or to estimate or cast forward: *Our team is working on a major construction **project** in the center of the city.*

promise /'prɒmɪs/ *noun*, **A2**

★ a declaration or assurance that one will do something or that a particular thing will happen: *If you make a **promise** to someone, you should work hard to keep it.*

promote /prə'məʊt/ *verb*, **B1**

★ support or encourage a cause or venture; raise someone to a higher position or rank: *The organization campaigns heavily to **promote** healthy eating habits.*

proof /pru:f/ *noun*, **B1**

★ evidence or argument establishing or helping to establish a fact or the truth of a statement: *You must show your passport as **proof** of identity at the airport gate.*

property /'prɒpəti/ *noun*, **B1**

★ a thing or things belonging to someone; possessions collectively; a building or piece of land: *This vintage camera is personal **property**, so please handle it with care.*

proposal /prə'pəʊzəl/ *noun*, **B2**

★ a plan or suggestion, especially a formal or written one, put forward for consideration or discussion by others: *The committee accepted our **proposal** to build a new community playground.*

protest /'prəʊtest/ *noun*, **B2**

★ an expression or declaration of objection, disapproval, or dissent, often in a public gathering: *A peaceful public **protest** took place outside the city hall yesterday afternoon.*

proud /praʊd/ *adjective*, **A2**

★ feeling deep pleasure or satisfaction as a result of one's own achievements or possessions, or those of someone with whom one is closely associated: *Her parents felt incredibly **proud** when she graduated from university with honors.*

provide /prə'vaɪd/ *verb*, **A2**

★ make available for use; supply someone with something needed or useful: *The hotel will **provide** fresh towels and complimentary breakfast for all guests.*

public /'pʌblɪk/ *adjective*, **A2**

★ of or concerning the people as a whole; open to or shared by all the people: *Utilizing **public** transport is an excellent way to reduce individual carbon footprints.*

purpose /'pɜːpəs/ *noun*, **A2**

★ the reason for which something is done or created or for which something exists: *The primary **purpose** of this training course is to improve communication skills.*



qualification /ˌkwɒlɪfɪ'keɪʃn/ *noun*, **B1**

★ an official record showing that you have finished a training course or have the necessary skills, etc.; a quality or

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accomplishment that makes someone suitable for a job or activity: *She gained a recognized teaching **qualification** after two years of hard work.*

qualify /'kwɒlɪfaɪ/ verb, **B1**

★ to reach the necessary standard; to finish a training course or pass the exams needed to do a particular job: *It takes several years of rigorous study and practical training to **qualify** as a doctor.*

quantity /'kwɒntəti/ noun, **A2**

★ an amount or number of something, especially that can be measured or counted: *The company produces a vast **quantity** of paper every single year.*

quarter /'kwɔːtə/ noun, **A2**

★ one of four equal parts into which something is or can be divided: *We cut the birthday cake into **quarters** so everyone could have a piece.*

question /'kwestʃən/ verb, **B1**

★ to ask someone questions, especially officially; to express doubt about something: *The detective began to **question** the suspect about his whereabouts on Tuesday night.*

quit /kwɪt/ verb, **B1**

★ to stop doing something or leave a job or a place permanently: *After winning the lottery, he decided to **quit** his job and travel the world.*

quiz /kwɪz/ *noun*, **A2**

★ a competition or game in which people try to answer questions to test their knowledge: *Our history teacher gave us a surprise **quiz** on the American Revolution.*

quote /kwəʊt/ *verb*, **B1**

★ to repeat the exact words that someone else has said or written: *The journalist chose to **quote** the mayor directly to avoid any misunderstanding.*

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race /reɪs/ *noun*, **A2**

★ a competition between people, animals, vehicles, etc. to see which is the fastest: *She won the 100-meter **race** in record time.*

raise /reɪz/ *verb*, **B1**

★ to lift or move something to a higher position: *If you know the correct answer, please **raise** your hand.*

range /reɪndʒ/ *noun*, **B1**

★ a variety of things of a particular type: *The hotel offers a wide **range** of activities for children.*

rank /ræŋk/ *noun*, **B2**

★ the position that someone or something has in a hierarchy or scale of importance: *He quickly rose through the **ranks** to become a general.*

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rapid /'ræpɪd/ *adjective*, **B2**

★ happening in a short period of time; fast or quick: *The tech industry has seen **rapid** growth over the last decade.*

rare /reə/ *adjective*, **B1**

★ not existing in large numbers; very uncommon or unusual: *It is very **rare** to find this species of bird in the city.*

reaction /ri'ækʃn/ *noun*, **B1**

★ what you do, say, or think as a result of something that has happened: *Her initial **reaction** to the surprise news was utter disbelief.*

reality /ri'æləti/ *noun*, **B2**

★ the state of things as they actually exist, rather than as they may appear or be imagined: *He wanted to be an actor, but in **reality**, he worked as a waiter.*

realize /'ri:əlaɪz/ *verb*, **A2**

★ to understand or become aware of something situationally: *I suddenly **realized** that I had left my keys at home.*

reason /'ri:zn/ *noun*, **A2**

★ a cause, explanation, or justification for an action or event: *Give me one good **reason** why I should help you.*

receive /rɪ'si:v/ *verb*, **A2**

★ to get or be given something: *Did you **receive** the email I sent you yesterday morning?*

recipe /'resəpi/ *noun*, **A2**

★ a set of instructions telling you how to cook something: *I tried a new **recipe** for chocolate cake, and it was delicious.*

recognize /'rekəɡnaɪz/ verb, **A2**

★ to know who somebody is or what something is because you have seen or heard them before: *I didn't **recognize** her at first because she had changed her hairstyle.*

recommend /,rekə'mend/ verb, **B1**

★ to advise someone to do something or suggest a particular choice because it is good: *Can you **recommend** a good Italian restaurant in this neighborhood?*

record /'rekɔ:d/ noun, **A2** /rɪ'kɔ:d/ verb, **B1**

★ (noun) a written or electronic account of facts or events: *The hospital keeps a detailed medical **record** for every patient who is admitted.*

★ (verb) to store sounds or moving pictures using electronic equipment: *The band went into the studio to **record** their new album.*

recover /rɪ'kʌvə/ verb, **B1**

★ to get well again after being ill, hurt, or sick: *It took him several weeks to **recover** from the severe flu.*

recovery /rɪ'kʌvəri/ noun, **B2**

★ the process of becoming well again after an illness or injury: *Doctors are very confident that she will make a full **recovery**.*

reference /'refrəns/ noun, **B2**

★ a mention of something or a note in a book that tells you where the information came from: *Please include a list of **references** at the end of your essay.*

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register /'redʒɪstə/ verb, **B1**

★ to put your name or other information on an official list: *You need to **register** online before you can attend the conference.*

regulation /,regju'leɪʃn/ noun, **B2**

★ an official rule made by a government or other authority: *The safety **regulations** strictly forbid smoking anywhere in the building.*

relationship /rɪ'leɪʃnʃɪp/ noun, **A2**

★ the way in which two or more people, groups, or countries behave toward each other: *She has a very close working **relationship** with her manager.*

relax /rɪ'læks/ verb, **A1**

★ to rest while doing something enjoyable, especially after work: *I like to listen to classical music to **relax** after a stressful day.*

release /rɪ'li:s/ verb, **B1**

★ to allow a person or animal to leave a place where they have been kept: *The police decided to **release** the suspect due to a lack of evidence.*

reliable /rɪ'laɪəbl/ adjective, **B1**

★ that can be trusted to do something well; dependable: *It is hard to find a truly **reliable** second-hand car these days.*

relief /rɪ'li:f/ noun, **B2**

★ a feeling of comfort when something frightening, worrying, or painful has ended: *It was a huge **relief** to hear that everyone survived the accident safely.*

religion /rɪˈlɪdʒən/ *noun*, **B1**

★ the belief in the existence of a god or gods, and the activities connected with this: *Freedom of **religion** is a fundamental right guaranteed by the constitution.*

remark /rɪˈmɑːk/ *noun*, **B2**

★ something that you say or write which expresses an opinion or thought: *The critic's casual **remark** upset the young director immensely.*

remind /rɪˈmaɪnd/ *verb*, **B1**

★ to help someone remember something they need to do: *Please **remind** me to call my mother before we leave tonight.*

remove /rɪˈmuːv/ *verb*, **B1**

★ to take something away from a place, or to get rid of something: *You should use a clean cloth to **remove** the stain from the sofa.*

rent /rent/ *noun/verb*, **A2**

★ (noun) money that you pay regularly to a landlord to live in a house or apartment: *The **rent** for this downtown apartment is due on the first of every month.*

★ (verb) to pay money regularly to a landlord or owner in order to use a house, apartment, room, or piece of equipment; alternatively, to allow someone to use your property in exchange for regular payments: *Instead of buying a house right away, they decided to **rent** a small apartment downtown for a year.*

repair /rɪˈpeə/ *verb*, **A2**

★ to fix something that is broken, damaged, or torn: *The mechanic said it would take two hours to **repair** the brakes.*

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repeat /rɪˈpi:t/ verb, **A1**

★ to say or do something again: *Could you please **repeat** the question? I didn't hear you clearly.*

replace /rɪˈpleɪs/ verb, **A2**

★ to substitute someone or something with a new person or object: *We need to **replace** the old light bulbs with energy-efficient ones.*

report /rɪˈpɔ:t/ noun, **A2**

★ a spoken or written account of something that one has observed, heard, or investigated: *The committee published a comprehensive **report** on climate change.*

request /rɪˈkwest/ noun, **B1**

★ an act of politely or formally asking for something: *They submitted a formal **request** for additional funding for the project.*

require /rɪˈkwaɪə/ verb, **B1**

★ to need something; to make something necessary: *Most European hotels **require** guests to present a passport upon check-in.*

rescue /ˈreskjʊ:/ verb, **B1**

★ to save someone or something from a dangerous or unpleasant situation: *Firefighters managed to **rescue** the cat from the burning house.*

research /rɪˈsɜ:tʃ/ noun, **A2** /ˈri:sɜ:tʃ/ verb, **B1**

★ (noun) a detailed study of a subject, especially in order to discover new facts or information: *She is doing scientific **research** into the causes of Alzheimer's disease.*

★ (verb) to study a subject carefully and in detail, especially in order to discover new facts, find information, or reach a

new understanding: *The scientists spent months in the laboratory to **research** the long-term effects of the new medication.*

reservation /ˌrezə'veɪʃn/ *noun*, **A2**

★ an arrangement to have a room, table, or seat kept for you at a later time: *I made a dinner **reservation** for two at the restaurant for 8:00 PM.*

resilience /rɪ'zɪliəns/ *noun*, **C1**

★ the capacity to recover quickly from difficulties; toughness: *The economic **resilience** of the country surprised many global financial experts.*

resource /rɪ'sɔːs/ or /'riːsɔːs/ *noun*, **B1**

★ something that a country, person, or organization has which can be used to achieve a goal: *Water is a vital natural **resource** that we must protect.*

respect /rɪ'spekt/ *noun*, **A2**

★ a feeling of deep admiration for someone or something elicited by their abilities or qualities: *Children should always show **respect** to their parents and teachers.*

respond /rɪ'spɒnd/ *verb*, **A2**

★ to say or write something as a reply to someone or something: *The company failed to **respond** to my letters of complaint.*

responsibility /rɪˌspɒnsə'bɪləti/ *noun*, **B1**

★ a duty to deal with something or of having control over someone: *It is the manager's **responsibility** to make sure the project finishes on time.*

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restaurant /ˈrestɹɑnt/ *noun*, **A1**

★ a place where people pay to sit and eat meals that are cooked and served on the premises: *We went to a luxury French **restaurant** to celebrate our wedding anniversary.*

result /rɪˈzʌlt/ *noun*, **A1**

★ something that happens or exists because of something else: *His success was the direct **result** of many years of hard work.*

review /rɪˈvjuː/ *noun/verb*, **A2**

★ (noun) a report in which someone gives their opinion of a book, movie, play, or consumer product: *The film received an incredibly positive review in the national newspaper.*

★ (verb) to look at, study, or examine something again, typically to evaluate it, make a judgment, or check for errors: *I need to **review** my notes before the exam tomorrow.*

revise /rɪˈvaɪz/ *verb*, **B1**

★ to change your opinions or plans because of new information; to study again for an exam: *You should carefully **revise** your notes before the final exam next week.*

revolution /ˌrevəˈluːʃn/ *noun*, **B2**

★ a forcible overthrow of a government or social order, in favor of a new system: *The French **Revolution** changed the course of European history forever.*

reward /rɪˈwɔːd/ *noun/verb*, **B1**

★ (noun) something given in recognition of one's service, effort, or achievement: *A cash **reward** was offered for the return of the missing jewelry.*

★ (verb) to give something (such as money, a prize, praise, or a privilege) to someone in recognition of their merit,

effort, good behavior, or achievements: *The company will **reward** the top-performing employees with a bonus at the end of the year.*

rhythm /'rɪðəm/ *noun*, **B2**

★ a strong, regular, repeated pattern of movement or sound: *The dancers moved perfectly to the fast **rhythm** of the African drums.*

right /raɪt/ *adjective*, **A1**

★ morally good, justified, or acceptable; correct in fact or judgment: *Is this the **right** way to get to the train station?*

rise /raɪz/ *verb*, **A2**

★ to move from a lower position to a higher one; to increase in amount or value: *The sun will **rise** at 6:00 AM tomorrow morning.*

risk /rɪsk/ *noun*, **B1**

★ the possibility of something bad or unpleasant happening: *Smoking poses a massive health **risk** to your lungs.*

romantic /rəʊ'mæntɪk/ *adjective*, **A2**

★ connected with or expressing love, or a desire for love: *They enjoyed a **romantic** candlelit dinner by the ocean.*

rough /rʌf/ *adjective*, **B1**

★ having an uneven or irregular surface; not smooth: *The bark of the ancient oak tree was thick and **rough** to the touch.*

round /raʊnd/ *adjective*, **A1**

★ shaped like a circle or a ball: *The children sat in a **round** circle on the classroom floor.*

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route /ru:t/ *noun*, **A2**

★ a way or course taken in getting from a starting point to a destination: *We chose a scenic **route** through the mountains for our road trip.*

routine /ru:'ti:n/ *noun*, **A2**

★ a sequence of actions regularly followed; a fixed program: *Going to the gym before work has become part of my daily **routine**.*

rule /ru:l/ *noun*, **A1**

★ an official instruction that says what you must or must not do: *The first **rule** of the club is that you must arrive on time.*

rural /'rʊərəl/ *adjective*, **B2**

★ connected with or like the countryside rather than the city: *They moved from Bangkok to a quiet, **rural** village in Chiangmai.*

S

safety /'seɪfti/ *noun*, **B1**

★ the state of being safe and protected from danger or harm: *The company's top priority is the **safety** of its workers.*

salty /'sɔ:lti/ *adjective*, **A2**

★ containing salt or tasting of salt: *The soup was a bit too **salty** for my taste.*

sample /'sɑ:mpl/ *noun*, **B1**

★ a small amount of something that shows what the rest is like: *They provided a free **sample** of the new perfume.*

satisfaction /,sætɪs'fækʃn/ *noun*, **B2**

★ a good feeling that you get when you have achieved something or when something happens the way you wanted: *She looked at her finished painting with great **satisfaction**.*

satisfy /'sætɪsfai/ *verb*, **B1**

★ to make someone pleased by doing what they want or giving them what they need: *The company worked hard to **satisfy** all customer demands.*

save /seɪv/ *verb*, **A1**

★ to stop someone or something from being hurt, killed, or destroyed; to keep money for future use: *The brave firefighter managed to **save** the puppy from the burning building; He managed to save enough money to buy a new bicycle.*

schedule /'fedʒu:l/ (UK) or /'skedʒu:l/ (US) *noun*, **A2**

★ a plan that lists all the work that you have to do and when you must do it: *According to the **schedule**, the train should arrive at 3:00 PM.*

scholarship /'skɒləʃɪp/ *noun*, **B2**

★ an amount of money given by a school or university to pay for the education of a talented student: *He won a **scholarship** to study Engineering at Interdisciplinary and Technological College.*

score /skɔː/ *noun*, **A2**

★ the number of points that someone gets in a game or test: *The final **score** of the football match was 2-1.*

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search /sɜːtʃ/ verb, **A2**

★ to look carefully for something or someone: *She used an internet browser to **search** for a local hotel.*

section /'sekʃn/ noun, **B1**

★ one of the parts that something is divided into: *The book review is located in the business **section** of the newspaper.*

security /sɪ'kjʊərəti/ noun, **B1**

★ things that are done to keep a person, building, or country safe from danger or crime: *Airport **security** has been tightened significantly over the last month.*

select /sɪ'lekt/ verb, **B1**

★ to choose someone or something from a group: *You need to **select** the option that best describes your issue.*

sensitive /'sensətɪv/ adjective, **B2**

★ able to understand other people's feelings; easily offended or hurt: *He is very **sensitive** to criticism and gets upset easily.*

separate /'seprət/ adjective/verb, **B1**

★ (adjective) not joined or together: *The raw vegetables should be kept in a **separate** container from the meat.*

★ (verb) to divide or split into parts: *You need to **separate** the white clothes from the colored ones before putting them in the washing machine.*

serious /'sɪəriəs/ adjective, **A2**

★ bad or dangerous enough to cause worry; not joking or funny: *The doctor said it was a **serious** injury but she would recover.*

serve /sɜːv/ verb, **A2**

★ to give somebody food or drink at a restaurant or during a meal: *The restaurant will **serve** dinner until 10:00 PM.*

service /'sɜːvɪs/ noun, **A2**

★ the act of helping or doing work for someone: *The food was excellent, but the **service** was quite slow.*

settle /'setl/ verb, **B2**

★ to reach an agreement about a dispute; to make a place your permanent home: *They managed to **settle** the argument without going to court.*

severe /sɪ'vɪə/ adjective, **B2**

★ very serious, bad, or unpleasant: *The region suffered from a **severe** winter storm last night.*

shake /ʃeɪk/ verb, **A2**

★ to move backwards and forwards or up and down with short, quick movements: *He began to **shake** with fear when he heard the loud noise.*

shape /ʃeɪp/ noun, **A2**

★ the physical outline or form of something: *The cookies were cut into the **shape** of a star.*

share /ʃeə/ verb, **A1**

★ to give a part of something to somebody else; to use something together: *The children were taught to **share** their toys with each other.*

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shelter /'ʃeltə/ noun, B2

★ a place that protects you from bad weather or danger: *They used the abandoned cabin as a **shelter** from the heavy rain.*

D

shift /ʃɪft/ verb/noun, B2

★ (verb) to move or change from one position or direction to another: *Could you help me **shift** this heavy sofa a few inches to the left?*

G

★ (noun) a period of time worked by a group of workers: *He works the night **shift** at the local hospital.*

I

shine /ʃaɪn/ verb, A2

★ to produce or reflect light; to be very bright: *The sun began to **shine** brightly through the clouds.*

K

L

shout /ʃaʊt/ verb, A2

★ to speak or cry out in a very loud voice: *You don't need to **shout**, I can hear you perfectly fine.*

M

N

sight /saɪt/ noun, B1

★ the ability to see; something that you see, especially something interesting: *She lost her **sight** in a tragic accident when she was a child.*

Q

R

sign /saɪn/ noun, A2

★ a notice, board, or mark that gives information, a warning, or an instruction: *The **sign** on the door said "Closed for Holidays."*

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signal /'sɪgnəl/ noun, B1

★ a movement or sound that gives information or a command: *The red light is a **signal** that tells drivers to stop.*

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significant /sɪɡ'nɪfɪkənt/ *adjective, B2*

★ large or important enough to have an effect or be noticed: *There has been a **significant** increase in sales this quarter.*

silence /'saɪləns/ *noun, B1*

★ a complete lack of sound or noise: *The classroom was filled with absolute **silence** during the test.*

similarity /sɪmə'lærəti/ *noun, B1*

★ the state of being like somebody or something else; a feature that is the same: *There is a striking **similarity** between the two brothers.*

simple /'sɪmpl/ *adjective, A1*

★ easy to understand or do; not complicated: *The instructions were **simple** and easy to follow.*

sincere /sɪn'sɪə/ *adjective, B2*

★ showing what you really think or feel; honest and genuine: *Please accept my **sincere** apologies for the misunderstanding.*

situation /sɪtʃu'eɪʃn/ *noun, A2*

★ the things that are happening and the conditions that exist at a particular time and place: *The economic **situation** in the country is slowly improving.*

skill skɪl/ *noun, A2*

★ the ability to do something well, usually gained through training or experience: *Learning to play the piano requires a lot of time and **skill**.*

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smart /sma:t/ adjective, **A2**

★ intelligent; clean, tidy, and well-dressed: *She is a very **smart** student who always gets top grades.*

smile /smaɪl/ verb, **A1**

★ to turn up the corners of your mouth to show that you are happy or amused: *He couldn't help but **smile** when he saw the puppy.*

smooth /smu:ð/ adjective, **B1**

★ having a surface that is perfectly even and regular; completely free of lumps: *The silk fabric felt incredibly **smooth** against her skin.*

social media /ˌsəʊʃl 'mi:diə/ noun, **A2**

★ websites and applications that enable users to create and share content or to participate in social networking: *Many people use **social media** to stay in touch with childhood friends.*

society /sə'saɪəti/ noun, **B1**

★ people in general, living together in communities with shared laws and traditions: *Technology plays an incredibly central role in modern **society**.*

solution /sə'lu:ʃn/ noun, **A2**

★ a way of solving a problem or dealing with a difficult situation: *The engineers are trying to find a permanent **solution** to the leak.*

solve /sɒlv/ verb, **A2**

★ to find a way of dealing with a problem or finding the answer to a puzzle: *It took me over an hour to **solve** the crossword puzzle.*

sound /saʊnd/ *noun*, **A1**

★ something that you can hear: *I woke up in the middle of the night because of a strange **sound**.*

sour /'saʊə/ *adjective*, **A2**

★ having an acid taste like that of a lemon or fruit that is not ripe: *The milk has gone **sour** because it was left out of the fridge.*

source /sɔːs/ *noun*, **B1**

★ a place, person, or thing from which something comes or can be obtained: *The internet is a vast **source** of information on almost any topic.*

speech /spi:tʃ/ *noun*, **B1**

★ a formal talk given to an audience of people: *The president delivered an inspiring **speech** on television.*

speed /spi:d/ *noun*, **A2**

★ the rate at which someone or something moves or operates: *The car was traveling at a very high **speed** when it crashed.*

spend /spend/ *verb*, **A1**

★ to give money to pay for goods or services; to use time doing something: *How much money did you **spend** on your holiday?*

spicy /'spaisi/ *adjective*, **A1**

★ having a strong, hot flavor because spices have been added: *I love eating **spicy** food, especially traditional Thai curries.*

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sponsor /'spɒnsə/ *noun*, **B2**

★ a person or organization that pays for or supports something, often for advertising reasons: *The local bank is the main **sponsor** of the football team.*

stage /steɪdʒ/ *noun*, **A2**

★ a period or state that something reaches as it develops; the raised platform in a theater: *The actors walked onto the **stage** to take a final bow.*

standard /'stændəd/ *noun*, **B1**

★ a level of quality that is normal or acceptable: *The hotel rooms are built to a very high **standard**.*

straight /streɪt/ *adjective/adverb*, **A2**

★ not bending or curving; moving in one direction without turning: *Go **straight** down this road and turn left at the lights.*

strange /streɪndʒ/ *adjective*, **A2**

★ unusual or surprising in a way that is unsettling or hard to understand: *I heard a **strange** noise coming from the basement.*

strategy /'strætədʒi/ *noun*, **B2**

★ a plan that is intended to achieve a specific long-term purpose: *The company needs a clear marketing **strategy** to boost sales.*

strength /streŋθ/ *noun*, **B1**

★ the quality or state of being physically strong or powerful: *He didn't have the **strength** to lift the heavy box by himself.*

stress /stres/ *noun*, **A2**

★ pressure or worry caused by life's problems or hard work: *Yoga is a fantastic practice for reducing everyday **stress**.*

structure : /'strʌktʃə/ *noun*, **B2**

★ the way in which the parts of something are connected and organized: *The teacher explained the basic grammatical **structure** of the sentence.*

submit /səb'mɪt/ *verb*, **B1**

★ to hand in a document or proposal to an authority for judgment or processing: *You must **submit** your completed assignment before Friday noon.*

succeed /sək'si:d/ *verb*, **B1**

★ to achieve something that you have been trying to do: *If you work hard, you will eventually **succeed** in your career.*

success /sək'ses/ *noun*, **A2**

★ the achievement of something that you wanted to do or reach: *The entire launch of the new product line was a massive **success**.*

sudden /'sʌdn/ *adjective*, **B1**

★ happening or done quickly and unexpectedly: *His **sudden** decision to leave the country shocked everyone.*

suffer /'sʌfə/ *verb*, **B1**

★ to experience physical or mental pain, illness, or injury: *Many people **suffer** from seasonal allergies during the spring.*

suggest /sə'dʒest/ *verb*, **A2**

★ to mention an idea or a plan for other people to consider: *I **suggest** that we take a quick break before continuing the meeting.*

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summarize /'sʌməraɪz/ verb, **B1**

★ to give a brief statement of the main points of something: *At the end of the presentation, she will **summarize** the key findings.*

supply /sə'plaɪ/ verb, **B2**

★ to provide something that is needed or wanted, especially in large amounts: *The power plant works hard to **supply** electricity to the entire city.*

support /sə'pɔ:t/ verb, **A2**

★ to help someone by giving them encouragement, money, or physical assistance: *My family always **support** me in whatever choices I make.*

survey /'sɜ:veɪ/ noun, **B1**

★ an investigation of the opinions or behavior of a group of people based on questions: *They conducted a market **survey** to find out what consumers want.*

survive /sə'vaɪv/ verb, **B1**

★ to continue to live or exist, especially after a dangerous event or difficult situation: *Plants need sunlight and water in order to **survive**.*

suspect /sə'spekt/ verb, **B2**

★ to believe that something is true, or that someone is guilty of a crime, without definite proof: *The police **suspect** that the fire was started deliberately.*

sweet /swi:t/ adjective, **A1**

★ tasting like sugar; pleasant and kind: *This fresh orange juice is incredibly **sweet**; She is really **sweet**.*

symbol /'sɪmbəl/ *noun*, **B1**

★ a sign, shape, or object that is used to represent something else: *The dove is widely recognized as a global **symbol** of peace.*

sympathy /'sɪmpəθi/ *noun*, **B2**

★ the feeling of being sorry for someone who is in a bad situation: *I have a lot of **sympathy** for him because he lost his job.*

symptom /'sɪmptəm/ *noun*, **B1**

★ a physical or mental feature which is regarded as a sign of an illness: *A persistent dry cough is a common **symptom** of the flu.*

system /'sɪstəm/ *noun*, **A2**

★ a set of connected things or parts forming a complex whole: *The human body has a complex immune **system** to fight off viruses.*

T

talent /'tælənt/ *noun*, **B1**

★ a natural ability to do something well: *She possesses a remarkable **talent** for playing the violin.*

target /'tɑːɡɪt/ *noun*, **B1**

★ a result that you try to achieve; an object that people try to hit in shooting or shooting sports: *The sales team managed to hit their monthly **target** ahead of schedule.*

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task /tɑːsk/ *noun*, **B1**

★ a piece of work that somebody has to do, especially a hard or unpleasant one: *Cleaning out the messy basement was no easy **task**.*

taste /teɪst/ *noun*, **A2**

★ the flavor of something, or the ability to sense flavors in food and drink: *The soup has a very distinct **taste** of garlic and herbs.*

team /tiːm/ *noun*, **A1**

★ a group of people who play a sport or game together against another group, or work together on a project: *Our local football **team** won the championship match last weekend.*

teamwork /'tiːmwɜːk/ *noun*, **B1**

★ the activity of working together in a group with other people to achieve a common goal: *The success of the project was due to excellent **teamwork**.*

technical /'tekɪnɪkl/ *adjective*, **B1**

★ connected with the practical use of machinery, methods, or science: *The system failure was caused by a minor **technical** glitch.*

technology /tek'nɒlədʒi/ *noun*, **A2**

★ scientific knowledge used in practical ways in industry or everyday life, for example in designing machines: *Modern **technology** has completely changed the way people communicate.*

teenage /'tiːneɪdʒ/ *adjective*, **A2**

★ being between the ages of 13 and 19: *She looked after her **teenage** brother while her parents were away.*

temperature /'temprətʃə/ *noun*, **A2**

★ a measurement of how hot or cold something is: *The **temperature** dropped significantly as soon as the sun went down.*

theory /'θɪəri/ *noun*, **B1**

★ a formal set of ideas that is intended to explain why something happens or exists: *In **theory**, the new strategy should increase our production speed.*

therapy /'θerəpi/ *noun*, **B2**

★ the treatment of a physical or mental illness over a period of time: *He underwent physical **therapy** for six months after his knee surgery.*

thought /θɔːt/ *noun*, **A2**

★ an idea, image, or opinion that is formed in the mind: *The sudden **thought** of moving to a new city made her nervous.*

threat /θret/ *noun*, **B2**

★ a statement or signal that someone will be hurt or punished if they do not do what is demanded: *Pollution poses a major **threat** to the local wildlife population.*

throw /θrəʊ/ *verb*, **A2**

★ to send something through the air with force, especially using the arm and hand: *He tried to **throw** the ball directly into the basketball hoop.*

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tidy /'taɪdi/ *adjective/verb*, **A2**

★ arranged neatly and with everything in its proper place:
*Please make sure your bedroom is **tidy** before you go outside.*

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touch /tʌtʃ/ *verb*, **A2**

★ to put your hand or fingers on something to see what it
 is like or feel it: *The paint is still wet, so please do not **touch** it.*

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tough /tʌf/ *adjective*, **B1**

★ strong enough to deal with difficult conditions,
 circumstances, or hard work; physical texture that is hard to
 cut or chew: *The skin of the fruit is quite **tough**, so you need a
 sharp knife to peel it.*

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tour /tʊə/ or /tɔː/ *noun*, **A2**

★ a journey through a country or city, visiting several places
 for interest or pleasure: *We took a guided **tour** around the
 historic castle yesterday morning.*

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tourism /'tʊərizəm/ or /'tɔːrizəm/ *noun*, **B1**

★ the business of providing services such as transport,
 hotels, and entertainment for people who are holidaying:
*The island's economy depends almost entirely on international
tourism.*

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track /træk/ *noun/verb*, **B1**

★ (noun) a rough path or road made by people or vehicles; a
 mark left on the ground by a person or animal: *They followed a
 narrow mud **track** through the dense forest.*

★ (verb) to follow the trail, movement, development, or
 progress of someone or something, often to find them or to
 gather data about them: *You can use this smartphone app to **track**
 how many steps you take every day.*

tradition /trə'dɪʃn/ *noun*, **B1**

★ a belief, custom, or way of doing something that has existed for a long time among a particular group of people: *It is a long-standing family **tradition** to open one present on Christmas Eve.*

transform /træns'fɔ:m/ *verb*, **B2**

★ to completely change the appearance, form, or character of something, typically for the better: *The city plans to **transform** the old railway line into a beautiful green park.*

translate /træns'leɪt/ *verb*, **A2**

★ to change words from one language into another: *Could you help me translate this official letter into Chinese?*

transport /'træns'pɔ:t/ *noun*, **A2**

★ a system or method for carrying passengers or goods from one place to another: *Buses and trains are forms of public **transport**.*

transportation /,træns'pɔ:'teɪʃn/ *noun*, **B1**

★ the action of transporting someone or something, or a system of vehicles for doing this (common in American English): *The city needs to invest heavily in improved municipal **transportation**.*

travel /'trævl/ *verb*, **A1**

★ to go from one place to another, especially over a long distance: *I love to **travel** to new countries during my annual summer holidays.*

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treat /tri:t/ verb, **B1**

C

★ to behave in a particular way toward somebody or something; to give medical care to someone: *You should always **treat** other people with kindness and respect.*

E

treatment /'tri:tmənt/ noun, **B1**

F

★ medical care given to a patient for an illness or injury: *She is currently receiving medical **treatment** for her back pain.*

G

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trend /trend/ noun, **B1**

I

★ a general direction in which a situation is changing or developing: *There is a growing **trend** toward working from home rather than in an office.*

J

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trial /'traɪəl/ noun, **B2**

L

★ a formal examination of evidence in a court of law to decide if a person is guilty of a crime; a test of performance: *The murder **trial** is expected to last for at least three weeks.*

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trick /trɪk/ noun, **A2**

P

★ something that you do to make somebody believe something that is not true, often to make them look silly or to cheat them: *The magician performed a clever card **trick** that amazed the entire audience.*

Q

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trip /trɪp/ noun, **A1****T**

★ a journey to a place and back again, especially for pleasure or a particular purpose: *We are planning a weekend **trip** to Paris next month.*

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trouble /'trʌbl/ noun, **A2**

W

★ problems, difficulties, worry, or anxiety: *The old car is causing me a lot of **trouble** lately.*

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trust /trʌst/ verb, B1

★ to believe that somebody is good, honest, and will not try to harm or trick you: *I **trust** him completely with my secrets because he has never let me down.*

truth /truːθ/ noun, B1

★ the true facts about a situation or event, rather than things that have been invented: *It is always best to tell the **truth**, no matter the consequences.*

U

understand /ˌʌndə'stænd/ verb, A1

★ to know or realize the meaning of words, a language, or what somebody is saying: *I am sorry, but I do not **understand** what you mean.*

uniform /'juːnɪfɔːm/ noun, A2

★ the special set of clothes worn by all members of an organization, such as soldiers or police officers, or by children at school: *All students at the academy are required to wear a school **uniform**.*

unique /juˈniːk/ adjective, B2

★ being the only one of its kind; very special or unusual: *Each individual has a completely **unique** set of fingerprints.*

unit /'juːnɪt/ noun, B1

★ a single thing, person, or group that is complete in itself but can also form part of something larger; a fixed quantity used as a

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standard of measurement: *The basic **unit** of currency in France and Germany is the Euro.*

usual /'ju:ʒuəl/ adjective, **A2**

★ that happens or is done most of the time or in most cases; normal: *She took her **usual** seat by the window on the train.*



vacation /və'keɪʃn/ or /veɪ'keɪʃn/ noun, **A1**

★ a period of time spent traveling or resting away from home or work; a holiday: *They spent their summer **vacation** relaxing at a beach resort in Hawaii.*

valuable /'væljuəbl/ adjective, **B1**

★ worth a lot of money, or very useful and important: *The museum houses a highly **valuable** collection of ancient jewelry.*

value /'vælju:/ noun, **B1**

★ the amount of money that something is worth; the importance or usefulness of something: *The **value** of the house has doubled over the past ten years.*

variety /və'raɪəti/ noun, **B1**

★ several different sorts of the same thing: *The supermarket sells a wide **variety** of fresh fruits and vegetables.*

vegetable /'vedʒtəbl/ noun, **A1**

★ a plant or part of a plant that is eaten as food: *Carrots, potatoes, and broccoli are all types of **vegetables**.*

vehicle /'vi:əkl/ *noun*, **A2**

★ a machine with an engine, such as a car, bus, or truck, that carries people or things from one place to another: *The police found an abandoned **vehicle** by the side of the road.*

version /'vɜ:ʃn/ (UK) or /'vɜ:rʒn/ (US) *noun*, **B1**

★ a form of something that is slightly different from an earlier or other form: *You need to download the latest **version** of the software program.*

victory /'vɪktəri/ *noun*, **B2**

★ success in winning a war, a competition, an election, or a game: *The team celebrated their spectacular **victory** with a big party.*

view /vju:/ *noun*, **A2**

★ what you can see from a particular place; a personal opinion about something: *The bedroom window offers an exceptional **view** of the mountains.*

violence /'vaɪələns/ *noun*, **B2**

★ actions or words that are intended to hurt, damage, or kill someone or something: *The government is working hard to reduce crime and **violence** in major cities.*

virtual /'vɜ:tʃuəl/ *adjective*, **B1**

★ made, done, or seen using a computer or the internet rather than in the real world: *The company held a **virtual** meeting using video conferencing tools.*

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vision /'vɪʒn/ *noun*, **B2**

★ the ability to see; an idea or picture in your imagination of what something could be like in the future: *The architect shared his creative **vision** for the new museum project.*

vocabulary /və'kæbjələri/ *noun*, **A1**

★ all the words that a person knows or uses, or all the words in a particular language: *Reading books is a great way to expand your English **vocabulary**.*

volume /'vɒlju:m/ *noun*, **B1**

★ the amount of space that an object or a substance fills; the amount of sound produced by a television, radio, etc: *Could you please turn the **volume** down? The music is too loud.*

volunteer /ˌvɒlən'tɪə/ *noun*, **B1**

★ a person who offers to do something without being forced or paid for it: *She works as a **volunteer** at the local animal shelter on weekends.*



warning /'wɔːnɪŋ/ *noun*, **B1**

★ a statement or notice that tells you about a danger, problem, or potential punishment: *The lighthouse serves as a vital **warning** to ships passing close to the rocks.*

waste /weɪst/ *noun*, **B1**

★ the act of using more of something than is necessary or useful; materials that are no longer needed and are thrown away: *Leaving the lights on all day is a terrible **waste** of electricity.*

weapon /'wepən/ *noun*, **B1**

★ an object such as a gun, knife, or bomb that is used for fighting or attacking someone: *The police officer asked the suspect if he was carrying a **weapon**.*

weakness /'wiːknəs/ *noun*, **B1**

★ a lack of physical strength or energy; a weak point in somebody's character or a system: *The main **weakness** of the plan is that it will cost too much money.*

wealth /welθ/ *noun*, **B2**

★ a large amount of money, property, or valuable possessions that a person or country owns: *The family accumulated their vast **wealth** through generations of real estate investing.*

wealthy /'welθi/ *adjective*, **B1**

★ having a lot of money, land, or valuable possessions; rich: *They live in a very **wealthy** neighborhood just outside the capital city.*

weather /'weðə/ *noun*, **A1**

★ the conditions in the atmosphere at a particular time, such as rain, sunshine, or wind: *The outdoor match was canceled because of the terrible **weather** conditions.*

weekend /,wi:k'end/ *noun*, **A1**

★ Saturday and Sunday, when most people do not have to go to work or school: *What are your plans for the upcoming holiday **weekend**?*

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weight /weɪt/ *noun*, **A2**

★ a measurement of how heavy a person or thing is: *He checked his **weight** on the scales first thing in the morning.*

welcome /'welkəm/ *verb*, **A1**

★ to greet someone politely when they arrive at a place; acceptable or pleasing: *They stood at the front door to **welcome** all of their dinner guests.*

whisper /'wɪspə/ *verb*, **B1**

★ to speak very quietly into someone's ear using your breath rather than your voice: *She leaned over to **whisper** the secret directly into her sister's ear.*

wise /waɪz/ *adjective*, **B1**

★ having or showing experience, knowledge, and good judgment: *It is a **wise** idea to save some money every month for emergencies.*

witness /'wɪtnəs/ *noun/verb*, **B2**

★ (noun) a person who sees an event, typically a crime or an accident, take place: *The police are looking for a **witness** who saw the car accident happen.*

★ (verb) to see, hear, or know something by personal presence and perception; to be present at an event and see it happen: *The elderly man lived to **witness** incredible technological advancements during his lifetime.*

wonderful /'wʌndəfl/ *adjective*, **A2**

★ extremely good, pleasant, or enjoyable: *We had a **wonderful** time at the music festival on Saturday.*

worry /'wʌri/ verb, **A2**

★ to think about problems or unpleasant things that might happen in a way that makes you feel anxious: *You don't need to **worry** about the exam; you studied very hard.*

worth /wɜːθ/ adjective, **B1**

★ having a particular value, especially in terms of money; justifying the specified action: *The old stamp collection turned out to be **worth** thousands of dollars.*

wound /wuːnd/ noun, **B2**

★ an injury to a part of the body, especially one in which the skin is cut or torn: *The nurse cleaned the deep **wound** thoroughly before putting on a bandage.*

wrap /ræp/ verb, **B1**

★ to cover something completely by folding paper, cloth, or another material around it: *He spent the evening trying to **wrap** all the birthday presents nicely.*

wrong /rɒŋ/ adjective, **A1**

★ not correct according to facts; morally bad or incorrect: *I am sorry, but you have dialed the **wrong** telephone number.*

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young /jʌŋ/ adjective, **A1**

★ having lived or existed for only a short time; not old: *The **young** couple recently bought their very first apartment.*

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youth /ju:θ/ *noun*, **B1**

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★ the time of life when a person is young, especially the period between childhood and adulthood: *He spent most of his **youth** living in a small coastal village.*

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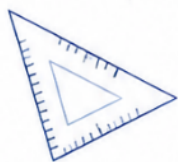
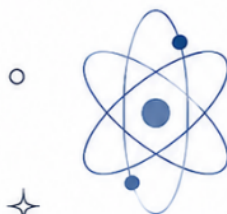
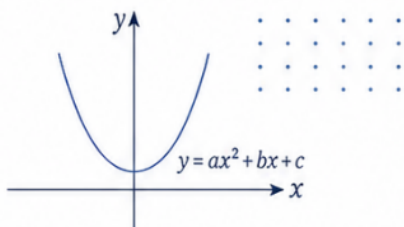
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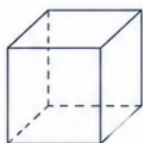
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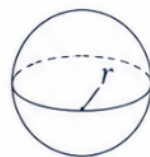
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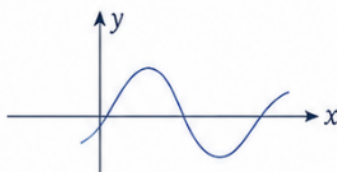
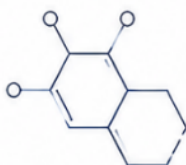
Science



$$a^2 + b^2 = c^2$$



$$V = \frac{4}{3} \pi r^3$$



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absolute value /'æbsəlu:t 'vælju:/ *noun*, **C1**

★ (Math) the distance of a number from zero on the number line, always non-negative: *The **absolute value** of -7 is 7, written $|-7| = 7$.*

absolute value function /'æbsəlu:t 'vælju: 'fʌŋkʃn/ *noun*, **C2**

★ (Math) the function $f(x) = |x|$ that returns the non-negative value of x ; graph is V-shaped: *The **absolute value function** $f(x) = |x|$ has vertex at the origin.*

absolute zero /,æb.sə.lu:t 'ziə.rəʊ/ *noun*, **C2**

★ (Physics) The lowest possible temperature ($0\text{ K} = -273.15^\circ\text{C}$) where particles stop moving: ***Absolute zero** has never been reached.*

absorption /əb'sɔ:p.fən/ *noun*, **B2**

★ (Chem) the penetration of one substance into another: *Iron **absorption** from the duodenum is enhanced by the reducing agent vitamin C.*

★ (Biology) the process by which digested nutrient molecules are transported across the intestinal epithelium into the bloodstream or lymphatic system: *The primary function of the small intestine is the **absorption** of nutrients and water from digested food into the bloodstream.*

acceleration /ək'sel.ə'rei.fən/ *noun*, **B2**

★ (Physics) the rate of change of velocity per unit time: *The **acceleration** of gravity is 9.8 m/s^2 .*

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acid /'æs.ɪd/ *noun*, **B1**

★(Chem) a substance that donates protons (H⁺); has a sour taste: *Lemon juice contains citric **acid**.*

acid-base reaction /'æs.ɪd beɪs ri'æk.ʃən/ *noun*, **C2**

★(Chem) a reaction between acid and base producing salt and water: *Antacids work through an **acid-base reaction**.*

activation energy /,æk.tɪ'veɪ.ʃən 'en.ə.dʒi/ *noun*, **C2**

★ (Chem) the minimum energy needed to start a chemical reaction: *A spark provides the **activation energy** for ignition.*

active site /'æktɪv saɪt/ *noun*, **C2**

★ (Biology) the specific region of an enzyme molecule, shaped to complement a particular substrate, at which substrate binding and catalytic conversion occur: *A competitive inhibitor occupies the **active site**, preventing substrate access.*

active transport /'æktɪv 'trænsɒːrt/ *noun*, **C2**

★ (Biology) the energy-dependent movement of ions or molecules across a membrane against their electrochemical gradient, requiring ATP and specific carrier proteins: *The sodium-potassium pump uses **active transport** to maintain the neuronal resting potential.*

adaptation /,ædæp'teɪʃən/ *noun*, **B2**

★ (Biology) a heritable structural, physiological, or behavioral trait that increases an organism's fitness by improving its ability to survive and reproduce in a given environment: *The thick blubber layer of polar bears is an **adaptation** to sub-zero Arctic temperatures.*

addition /ə'dɪʃən/ *noun*, **B1**

★ (Math) the process of combining two or more numbers to get a total: *The **addition** of 8 and 5 gives 13.*

additive inverse /'ædɪtɪv 'ɪnvɜːs/ *noun*, **C2**

★ (Math) the number that, when added to the original, gives zero; the negative of a number: *The **additive inverse** of 7 is -7, since $7 + (-7) = 0$.*

Adenosine Triphosphate, ATP /ə'denə,sɪn traɪ'fɒsfet/ *noun*, **C2**

★ (Biology) a nucleoside triphosphate that serves as the universal energy currency of the cell, releasing energy upon hydrolysis of its terminal Phosphoanhydride bond: ***ATP** hydrolysis drives muscle contraction, active transport, and biosynthetic reactions.*

adsorption /əd'sɔːp.ʃən/ *noun*, **C2**

★ (Chem) the adherence of molecules to a surface: *Activated carbon removes impurities by **adsorption**.*

alcohol /'æɪ.kə.hɒl/ *noun*, **C2**

★ (Chem) an electrical device or piece of equipment that makes sounds or radio signals louder: *Ethanol is the **alcohol** in beer.*

aldehyde /'æɪ.dɪ.haɪd/ *noun*, **C2**

★ (Chem) an organic compound with a -CHO group, such as formaldehyde: *Formaldehyde is an **aldehyde** used to preserve specimens.*

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algorithm /'ælgəɾɪðəm/ *noun*, **B2**

★ (Math) a step-by-step procedure for solving a problem or performing a calculation: *The quadratic formula is an **algorithm** for solving $ax^2 + bx + c = 0$.*

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alkali metal /'æɪ.kə.laɪ 'met.əl/ *noun*, **C2**

★ (Chem) group 1 elements; extremely reactive with water: *Sodium is an **alkali metal** that reacts violently with water.*

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alkaline earth metal /'æɪ.kə.laɪn ɜːθ 'met.əl/ *noun*, **C2**

★ (Chem) group 2 elements; reactive but less so than alkali metals: *Calcium is an **alkaline earth metal** in bones.*

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alkane /'æɪ.keɪn/ *noun*, **C2**

★ (Chem) a hydrocarbon with only single bonds (C_nH_{2n+2}): *Ethylene is an **alkane** used to make plastics.*

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alkyne /'æɪ.kɑɪn/ *noun*, **C2**

★ (Chem) a hydrocarbon with a $C \equiv C$ triple bond (C_nH_{2n-2}): *Acetylene is an **alkyne** used in welding.*

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allele /ə'liːl/ *noun*, **C2**

★ (Biology) one of two or more alternative forms of a gene occupying the same locus on homologous chromosomes, differing in nucleotide sequence and potentially producing different phenotypes: *The presence of two recessive **alleles** results in expression of the recessive phenotype.*

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alloy /'æɪ.lɔɪ/ *noun*, **C1**

★ (Chem) a mixture of two or more metals, such as brass or steel: *Stainless steel is a common **alloy**.*

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alpha particle /'æɪ.lə 'pɑː.tɪ.kəl/ *noun*, **C2**

★ (Chem) a radiation particle of two protons and two neutrons: *Alpha particles can be stopped by paper.*

alternating current /'ɔːl.tə.neɪ.tɪŋ 'kʌr.ənt/ *noun*, **C1**

★ (Physics) current that periodically reverses direction, as in household power: *Power grids supply **alternating current**.*

amine /ə'miːn/ *noun*, **C2**

★ (Chem) an organic compound with $-NH_2$; behaves as a weak base: *Many medications contain **amine** groups.*

amino acid /ə'miː.nəʊ 'æs.ɪd/ *noun*, **C2**

★ (Chem) building blocks of proteins, containing $-NH_2$ and $-COOH$ groups: *There are 20 standard **amino acids**.*

ammeter /'æm.ɪ.miː.tər/ *noun*, **C2**

★ (Physics) an instrument for measuring electric current, connected in series : *Connect the **ammeter** in series with the circuit.*

ampere /'æm.peər/ *noun*, **C1**

★ (Physics) the SI unit of electric current: *Household circuits typically carry 10 to 20 **amperes**.*

amphoteric /,æm.fə'ter.ɪk/ *adjective*, **C2**

★ (Chem) acting as both an acid and a base, such as water: *Aluminum hydroxide is **amphoteric**.*

amplitude /'æm.plɪ.tjuːd/ *noun*, **C1**

★ (Math) the maximum distance a periodic function reaches from its midline: *The **amplitude** of $y = 3 \sin(x)$ is 3.*

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★(Physics) the maximum displacement from the equilibrium position: *The **amplitude** of the sound wave determines its loudness.*

angular velocity /'æŋ.gjə.lər və'lbs.ɪ.ti/ *noun, C2*

★ (Physics) the angle rotated per unit time ($\omega = \theta/t$): *The **angular velocity** of a wheel is measured in rad/s.*

anion /'æŋ.aɪ.ən/ *noun, C2*

★ (Chem) a negatively charged ion formed by gaining electrons: *Chloride is a common **anion** (Cl).*

anode /'æŋ.əʊd/ *noun, C2*

★ (Chem) the electrode where oxidation occurs: *Electrons leave the cell from the **anode**.*

antibody /'æntɪ.bɒdi/ *noun, C1*

★(Biology) a Y-shaped immunoglobulin protein produced by plasma B cells that specifically binds to a complementary antigen, neutralising pathogens or marking them for destruction: *Monoclonal **antibodies** are widely used in cancer immunotherapy and diagnostic assays.*

antigen /'æntɪdʒən/ *noun, C1*

★ (Biology) any molecule, typically a protein or polysaccharide on the surface of a pathogen, that the immune system recognises as foreign and uses to mount a specific immune response: *Viral surface glycoproteins serve as **antigens** that elicit antibody production.*

antinode /'æŋ.tɪ.nəʊd/ *noun, C2*

★ (Physics) a point in a standing wave with maximum amplitude: *The **antinode** has the largest vibration on a string.*

arc length /ɑːk leŋθ/ *noun*, **C2**

★ (Math) the length of a portion of a circle's circumference; $s = r\theta$ where θ is in radians: *For a circle of radius 4 and angle 2 radians, **arc length** $s = 4 \times 2 = 8$.*

Archimedes' principle /,ɑː.kɪ'miː.dɪːz 'prɪn.sɪ.pəl/ *noun*, **C2**

★ (Physics) buoyant force equals the weight of fluid displaced: **Archimedes' principle** *explains why steel ships float.*

arithmetic sequence /ə'ɪθmətɪk 'siːkwəns/ *noun*, **C1**

★ (Math) a sequence where consecutive terms differ by a constant amount called the common difference: *In 4, 7, 10, 13, the common difference $d = 3$.*

aromatic compound /,æ.r.ə'mæt.ɪk 'kɒm.paʊnd/ *noun*, **C2**

★ (Chem) a compound with a benzene ring; highly stable: *Benzene is the simplest **aromatic compound**.*

artery /'ɑːrtəri/ *noun*, **B2**

★ (Biology) a thick-walled, elastic blood vessel that carries blood away from the heart to peripheral tissues, typically transporting oxygenated blood at high pressure: *The aorta is the largest **artery** in the body, receiving blood directly from the left ventricle.*

associative property /ə'səʊʃjətɪv 'prɒpəti/ *noun*, **C2**

★ (Math) the rule that regrouping numbers in addition or multiplication does not change the result: $(2 + 3) + 4 = 2 + (3 + 4) = 9$ by the **associative property**.

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asymptote /'æsɪmtəʊt/ *noun*, **C2**

★ (Math) *t* a line that a graph approaches but never touches or crosses: *The x-axis ($y = 0$) is a horizontal **asymptote** of $f(x) = 2^x$.*

at least /æt liːst/ *phrase*, **B1**

★ (Math) not less than; the minimum acceptable value, expressed with the symbol $\geq$: *'At least 5 people' means $x \geq 5$.*

at most /æt məʊst/ *phrase*, **B1**

★ (Math) not more than; the maximum acceptable value, expressed with the symbol $\leq$: *'At most 10 items' means $x \leq 10$.*

atom /'æt.əm/ *noun*, **B2**

★ (Chem) the smallest unit of an element that retains its chemical properties: *Every substance is made of **atoms**.*

atomic mass /ə'tɒm.ɪk mæs/ *noun*, **C2**

★ (Chem) The average mass of an atom of an element, measured in atomic mass units (u): *The **atomic mass** of oxygen is about 16 u.*

atomic number /ə'tɒm.ɪk 'nʌm.bər/ *noun*, **C2**

★ (Chem) the number of protons in an atom, identifying the element: *Carbon has an **atomic number** of 6.*

atomic radius /ə'tɒm.ɪk 'reɪ.di.əs/ *noun*, **C2**

★ (Chem) the distance from the nucleus to the outermost electron shell: ***Atomic radius** increases down a group.*

augmented matrix /ɔːɡ,mentɪd 'meɪtrɪks/ *noun*, **C2**

★ (Math) a matrix formed by appending the column of constants to the coefficient matrix of a system: *Write the system as an **augmented matrix** $[A \mid b]$ before row-reducing.*

average rate of change /'ævərɪdʒ reɪt əv tʃeɪndʒ/ *noun*, **C1**

★ (Math) the change in output divided by the change in input over an interval: $(f(b)-f(a))/(b-a)$: *Find the **average rate of change** of $f(x) = x^2$ from $x=1$ to $x=3$.*

Avogadro's hypothesis /,æv.ə'ɡɑː.drəʊz haɪ'pɒθ.ə.sɪs/ *noun*, **C2**

★ (Chem) equal volumes of gases at same T and P have equal molecules: ***Avogadro's hypothesis** underlies gas calculations.*

Avogadro's law /,æv.ə'ɡɑː.drəʊz lɔː/ *noun*, **C2**

★ (Physics) volume of a gas is proportional to the number of moles at constant T and P: ***Avogadro's law** links gas volume to particle number.*

Avogadro's number /,æv.ə'ɡɑː.drəʊz 'nʌm.bər/ *noun*, **C2**

★ (Chem) the number of particles in one mole: 6.022×10^{23} : ***Avogadro's number** relates moles to particle counts.*

axis of symmetry /'æksɪs əv 'sɪmɪtri/ *noun*, **C1**

★ (Math) the vertical line $x = -b/(2a)$ that divides the parabola into two mirror images: *The **axis of symmetry** of $y = x^2 - 6x + 5$ is $x = 3$.*

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balancing equation /'bæl.ən.sɪŋ ɪ'kweɪ.ʒən/ *noun*, **C2**★(Chem) adjusting coefficients so atom counts match on both sides: ***Balancing equations** conserves mass.***base** /beɪs/ *noun*, **C1**★(Math) the number being raised to a power in an exponential expression: *In 7^3 , the **base** is 7 and the exponent is 3.*★(Chem) a substance that accepts protons (H^+); often bitter: *Soap is a **base**.***battery** /'bæt.ər.i/ *noun*, **A2**★(Physics) a DC source that converts chemical energy into electricity: *The phone needs a new **battery**.***beats** /bi:ts/ *noun*, **C1**★(Physics) interference of two close-frequency sound waves making volume pulsate: *Musicians use **beats** to tune their instruments.***benzene** /'ben.zi:n/ *noun*, **C2**★(Chem) the basic aromatic compound, C_6H_6 , with a six-carbon ring: ***Benzene** is a common industrial solvent.***Bernoulli's principle** /bə:'nu:li:z 'prɪn.sɪ.pəl/ *noun*, **C2**★(Physics) faster-moving fluid has lower pressure: ***Bernoulli's principle** explains how airplanes generate lift.*

beta particle /'bi:tə 'pɑ:ti.kəl/ *noun*, **C2**

★(Chem) an electron or positron emitted from a nucleus:

Beta particles penetrate further than alpha particles.

binding energy /'baɪn.dɪŋ 'en.ə.dʒi/ *noun*, **C2**

★(Chem) the energy holding protons and neutrons together in a nucleus: *Nuclear binding energy is enormous.*

binomial /baɪ'nəʊmiəl/ *noun*, **C1**

★(Math) a polynomial with exactly two terms: $x + 3$ and $2x - 5$ are *binomials*.

binomial theorem /baɪ'nəʊmiəl 'θɪərəm/ *noun*, **C2**

★(Math) a formula for expanding $(a + b)^n$ using binomial coefficients: *Use the binomial theorem to expand $(x + 2)^3 = x^3 + 6x^2 + 12x + 8$.*

biodiversity /ˌbaɪəʊdaɪ'vɜ:rsɪti/ *noun*, **B2**

★(Biology) the variety of life on Earth at all levels of biological organisation, encompassing genetic diversity, species richness, and the diversity of ecosystems: *Tropical rainforests harbor the greatest biodiversity of any terrestrial biome.*

bioethics /ˌbaɪəʊ'εθɪks/ *noun*, **C2**

★(Biology) the systematic study of moral and ethical issues arising from advances in biology, medicine, and biotechnology, including questions of justice, autonomy, and harm: *Bioethics committees evaluate the ethical implications of human embryonic stem cell research.*

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biohazard /'baɪəʊ'hæzəd/ *noun*, **C1**

★ (Biology) a biological agent or material- such as a pathogenic microorganism, toxin, or infected specimen- that poses a risk to human health or the environment: **Biohazard** *containment protocols require the use of appropriate personal protective equipment.*

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biology /baɪ'ɒlədʒi/ *noun*, **A2**

★(Biology) the natural science concerned with the study of life and living organisms, encompassing their structure, function, growth, evolution, distribution, and classification: **Biology** *encompasses disciplines ranging from molecular genetics to ecosystem ecology.*

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biome /'baɪəʊm/ *noun*, **C1**

★(Biology) a DC source that converts chemical energy into electricity: *The boreal forest **biome** encircles the Northern Hemisphere and stores vast carbon reserves.*

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biotechnology /ˌbaɪəʊtɛk'nɒlədʒi/ *noun*, **C1**

★(Biology) the applied use of biological systems, living organisms, or their derivatives to develop products, processes, and technologies for medicine, agriculture, and industry: **Biotechnology** *underpins the large-scale production of monoclonal antibodies for cancer therapy.*

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black body /ˌblæk 'bɒd.i/ *noun*, **C2**

★(Physics) an object that absorbs all electromagnetic radiation: *A **black body** absorbs all incoming radiation.*

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boiling point /'bɔɪ.lɪŋ pɔɪnt/ *noun*, **B2**

★(Physics) the temperature at which a liquid rapidly turns to gas: *Water's **boiling point** is 100°C at sea level.*

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boiling point elevation /'bɔɪ.lɪŋ pɔɪnt ,el.ɪ'veɪ.ʃən/ *noun*, **C2**

★(Chem) solutions boil at higher temperatures than pure solvents: *Salt causes **boiling point elevation** in water.*

bond energy /bɒnd 'en.ə.dʒi/ *noun*, **C2**

★(Chem) the energy needed to break one mole of bonds in a gas: *Stronger bonds have higher **bond energy**.*

bone /boʊn/ *noun*, **A1**

★(Biology) a rigid connective tissue composed of a collagen matrix impregnated with calcium phosphate mineral salts, forming the structural elements of the vertebrate endoskeleton: ***Bone** is a dynamic tissue that undergoes continuous remodeling by osteoblasts and osteoclasts.*

boyle's law /ˌbɔɪlz lɔː/ *noun*, **C2**

★(Physics) at constant temperature, pressure and volume are inversely related: ***Boyle's law** explains how a syringe works.*

break-even point /'breɪk 'i:vən pɔɪnt/ *noun*, **B2**,

★(Math) the point at which total revenue equals total cost; neither profit nor loss: *Solve Revenue = Cost to find the **break-even point**.*

buffer /'bʌf.ər/ *noun*, **C1**

★(Chem) a solution that resists pH changes when acid or base is added: *Blood contains a **buffer** to maintain pH.*

buoyancy /'bɔɪ.ən.si/ *noun*

★(Physics) The upward force exerted by a fluid on a submerged object: ***Buoyancy** allows ships to float on water.*

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buoyant force /'bɔɪ.ənt fɔːs/ *noun*, **C1**

★(Physics) the upward force on an object immersed in a fluid: *The **buoyant force** keeps the ship afloat.*



calorimeter /,kæl.ə'ɹɪm.i.tər/ *noun*, **C2**

★(Physics) a device for measuring heat transferred during a reaction: *Chemists use a **calorimeter** to measure reaction heat.*

calorimetry /,kæl.ə'ɹɪm.i.tri/ *noun*, **C2**

★(Chem) the measurement of heat released or absorbed in reactions: ***Calorimetry** measures reaction enthalpy directly.*

capacitance /kə'pæs.i.təns/ *noun*, **C2**

★ (Physics) a capacitor's ability to store charge, measured in farads: *Higher **capacitance** means more stored charge.*

capacitor /kə'pæs.i.tər/ *noun*, **C1**

★(Chem) A device that stores electric charge between two conductive plates: ***Capacitors** store energy in electronic devices.*

capillarity /,kæp.i'lær.i.ti/ *noun*, **C2**

★(Physics) the rise of liquid in a narrow tube against gravity: ***Capillarity** helps water move up plant stems.*

capillary /'kæpɪ,ləri/ *noun*, **C1**

★(Biology) the smallest blood vessels in the circulatory system, with a wall only one endothelial cell thick, across which exchange of gases, nutrients, and waste products occurs: *Gas exchange occurs by diffusion across the thin walls of pulmonary **capillaries**.*

carbohydrate /ˌkɑː.bəʊˈhaɪ.dreɪt/ *noun*, **B2**

★(Chem) a biomolecule of C, H, O; the body's main energy source: *Rice is rich in **carbohydrates**.*

★(Biology) a class of biomolecule composed of carbon, hydrogen, and oxygen that functions as a primary metabolic fuel and structural material in living organisms: ***Carbohydrates** stored as glycogen in the liver are mobilized during fasting.*

carboxylic acid /ˌkɑː.bɒkˈsɪl.ɪk ˈæs.ɪd/ *noun*, **C2**

★(Chem) an organic compound with a -COOH group, such as acetic acid: *Acetic acid is a **carboxylic acid** found in vinegar.*

Carnot cycle /ˈkɑː.nəʊ ˈsaɪ.kəl/ *noun*, **C2**

★(Physics) the theoretically most efficient thermodynamic cycle: *The **Carnot cycle** sets the efficiency limit for engines.*

catalyst /ˈkæt.əl.ɪst/ *noun*, **C1**

★(Chem) a substance that speeds reactions by lowering activation energy: *Enzymes act as biological **catalysts**.*

cathode /ˈkæθ.əʊd/ *noun*, **C2**

★(Chem) the electrode where reduction occurs: *Hydrogen forms at the **cathode**.*

cation /ˈkæt.aɪ.ən/ *noun*, **C2**

★(Chem) a positively charged ion formed by losing electrons: *Sodium forms a positive **cation** (Na⁺).*

cell /sɛl/ *noun*, **A2**

★(Biology) the smallest structural and functional unit of a living organism, capable of carrying out all basic life

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processes independently: *Every living organism is composed of one or more **cells**.*

cell cycle /sɛl 'saɪkəl/ *noun*, **C2**

★ (Biology) an ordered sequence of events comprising interphase (G₁, S, and G₂ phases) and the mitotic phase (M phase), by which a cell grows, replicates its genome, and divides: *Cyclins and cyclin-dependent kinases regulate progression through the **cell cycle**.*

cell membrane /sɛl 'mɛmbreɪn/ *noun*, **C1**

★ (Biology) a selectively permeable phospholipid bilayer that encloses the cell, regulating the passage of substances into and out of the cytoplasm: *The **cell membrane** controls which molecules may enter or exit the cell.*

cell wall /sɛl wɔ:l/ *noun*, **C1**

★ (Biology) a rigid structural layer external to the cell membrane in plant, fungal, and bacterial cells that provides mechanical support and determines cell shape: *The **cellulose cell wall** prevents plant cells from bursting under osmotic pressure.*

cellular respiration /'sɛljʊlər ˌrɛspɪ'reɪʃən/ *noun*, **C2**

★ (Biology) a series of metabolic reactions by which cells oxidize organic molecules to produce ATP, with oxygen as the terminal electron acceptor in aerobic conditions: ***Cellular respiration** in mitochondria yields up to 36–38 ATP molecules per glucose molecule.*

Celsius scale /'selsiəs skeɪl/ *noun*, **B1**

★ (Physics) a temperature scale with ice melting at 0°C and water boiling at 100°C: *Water freezes at 0 degrees on the Celsius scale.*

center of mass /'sen.tər əv mæs/ *noun*, **C1**

★ (Physics) the imaginary point where all of an object's mass is concentrated: *The **center of mass** of a uniform rod is at its midpoint.*

centripetal acceleration / senˌtrɪp.ɪ.təl əkˌsel. ə'reɪ.ʃən/ *noun*, **C2**

★ (Physics) the acceleration of an object moving in a circle ($a = v^2/r$): ***Centripetal acceleration** is felt on a merry-go-round.*

centripetal force /senˌtrɪp.ɪ.təl fɔːs/ *noun*, **C1**

★ (Physics) the force that makes an object move in a circle, directed inward: ***Centripetal force** keeps satellites in orbit.*

change of base formula /tʃeɪndʒ əv beɪs 'fɔːmjələ/ *noun*, **C2**

★ (Math) $\log_b(x) = \log(x) / \log(b)$; allows evaluating logarithms in any base using a calculator: *Calculate $\log_5(25) = \log(25)/\log(5) = 2$.*

Charles's law /'tʃɑːl.zɪz lɔː/ *noun*, **C2**

★ (Physics) at constant pressure, volume is proportional to absolute temperature: *Hot air balloons rise due to **Charles's law**.*

check the solution /tʃek ðə səˈluːʃən/ *phrase*, **B1**

★ (Math) to substitute the found value back into the original equation to confirm it is correct: ***Check** $x = 3$ in $x + 7 = 10$: $3 + 7 = 10$. Correct.*

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chemical bond /'kem.i.kəl bɒnd/ *noun*, **C1**

★ (Chem) an attractive force holding two or more atoms together: **Chemical bonds** determine molecular shape and properties.

chemical equation /'kem.i.kəl i'kweɪ.ʒən/ *noun*, **C1**

★ (Chem) a symbolic representation of a chemical reaction: Balance the **chemical equation** for combustion.

chemical reaction /'kem.i.kəl ri'æk.ʃən/ *noun*, **B2**

★ (Chem) a process changing reactants into new products: Burning wood is a **chemical reaction**.

chlorophyll /'klɒ:rəˌfɪl/ *noun*, **B2**

★ (Biology) the principal photosynthetic pigment in plant and algal chloroplasts that absorbs light energy predominantly in the red and blue wavelengths to drive photosynthesis: **Chlorophyll** is located in the reaction center and directly drives photochemical reactions.

chloroplast /'klɒ:rəˌplæst/ *noun*, **C1**

★ (Biology) a plastid in plant and algal cells containing the pigment chlorophyll, in which photosynthesis converts light energy into chemical energy: **Chloroplasts** capture solar energy and use it to synthesize glucose from carbon dioxide and water.

chromatography /ˌkrəʊ.mə'tɒɡ.rə.fi/ *noun*, **C1**

★ (Chem) a separation method based on differential movement in a phase: Forensic labs use **chromatography**.

chromosome /'kroʊməˌsəʊm/ *noun*, **B2**

★ (Biology) a condensed structure of DNA wound around histone proteins, residing in the nucleus and carrying genes in a linear

arrangement along its length: *Human somatic cells typically contain 46 **chromosomes** arranged as 23 homologous pairs.*

circle /'sɜːkl/ *noun*, **A1**

★ (Math) the set of all points equidistant from a center point; equation $(x-h)^2 + (y-k)^2 = r^2$: A **circle** with center (0,0) and radius 5 has equation $x^2 + y^2 = 25$.

circuit breaker /'sɜː.kɪt 'breɪ.kər/ *noun*, **B2**

★ (Physics) an automatic switch that interrupts circuits during overcurrent: *Reset the **circuit breaker** in the electrical panel.*

circular motion /'sɜː.rkjələr 'moʊʃn/ *noun*, **B2**

★ (Physics) movement along a circular path: *A Ferris wheel moves in **circular motion**.*

circulatory system /'sɜː.rkjələtɔːri 'sɪstəm/ *noun*, **B2**

★ (Biology) the organ system comprising the heart, blood vessels, and blood that transports oxygen, nutrients, hormones, immune cells, and metabolic waste throughout the body: *The closed **circulatory system** of mammals operates under high pressure for efficient delivery.*

closed circle /kləʊzd 'sɜːkl/ *noun*, **C1**

★ (Math) a solid dot on a number line graph indicating that the endpoint is included ($\leq$ or $\geq$): *Graph $x \leq 3$ with a **closed circle** at 3.*

coefficient /,kəʊɪ'fɪʃənt/ *noun*, **C1**

★ (Math) the numerical factor multiplied by the variable in a term: *In $7x$, the **coefficient** is 7.*

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coefficient of friction /ˌkəʊ.ɪˈfɪʃ.ənt əv ˈfrɪk.ʃən/ *noun*, **C2**

★(Physics) the ratio of frictional force to normal force: *Rubber tires have a high **coefficient of friction** with dry road.*

coefficient of thermal expansion

/ˌkəʊ.ɪˈfɪʃ.ənt əv ˈθɜː.məl ɪkˈspæn.ʃən/ *noun*, **C2**

★(Physics) a value indicating how much a substance expands per degree: *Metals have a significant **coefficient of thermal expansion**.*

coherent light /kəʊˈhiə.rənt laɪt/ *noun*, **C1**

★(Physics) light with waves in phase, such as laser light: ***Coherent light** forms sharp interference patterns.*

colligative properties /kəˈlɪg.ə.tɪv ˈprɒp.ə.tɪz/ *noun*, **C2**

★(Chem) properties of solutions depending on solute particle count: *Freezing point depression is a **colligative property**.*

collinear points /kəˈlɪniər pɔɪnts/ *noun*, **C2**

★(Math) three or more points that lie on the same straight line: *Points (1,2), (3,6), and (5,10) are **collinear** — they all lie on $y = 2x$.*

colloid /ˈkɒl.ɔɪd/ *noun*, **C2**

★(Chem) a mixture with particles 1-1000 nm that don't settle: *Milk is a **colloid**.*

combination /ˌkɒmbɪˈneɪʃən/ *noun*, **B2**

★(Math) a selection of objects where order does not matter; $C(n, r) = n!/(r!(n-r)!)$: *The number of ways to choose 3 books from 5 is $C(5,3) = 10$.*

combustion reaction /kəm'bəstʃən ri'ækʃn/ *noun*, **C1**

★(Chem) a reaction with oxygen producing CO₂, H₂O, and energy: *Gasoline burning is a **combustion reaction**.*

common difference /'kɒmən 'dɪfrəns/ *noun*, **C2**

★(Math) the constant value added to each term to get the next term in an arithmetic sequence: *The arithmetic sequence 5, 9, 13, 17 has **common difference** $d = 4$.*

common ratio /'kɒmən 'reɪʃiəʊ/ *noun*, **C2**

★(Math) the constant factor multiplied by each term to get the next term in a geometric sequence: *The geometric sequence 3, 6, 12, 24 has **common ratio** $r = 2$.*

community /kə'mju:nɪti/ *noun*, **B1**

★ (Biology) an assemblage of populations of different species occupying the same geographic area at the same time and interacting ecologically: *The temperate forest **community** includes trees, herbivores, predators, and decomposers.*

commutative property /kə'mju:tətɪv 'prɒpəti/ *noun*, **C2**

★(Math) the rule that changing the order of addition or multiplication does not change the result: $3 + 5 = 5 + 3 = 8$ by the **commutative property**.

competition /,kɒmpə'tɪʃən/ *noun*, **B1**

★(Biology) an ecological interaction in which two or more organisms vie for the same limited resources, reducing the fitness of at least one competitor: *Interspecific **competition** for light among canopy trees shapes tropical forest structure.*

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complement /'kɒmplɪmənt/ *noun*

★(Math) the set of all elements in the universal set that are NOT in a given set, written A' : *If $A = \{1, 2\}$ and $U = \{1, 2, 3\}$, then $A' = \{3\}$.*

completing the square /kəm'pli:tɪŋ ðə skweə(r)/ *verb*, **C2**

★(Math) rewriting $ax^2 + bx + c$ in the form $a(x - h)^2 + k$ to find the vertex: **Complete the square** on $x^2 + 6x$ to get $(x + 3)^2 - 9$.

complex number /'kɒmpleks 'nʌmbər/ *noun*, **C1**

★(Math) a number in the form $a + bi$ where a is the real part and b is the imaginary part: $2 + 3i$ is a **complex number** with real part 2 and imaginary part 3.

composite number /'kɒmpəzɪt 'nʌmbər/ *noun*, **C1**

★(Math) a number greater than 1 that has more than two factors: 12 is a **composite number** with factors 1, 2, 3, 4, 6, and 12.

composition of functions /,kɒmpə'zɪʃn əv 'fʌŋkʃnz/ *noun*, **C2**

★(Math) applying one function to the result of another: $(f \circ g)(x) = f(g(x))$: *If $f(x) = x^2$ and $g(x) = x + 1$, then $(f \circ g)(2) = f(3) = 9$.*

compound /'kɒm.paʊnd/ *noun*, **C1**

★(Chem) a substance of two or more elements in fixed ratios: *Sodium chloride is a chemical compound.*

compound inequality /'kɒmpaʊnd ,ɪnɪ'kwələti/ *noun*, **C2**

★(Math) two inequalities joined by 'and' or 'or'; represents a range or union of values: $2 < x < 5$ is a **compound inequality** meaning x is between 2 and 5.

compound interest /'kɒmpaʊnd 'ɪntrɪst/ *noun*, **B2**

★(Math) interest calculated on both the principal and the previously accumulated interest: Use $A = P(1 + r/n)^{nt}$ to calculate **compound interest**.

compression /kəm'preʃ.ən/ *noun*, **C1**

★(Physics) a region of densely packed particles in a longitudinal wave: **Compression** and rarefaction make up sound waves.

concave mirror /kɒn'keɪv 'mɪr.ər/ *noun*

★(Physics) a curved mirror that converges light; used in telescopes and headlights: Telescope mirrors are **concave** to gather light.

concentration /ˌkɒn.sən'treɪ.ʃən/ *noun*, **B1**

★(Chem) the amount of solute per unit volume of solution: Increase the **concentration** of acid for a stronger solution.

condensation /ˌkɒn.den'seɪ.ʃən/ *noun*, **B2**

★(Physics) change from gas to liquid: **Condensation** forms dew on grass in the morning.

conditional probability /kən'dɪʃənəl ˌprɒbə'bɪləti/ *noun*, **C2**

★(Math) the probability that event A occurs given that event B has already occurred; $P(A|B) = P(A \cap B)/P(B)$: *P(rain | cloudy) is the (**conditional**) **probability** of rain given that it is cloudy.*

conduction /kən'dʌk.ʃən/ *noun*, **C1**

★(Physics) heat transfer through direct contact and particle collisions: Heat travels through metal pots by **conduction**.

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conductor /kən'dʌk.tər/ *noun*, **B2**★(Physics) a material allowing free electron flow, such as a metal: *Copper is an excellent electrical **conductor**.*

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conductor (thermal) /kən'dʌk.tər/ *noun*, **C1**★(Physics) a material that conducts heat well, such as metal: *Metal pans are good thermal **conductors**.***conjecture** /kən'dʒektʃər/ *noun*, **C1**★(Math) a mathematical statement believed to be true but not yet formally proved: *Identify the pattern and form a **conjecture** about the next term.***conjugate** /'kɒndʒʊɡɪt/ *noun*, **C2**★(Math) a pair of expressions that differ only in the sign between two terms; used to eliminate radicals: *The **conjugate** of $(a + \sqrt{b})$ is $(a - \sqrt{b})$.***consecutive** /kən'sekjʊtɪv/ *adjective*, **B2**★(Math) following one after another in an unbroken order: *5, 6, and 7 are **consecutive** integers.***conservation of energy** /ˌkɒn.sə'veɪ.ʃən əv 'en.ə.dʒi/ *noun*, **C1**★(Physics) total energy in an isolated system remains constant: ***Conservation of energy** is a fundamental physics principle.***conservation of momentum**/ˌkɒn.sə'veɪ.ʃən əv mə'men.təm/ *noun*, **C2**★(Physics) total momentum of an isolated system remains constant: ***Conservation of momentum** applies in collision problems.*

consistent system /kən'sɪstənt 'sɪstəm/ *noun*, **C2**

★(Math) a system of equations that has at least one solution (lines intersect or coincide): A **consistent system** produces exactly one solution or infinitely many.

constant /'kɒnstənt/ *noun*, **B2**

★(Math) a fixed value that does not change in an expression or equation: In $3x + 7$, the **constant** is 7.

constructive interference /kən'strʌk.tɪv ,ɪn.tə'fɪə.rəns/ *noun*, **C2**

★(Physics) wave combination that produces a larger amplitude: **Constructive interference** makes the sound louder.

consumer /kən'sjuːmər/ *noun*, **B1**

★(Biology) a heterotrophic organism that obtains energy and nutrients by feeding on other organisms, classified by trophic level as primary, secondary, or tertiary: *Herbivores are primary **consumers** that feed directly on producers.*

continuous /kən'tɪnjuəs/ *adjective*, **B2**

★(Math) a function with no breaks, jumps, or holes; can be drawn without lifting the pen: $f(x) = x^2$ is **continuous** for all real numbers.

convection /kən'vek.jən/ *noun*, **B2**

★(Physics) heat transfer by movement of fluids or gases: **Convection** currents create wind patterns.

converging lens /kən'vɜː.dʒɪŋ lenz/ *noun*, **C2**

★(Physics) a lens that focuses parallel light to a focal point: *Magnifying glasses use a **converging lens**.*

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convex mirror /'kɒn.veks 'mɪr.ər/ *noun*, **C2**

★ (Physics) a curved mirror that diverges light; used in car side mirrors: **Convex mirrors** give a wider field of view.

coordinate plane /kəʊ'ɔːdɪnɪt pleɪn/ *noun*, **C2**

★ (Math) a flat surface defined by a horizontal x-axis and a vertical y-axis intersecting at the origin: *Plot the point (3, -2) on the **coordinate plane**.*

correlation /,kɒrə'leɪʃən/ *noun*, **C1**

★ (Math) a statistical measure showing the direction and strength of a relationship between two variables: *Height and weight usually show a positive **correlation**.*

corrosion /kə'reʊ.ʒən/ *noun*, **B2**

★ (Chem) the chemical degradation of metals by reactions with their environment: *Rust is the **corrosion** of iron.*

cosine /'kəʊsaɪn/ *noun*, **C1**

★ (Math) the ratio of the adjacent side to the hypotenuse in a right triangle: ***cos60°**=0.5 shows the adjacent side is half the hypotenuse.*

coulomb /'kuː.lɒm/ *noun*, **C2**

★ (Physics) the SI unit of electric charge, equal to one ampere-second: *A **coulomb** is a large amount of charge.*

Coulomb's law /'kuː.lɒmz lɔː/ *noun*, **C2**

★ (Physics) force between two charges varies with charge and inversely with distance squared: ***Coulomb's law** predicts electrostatic forces.*

counterclockwise /ˌkaʊntəˈklɒkwaɪz/ *adjective/adverb*, **B2**

★(Math) in the direction opposite to the rotation of clock hands; positive angle direction in mathematics: *Angles are measured **counterclockwise** from the positive x-axis.*

counterexample /ˈkaʊntərɪɡzɑːmpl/ *noun*, **C2**

★(Math) a single example that disproves a general statement or conjecture: *The **counterexample** $x = -2$ shows that x^2 is not always greater than x .*

counting principle /ˈkaʊntɪŋ ˈprɪnsɪpl/ *noun*, **C2**

★(Math) if event A can occur in m ways and event B in n ways, then both can occur in $m \times n$ ways: *By the **counting principle**, 5 shirts and 3 pants give $5 \times 3 = 15$ outfits.*

covalent bond /ˌkəʊˈveɪ.lənt bɒnd/ *noun*, **C1**

★(Chem) a bond formed by sharing electrons between two atoms: *Water has **covalent bonds** between H and O.*

Cramer's rule /ˈkreɪməz ruːl/ *noun*, **C2**

★(Math) a formula using determinants to solve a system of linear equations: *Apply **Cramer's rule** to find $x = Dx/D$ where D is the coefficient determinant.*

crest /krest/ *noun*, **B2**

★(Physics) the highest point of a transverse wave: *Surfers ride the **crest** of ocean waves.*

critical angle /ˈkrɪt.ɪ.kəl ˈæŋ.gəl/ *noun*, **C2**

★(Physics) the incidence angle at which total internal reflection begins: *Beyond the **critical angle**, no light escapes.*

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cross multiply /krɒs 'mʌltɪplaɪ/ verb, **B2**

★(Math) to multiply the numerator of each fraction by the denominator of the other to solve a proportion: **Cross multiply** $a/b = c/d$ to get $ad = bc$.

crystallization /ˌkrɪs.təl.aɪ'zeɪ.ʃən/ noun, **B2**

★(Chem) a purification process forming crystals from a solution: *Salt is harvested through **crystallization**.*

cube /kjuːb/ noun/verb, **A2**

★(Math) to raise a number to the third power; the result of $x \times x \times x$: *The **cube** of 4 is $4^3 = 64$.*

cube root /kjuːb ruːt/ noun, **C1**

★(Math) a number that, when raised to the third power, gives the original number: *The **cube root** of 125 is 5, because $5^3 = 125$.*

cytoplasm /ˈsaɪtə.plæzəm/ noun, **C1**

★(Biology) the aqueous, gel-like medium enclosed by the cell membrane, excluding the nucleus, in which organelles are suspended and metabolic reactions occur: *Glycolysis takes place in the **cytoplasm** rather than in the mitochondria.*

D

Dalton's law /ˈdɔːl.tənz lɔː/ noun, **C2**

★(Chem) total pressure of a gas mixture equals the sum of partial pressures.: **Dalton's law** applies to atmospheric gases.

deceleration /ˌdiː.səl.ə'reɪ.ʃən/ *noun*, **C1**

★(Physics) acceleration in the opposite direction of velocity, slowing the object: *Hard **deceleration** caused the passengers to lurch forward.*

decibel /'des.ɪ.bel/ *noun*, **C1**

★(Physics) a logarithmic unit for measuring sound intensity level: *A whisper is about 30 **decibels**.*

decimal /'desɪmə/ *noun/adjective*, **B1**

★(Math) a number expressed using a decimal point to show parts of a whole: *The **decimal** 0.75 equals the fraction 3/4.*

decomposer /ˌdiːkəm'pəʊzər/ *noun*, **B2**

★(Biology) an organism, typically a bacterium or fungus, that breaks down dead organic matter into inorganic nutrients, returning minerals to the environment and completing biogeochemical cycles: ***Decomposers** are indispensable for nutrient recycling in all terrestrial ecosystems.*

decomposition reaction /ˌdiː.kəm.pə'zɪʃ.ən rɪ'æk.ʃən/ *noun*, **C1**

★(Chem) a reaction where one substance breaks into two or more: *Heating limestone causes a **decomposition reaction**.*

decreased by /dɪ'kriːst baɪ/ *phrase*, **B1**

★(Math) a phrase meaning subtraction in word problems: *'x **decreased by** 4' translates to $x - 4$.*

decreasing function /dɪ'kriːsɪŋ 'fʌŋkʃn/ *noun*, **C1**

★(Math) a function where y decreases as x increases; the graph falls from left to right: *$f(x) = -3x$ is a **decreasing function**.*

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deductive reasoning /dɪ'dʌktɪv 'riːzənɪŋ/ *noun*, **C1**

★ (Math) drawing a specific conclusion from general rules or premises: *Using the theorem that all multiples of 2 are even to conclude that 14 is even.*

degree /dɪ'ɡriː/ *noun*, **B1**

★ (Math) the highest power of the variable in a polynomial: *The polynomial $4x^3 - 2x + 7$ has **degree** 3.*

★ a unit of angle measurement; a full circle contains 360 degrees: *A right angle measures 90 **degrees**.*

denominator /dɪ'nɒmɪneɪtər/ *noun*, **B2**

★ (Math) the bottom number in a fraction, showing the total number of equal parts: *In $5/8$, the **denominator** is 8.*

density /'den.sɪ.ti/ *noun*, **B2**

★ (Physics) mass per unit volume ($\rho = m/V$): *Lead has a higher **density** than aluminum.*

deoxyribonucleic acid, DNA

/diː.ˌpɒksɪraɪboʊnjuː.ˌkleɪk 'æsɪd/ *noun*, **C1**

★ (Biology) a double-stranded, antiparallel helical polynucleotide that encodes the hereditary information governing the structure and function of all known living organisms: ***DNA** is replicated semi-conservatively prior to every round of cell division.*

dependent variable /dɪ'pendənt 'veəriəbl/ *noun*, **C1**

★ (Math) the output variable whose value depends on the input; typically plotted on the y-axis: *In $d = 60t$, the distance d is the **dependent variable**.*

derivative /diˈrɪvətɪv/ *noun*, **C2**

★ (Math) the instantaneous rate of change of a function at a given point; the slope of the tangent line: *The **derivative** of $f(x) = x^2$ is $f'(x) = 2x$.*

Descartes' Rule of Signs /deiˈkɑːts ruːl əv saɪnz/ *noun*, **C2**

★ (Math) the number of positive real roots of a polynomial equals the number of sign changes, or less by an even number: ***Descartes' Rule of Signs** gives at most 2 positive roots for $f(x) = x^3 - 2x^2 + 1$.*

destructive interference /diˈstrʌk.tɪv ˌɪn.təˈfɪə.rəns/ *noun*, **C2**

★ (Physics) wave combination that reduces or cancels amplitude: *Noise-canceling headphones use **destructive interference**.*

determinant /diˈtɜːmɪnənt/ *noun*, **C2**

★ (Math) a scalar value computed from a square matrix; for a 2×2 matrix: $ad - bc$: *The **determinant** of $\begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$ is $2(4) - 3(1) = 5$.*

diameter /daɪˈæmɪtər/ *noun*, **B2**

★ (Math) a chord of a circle passing through the center; equal to twice the radius: *The **diameter** of a circle with radius 5 is 10.*

difference /ˈdɪfrəns/ *noun*, **A2**

★ (Math) the result of subtracting one number from another: *The **difference** between 15 and 6 is 9.*

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difference of squares /'dɪfrəns əv skweərz/ *noun*, **C2**

★(Math) the factoring pattern $a^2 - b^2 = (a + b)(a - b)$: *Factor $x^2 - 25$ using the **difference of squares**: $(x + 5)(x - 5)$.*

diffraction /dɪ'fræk.ʃən/ *noun*, **C1**

★(Physics) the spreading of waves as they pass through openings or around obstacles: ***Diffraction** allows us to hear around corners.*

diffraction grating /dɪ'fræk.ʃən 'greɪ.tɪŋ/ *noun*, **C2**

★(Physics) a device with many lines used to separate light by wavelength: *Spectroscopes use a **diffraction grating**.*

diffusion /dɪ'fjuːʒən/ *noun*, **B2**

★(Biology) the passive net movement of molecules or ions from a region of higher concentration to one of lower concentration along a concentration gradient, requiring no energy input: *During respiration, oxygen enters the bloodstream from the lungs through the process of simple **diffusion**, moving from an area of higher concentration to lower concentration.*

digestive system /daɪ'dʒestɪv 'sɪstəm/ *noun*, **B2**

★(Biology) the organ system responsible for the ingestion, mechanical and chemical breakdown, and absorption of nutrients from food, and the elimination of indigestible residue: *The **digestive system** converts complex dietary macromolecules into absorbable monomers.*

dilution /daɪ'luː.ʃən/ *noun*, **C1**

★(Chem) lowering a solution's concentration by adding solvent: ***Dilution** reduces the strength of the acid.*

diode /'daɪ.əʊd/ *noun*, **C1**

★(Physics) a semiconductor device allowing current to flow in one direction: *An LED is a light-emitting **diode**.*

dipole-dipole /'daɪ.pəʊl 'daɪ.pəʊl/ *noun*, **C2**

★(Chem) attraction between two polar molecules: ***Dipole-dipole** forces occur in HCl molecules.*

direct current /dɪ'rekt 'kʌr.ənt/ *noun*, **C1**

★(Physics) current that flows in one constant direction, as from a battery: *Batteries produce **direct current**.*

direct variation /dɪ'rekt 'veəri'eɪʃən/ *noun*, **C1**

★(Math) a relationship where $y = kx$; as x increases, y increases proportionally: *If $y = 4x$, doubling x will double y (**direct variation**, $k = 4$).*

discount /'dɪskaʊnt/ *noun*, **A2**

★(Math) a reduction from the original price of something: *A 20% **discount** on a \$150 jacket saves \$30, making it \$120.*

discriminant /dɪ'skrɪmɪnənt/ *noun*, **C2**

★(Math) the expression $b^2 - 4ac$; determines the number and type of roots of a quadratic: *A **discriminant** of 0 means the quadratic has exactly one repeated root.*

dispersion /dɪ'spɜː.ʃən/ *noun*, **C2**

★(Physics) the separation of white light into its component colors: *Rainbow formation is due to light **dispersion**.*

displacement /dɪs'pleɪs.mənt/ *noun*, **C1**

★(Physics) the distance with direction from start to end point: *The **displacement** of the ball was 5 meters east.*

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dissociation /dɪˌsəʊ.sɪ'eɪ.ʃən/ *noun*, **C2**

★(Chem) the breaking of a compound into ions in solution:
*Salt undergoes **dissociation** in water.*

distance /'dɪs.təns/ *noun*, **A2**

★(Physics) the total length of the path traveled by an object: *She walked a **distance** of 3 kilometers to school.*

distance formula /'dɪstəns 'fɔːmjʊlə/ *noun*, **C1**

★(Math) the formula $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ for finding the distance between two points: *Find the distance between (1, 2) and (4, 6) using the **distance formula**.*

distillation /ˌdɪs.tɪ'leɪ.ʃən/ *noun*, **C1**

★(Chem) a separation method using different boiling points: *Petroleum is refined by **distillation**.*

distributive property /dɪ'strɪbjʊtɪv 'prɒpəti/ *noun*, **C2**

★(Math) the rule that $a(b + c) = ab + ac$; multiplying a sum by a factor: $3(x + 4) = 3x + 12$ by the **distributive property**.

diverging lens /daɪ'vɜː.dʒɪŋ lenz/ *noun*, **C2**

★(Physics) a lens that spreads parallel light away from its axis: *Glasses for nearsightedness use **diverging lenses**.*

division /dɪ'vɪʒən/ *noun*, **A2**

★(Math) the process of splitting a number into equal parts:
***Division** of 20 by 4 gives 5.*

DNA /ˌdiː.en'eɪ/ *noun*, **B2**

★(Chem) a double-helix nucleic acid storing genetic information: ***DNA** carries the blueprint of life.*

domain /dəʊ'meɪn/ *noun*, **C1**

★(Math) the set of all allowable input (x) values of a function: *The **domain** of $f(x) = 1/x$ is all real numbers except $x = 0$.*

dominant /'dɒmɪnənt/ *adjective*, **B2**

★(Biology) describing an allele whose phenotypic effect is fully expressed in heterozygous individuals, masking the expression of the paired recessive allele: *The **dominant** allele for brown eye color is expressed even when only one copy is present.*

doppler effect /'dɒp.lər ɪ'fekt/ *noun*, **C2**

★(Physics) apparent change in frequency due to relative motion of source and observer: *The **Doppler effect** makes an ambulance siren change pitch.*

double bond /'dʌb.əl bɒnd/ *noun*, **C1**

★(Chem) acovalent bond sharing two pairs of electrons: *Oxygen gas has a **double bond**.*

dynamics /daɪ'næm.ɪks/ *noun*, **C1**

★(Physics) the study of the relationship between forces and motion: *Vehicle **dynamics** is crucial in automotive design.*

E

echo /'ek.əʊ/ *noun*, **B1**

★(Physics) a sound reflected back after the original sound has stopped: *We heard an **echo** in the canyon.*

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ecosystem /'i:kəʊˌsɪstəm/ *noun*, **B2**

★(Biology) a functional unit comprising all the living organisms in an area together with the abiotic environment, interacting through energy flow and nutrient cycling: *The coral reef **ecosystem** supports extraordinary levels of marine biodiversity.*

efficiency /'ɪfɪjnsi/ *noun*, **B2**

★(Physics) the ratio of useful energy output to total energy input: *Modern LED bulbs have high energy **efficiency**.*

elastic PE /ɪ'læs.tɪk ˌpiː 'iː/ *noun*, **C2**

★(Physics) energy stored in stretched or compressed elastic materials ($PE = \frac{1}{2}kx^2$): *A compressed spring stores **elastic potential energy**.*

electric charge /ɪ'lek.trɪk tʃɑːdʒ/ *noun*, **C1**

★(Physics) a fundamental property of matter, positive or negative: *Like **electric charges** repel each other.*

electric circuit /ɪ'lek.trɪk 'sɜː.kɪt/ *noun*, **C1**

★(Physics) a closed path through which electric current can flow: *A simple **electric circuit** requires a power source, like a battery, and a continuous path of conducting wire to allow electric current to flow and light up a bulb.*

electric current /ɪ'lek.trɪk 'kʌr.ənt/ *noun*, **C1**

★(Physics) the rate of electric charge flow, measured in amperes: *An ammeter measures **electric current**.*

electric field /ɪˈlek.trɪk fiːld/ *noun*, **C2**

★(Physics) the region around a charge where another charge feels force: *An **electric field** surrounds every charged object.*

electric field lines /ɪˈlek.trɪk fiːld laɪnz/ *noun*, **C2**

★(Physics) lines showing the direction and strength of electric fields: ***Electric field lines** emerge from positive charges.*

electric potential /ɪˈlek.trɪk pəˈten.ʃəl/ *noun*, **C2**

★(Physics) electric potential energy per unit charge, measured in volts: ***Electric potential** drives current through a circuit.*

electric power /ɪˈlek.trɪk ˈpaʊ.ər/ *noun*, **C1**

★(Physics) the rate of electrical energy use; $P = VI = I^2R = V^2/R$: *Calculate the **electric power** consumed by the appliance.*

electrical energy /ɪˈlek.trɪ.kəl ˈen.ə.dʒi/ *noun*, **C1**

★(Physics) energy used in electrical circuits; $E = Pt$: *Your electricity bill measures **electrical energy** in kWh.*

electrochemistry /ɪˌlek.trəʊˈkem.ɪ.stri/ *noun*, **C2**

★(Chem) the study of relationships between chemical reactions and electricity: *Batteries are designed using **electrochemistry**.*

electrode /ɪˈlek.trəʊd/ *noun*, **C2**

★(Chem) a conductor in contact with an electrolyte in an electric cell: *Connect the **electrode** to the wire.*

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electrolyte /ɪˈlek.trə.laɪt/ *noun*, **C1**

★(Chem) A solution that conducts electricity through ions:
*Sports drinks contain **electrolytes**.*

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electrolytic cell /ɪˌlek.trəˈlɪt.ɪk sel/ *noun*, **C2**

★(Chem) a cell using electricity to drive a non-spontaneous reaction: *Electroplating uses an **electrolytic cell**.*

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electromagnet /ɪˌlek.trəʊˈmæɡ.nət/ *noun*, **C1**

★(Physics) a magnet created by a current-carrying coil of wire: ***Electromagnets** lift heavy steel in junkyards.*

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electromagnetic induction/ɪˌlek.trəʊˈmæɡˈnet.ɪk ɪnˈdʌk.ʃən/ *noun*, **C2**

★(Physics) the creation of EMF due to changing magnetic flux: *Generators rely on **electromagnetic induction**.*

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electromagnetic wave /ɪˌlek.trəʊˈmæɡˈnet.ɪk weɪv/ *noun*, **C1**

★(Physics) a wave that needs no medium, consisting of electric and magnetic fields: *Light is an **electromagnetic wave**.*

electron /ɪˈlek.trɒn/ *noun*, **B2**

★(Chem) a negatively charged particle orbiting the nucleus that forms chemical bonds: ***Electrons** determine how atoms bond together.*

electron affinity /ɪˈlek.trən əˈfɪn.i.ti/ *noun*, **C2**

★(Chem) the energy released when an atom gains an electron: *Chlorine has a high **electron affinity**.*

electron configuration /ɪˈlek.trən kənˌfɪɡ.jəˈreɪ.jən/ *noun*, **C2**

★(Chem) the arrangement of electrons in an atom's energy levels: *The **electron configuration** of carbon is $1s^2 2s^2 2p^2$.*

electronegativity /ɪˈlek.trəʊ.neg.əˈtɪv.i.ti/ *noun*, **C2**

★(Chem) an atom's ability to attract electrons in a bond: *Fluorine has the highest **electronegativity**.*

electroplating /ɪˈlek.trəʊ.pleɪ.tɪŋ/ *noun*, **C2**

★(Chem) cating an object with metal using electrolysis: ***Electroplating** gives jewelry a gold finish.*

element /ˈel.ɪ.mənt/ *noun*, **B1**

★(Chem) a pure substance made of only one type of atom: *Gold is a chemical **element**.*

elimination method /ɪˌlɪmɪˈneɪʃən ˈmeθəd/ *noun*, **C1**

★(Math) solving a system by adding or subtracting equations to cancel out one variable: *Add the equations $x + y = 8$ and $x - y = 2$ to eliminate y and find $x = 5$.*

ellipse /ɪˈlɪps/ *noun*, **C1**

★(Math) a closed curve where the sum of distances from any point to two foci is constant: *Earth orbits the sun in an elliptical path.*

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embryo /'ɛmbriəʊ/ *noun*, **B2**

★(Biology) the early developmental stage of a multicellular organism following fertilization and before the structural characteristics of the mature form are established: *The plant **embryo** within the seed contains the primordial root and shoot axes.*

EMF /i:ˌem'ef/ *noun*, **C2**

★(Physics) electromotive force; energy per unit charge from a power source: *The battery has an **EMF** of 12 volts.*

empirical formula /ɪm'pɪrɪ.ɪ.kəl 'fɔ:ˌmjə.lə/ *noun*, **C2**

★(Chem) the simplest whole-number ratio of atoms in a compound: *The **empirical formula** of glucose is CH_2O .*

empty set /'empti set/ *noun*, **C1**

★(Math) containing a set no elements, written $\{\}$ or $\emptyset$: *The set of real solutions to $x^2 = -1$ is the **empty set**.*

end behavior /end bɪ'heɪvjər/ *noun*, **C2**

★(Math) the description of a function's output values as x approaches positive or negative infinity: *For $f(x) = x^3$, the **end behavior** is: rises to the right and falls to the left.*

endocrine system /'endəkrɪn 'sɪstəm/ *noun*, **C1**

★(Biology) the network of ductless glands and specialized cells that produce and secrete hormones directly into the bloodstream to regulate physiological processes over sustained time periods: *The **endocrine system** coordinates growth, metabolism, and reproductive function through hormones.*

endoplasmic reticulum (ER) /ˌɛndəˈplæzmɪk rɪˈtɪkjələm/ *noun*, **C2**

★(Biology) an interconnected network of membranous tubules and cisternae in the cytoplasm; the rough ER synthesizes proteins, while the smooth ER synthesizes lipids and detoxifies compounds: *The rough **endoplasmic reticulum** is densely studded with ribosomes.*

endothermic /ˌɛn.dəʊˈθɜː.mɪk/ *adjective*, **C1**

★(Chem) Absorbing heat from the surroundings; $\Delta H > 0$: *Melting ice is an **endothermic** process.*

energy /ˈɛn.ə.dʒi/ *noun*, **A2**

★(Physics) the capacity to do work; exists in many forms: ***Energy** is required to power machines.*

enthalpy /ˈɛn.θəl.pi/ *noun*, **C2**

★(Chem) the heat content of a system at constant pressure: ***Enthalpy** changes during a reaction.*

enthalpy change /ˈɛn.θəl.pi tʃeɪndʒ/ *noun*, **C2**

★(Chem) heat absorbed or released at constant pressure (ΔH): *Calculate the **enthalpy change** of the reaction.*

entropy /ˈɛn.trə.pi/ *noun*, **C2**

★(Physics) a measure of disorder in a system, generally increasing over time: ***Entropy** always increases in isolated.*

★(Chem) a measure of disorder in a system; tends to increase spontaneously: ***Entropy** increases when ice melts.*

enzyme /ˈɛn.zaɪm/ *noun*, **C1**

★(Chem) a protein that catalyzes biochemical reactions: *Digestive **enzymes** break down food.*

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★(Biology) a biological catalyst, typically a globular protein, that accelerates the rate of a specific biochemical reaction by lowering its activation energy: *Amylase is a digestive **enzyme** that hydrolyses starch into maltose in the mouth.*

equation /ɪ'kweɪʒən/ *noun*, **B1**

★(Math) a mathematical statement showing that two expressions are equal, using the = sign: *$2x + 3 = 11$ is a linear **equation**.*

equilibrium /,ɪː.kwɪ'lb.rɪ.əm/ *noun*, **C1**

★(Chem) a state where forward and reverse reaction rates are equal: *Buildings must remain in **equilibrium** under all loads.*

★(Physics) a state where net force and net moment are both zero: *The reaction has reached chemical **equilibrium**.*

equilibrium constant (K) /,ɪː.kwɪ'lb.rɪ.əm 'kɒn.stənt/ *noun*, **C2**

★(Chem) the ratio of product to reactant concentrations at equilibrium: *A large **equilibrium constant** means products are favored.*

equilibrium constant K_c /,ɪː.kwɪ'lb.rɪ.əm 'kɒn.stənt/ *noun*, **C2**

★(Chem) an equilibrium constant based on molar concentrations: *Calculate **K_c** from concentrations at **equilibrium**.*

equivalence point /ɪ'kwɪv.ə.ləns pɔɪnt/ *noun*, **C1**

★(Chem) the point where moles of acid equal moles of base in titration: *The indicator color changes at the **equivalence point**.*

equivalent fractions /ɪ'kwɪvələnt 'frækʃənz/ *noun*, **B2**

★(Math) fractions that represent the same value even though they have different numerators and denominators: $1/2$, $2/4$, and $3/6$ are **equivalent fractions**.

ester /'es.tər/ *noun*, **C2**

★(Chem) a compound formed from a carboxylic acid and an alcohol: **Esters** give fruits their pleasant aromas.

estimation /,estɪ'meɪʃən/ *noun*, **B2**

★(Math) finding an approximate value that is close enough to the exact answer for a given purpose: **Estimate** $\sqrt{50} \approx 7$ because $\sqrt{49} = 7$.

ether /'iː.θər/ *noun*, **C2**

★(Chem) an organic compound with oxygen between two carbons (R-O-R): Diethyl **ether** was once used as an anesthetic.

eukaryote /ju:'kæriəʊt/ *noun*, **C2**

★(Biology) an organism whose cells contain a membrane-delimited nucleus and specialised organelles, permitting greater structural and functional complexity: *Animals, plants, fungi, and protists are all classified as **eukaryotes**.*

Euler's number (e) /'ɔɪlərz 'nʌmbər/ *noun*, **C2**

★(Math) the mathematical constant $e \approx 2.71828$, the base of the natural logarithm: *Continuous compound interest uses the formula $A = Pe^{(rt)}$.*

evaluate /ɪ'væljueɪt/ *verb*, **B1**

★(Math) to find the numerical value of an expression by substituting given values for the variables: **Evaluate** $3x + 1$ when $x = 4$ to get 13.

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evaporation /ˌɪ.væp.ə'reɪ.ʃən/ *noun*, **B2**

★(Physics) change from liquid to gas at the surface:
Evaporation cools the body when sweat dries.

★(Chem) the change of liquid to vapor at the surface;
separates solutes: *Sea salt is made by evaporation.*

even number /'i:vən 'nʌmbər/ *noun*, **B2**

★(Math) an integer that is divisible by 2 with no remainder:
4, 6, and 8 are even numbers.

evolution /ˌi:və'lu:ʃən/ *noun*, **B2**

★(Biology) the change in heritable characteristics of
biological populations over successive generations, driven
by mechanisms including natural selection, mutation, drift,
and gene flow: *The variety of beak shapes among Darwin's
finches is a classic example of evolution, driven by natural
selection as each species adapted to eat different types of food
on the Galápagos Islands.*

excess reagent /ɪk'ses ri'eɪ.dʒənt/ *noun*, **C2**

★(Chem) a reactant remaining after the reaction is
complete: *Some excess reagent is left after the reaction ends.*

excluded value /ɪk'skluːdɪd 'væljuː/ *noun*, **C1**

★(Math) a value of x that makes the denominator of a
rational expression equal to zero: *In $1/(x-2)$, the excluded value
is $x = 2$.*

excretory system /'ɛkskri:tɔːri 'sɪstəm/ *noun*, **C2**

★(Biology) the organ system responsible for eliminating
metabolic waste products, particularly nitrogenous
compounds such as urea, from the body to maintain

chemical homeostasis: *The **excretory system** regulates plasma osmolarity by adjusting urinary water and solute output.*

exothermic /ˌek.səʊˈθɜː.mɪk/ *adjective, C1*

★(Chem) releasing heat to the surroundings; $\Delta H < 0$: *Combustion is an **exothermic** reaction.*

expected value /ɪkˈspektɪd ˈvæljuː/ *noun, C1*

★(Math) the weighted average of all possible outcomes of a random variable; $E(X) = \sum x \cdot P(x)$: *The **expected value** of a fair die roll is $(1+2+3+4+5+6)/6 = 3.5$.*

★ the weighted average of all outcomes of a probability experiment; $E(X) = \sum x \cdot P(x)$: *The **expected** number of heads in 10 fair coin flips is $E = 5$.*

exponent /ˈekspəʊnənt/ *noun, B2*

★(Math) a number written above and to the right of a base, showing how many times to multiply: *In 2^5 , the **exponent** 5 means $2 \times 2 \times 2 \times 2 \times 2 = 32$.*

exponential decay /ˌekspəˈnenʃəl dɪˈkeɪ/ *noun, C1*

★(Math) a pattern where a quantity decreases by a constant percentage rate over equal time intervals: *Radioactive material losing half its mass every 10 years shows **exponential decay**.*

exponential function /ˌekspəˈnenʃəl ˈfʌŋkʃn/ *noun, C1*

★(Math) a function of the form $f(x) = b^x$ where $b > 0$ and $b \neq 1$: *$f(x) = 2^x$ is an **exponential function** that doubles every unit.*

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exponential growth /ˌɛkspəˈnɛnʃəl grəʊθ/ *noun*, **C1**

★(Math) a pattern where a quantity increases by a constant percentage rate over equal time intervals: *A population growing at 5% per year shows **exponential growth**.*

expression /ɪkˈspresjən/ *noun*, **B2**

★(Math) a mathematical phrase combining numbers, variables, and operations but without an equal sign: *$3x + 2$ is an algebraic **expression**.*

extinction /ɪkˈstɪŋkʃən/ *noun*, **B2**

★(Biology) the irreversible disappearance of every member of a species, rendering it permanently absent from the living world: *The sixth mass **extinction** is driven primarily by habitat destruction and climate change.*

extraneous solution /ɪkˈstreɪniəs səˈluːʃn/ *noun*, **C2**

★(Math) a value obtained during solving that does not satisfy the original equation: *Always check for **extraneous solutions** when solving radical equations.*

extrapolation /ɪkˌstræpəˈleɪʃən/ *noun*, **C1**

★(Math) using a model to predict values beyond the range of the observed data: ***Extrapolation** estimates the temperature next year using past trends.*

F

factor /ˈfæktər/ *noun*, **B2**

★(Math) a number that divides evenly into another number with no remainder: *The **factors** of 12 are 1, 2, 3, 4, 6, and 12.*

factor theorem /'fæktər 'θiərəm/ *noun*, **C2**

★(Math) $(x - c)$ is a factor of $f(x)$ if and only if $f(c) = 0$: *Since $f(3) = 0$, $(x - 3)$ is a factor of $f(x)$ by the **factor theorem**.*

factorial /fæk'tɔ:riəl/ *noun*, **C1**

★(Math) the product of all positive integers from 1 to n , written $n!$; $0! = 1$ by definition: $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$.

factoring /'fæktərɪŋ/ *verb/noun*, **B2**

★(Math) rewriting a polynomial as a product of simpler expressions: **Factor** $x^2 - 9$ to get $(x + 3)(x - 3)$.

Faraday's law /'fær.ə.deɪz lɔ:/ *noun*, **C2**

★(Physics) induced EMF is proportional to the rate of change of magnetic flux: **Faraday's law** underlies transformer operation.

★(Chem) the amount produced at an electrode is proportional to the charge passed: **Faraday's law** guides electroplating calculations.

feasible region /'fi:zɪbl 'ri:dʒən/ *noun*, **C2**

★(Math) the shaded area on a graph that satisfies all inequalities in a system: *The **feasible region** is the overlap of all the shaded half-planes.*

fermentation /fɜ:ˌmen'teɪ.jən/, /fɜ:ˌrən'teɪ.jən/ *noun*, **B2**

★(Chem) a biochemical process producing alcohol and CO_2 from sugar: *Bread rises through yeast **fermentation**.*

★(Biology) an anaerobic metabolic process that regenerates NAD^+ by reducing pyruvate, enabling glycolysis to continue in the absence of oxygen: *Lactic acid **fermentation** in muscle cells allows ATP production during intense exercise.*

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fertilization /ˈfɜːrtɪlaɪˈzeɪʃən/ *noun*, **B2**

★(Biology) the fusion of a haploid male gamete with a haploid female gamete to form a diploid zygote, initiating embryonic development: *In angiosperms, double **fertilization** produces both the embryo and the nutritive endosperm.*

filtration /fɪlˈtreɪ.ʃən/ *noun*, **B2**

★(Chem) separating solids from liquids using a filter: *Coffee makers use **filtration**.*

first law of thermodynamics

/fɜːst lɔː əv ˈθɜːmədaiˈnæm.ɪks/ *noun*, **C2**

★(Physics) change in internal energy equals heat in minus work done: *The **first law of thermodynamics** describes energy conservation.*

fluid /ˈfluːɪd/ *noun*, **B2**

★(Physics) a substance that flows, including liquids and gases: *Both water and air are **fluids**.*

focal length /ˈfəʊ.kəl leŋθ/ *noun*, **C1**

★(Physics) the distance from the lens center to its focal point: *A short **focal length** gives wide-angle photographs.*

focal point /ˈfəʊ.kəl pɔɪnt/ *noun*, **C1**

★(Physics) the point where parallel rays converge after passing through a lens: *Sunlight focused through a lens creates a hot **focal point**.*

FOIL method /fɔɪl ˈmeθəd/ *noun*, **C2**

★(Math) a technique for multiplying two binomials: *First, Outer, Inner, Last: $(x + 2)(x + 3)$ by **FOIL**: $x^2 + 3x + 2x + 6 = x^2 + 5x + 6$.*

food chain /fu:d tʃeɪn/ *noun*, **B2**

★(Biology) a linear sequence depicting the transfer of energy and matter from producers through successive levels of consumers in an ecosystem: *In a simple grassland **food chain**, grass is consumed by rabbits, which are preyed upon by foxes.*

food web /fu:d web/ *noun*, **B2**

★(Biology) an interconnected network of food chains representing the complex, overlapping feeding relationships among organisms within an ecosystem: *A **food web** more accurately captures the feeding dynamics of an ecosystem than a single chain.*

force /fɔ:s/ *noun*, **A2**

★(Physics) a push or pull that changes an object's motion or shape: *Apply a **force** to push the heavy door open.*

formula /'fɔ:mjələ/ *noun*, **B2**

★(Math) a mathematical rule or relationship expressed using symbols and variables: *The **formula** $A = \pi r^2$ calculates the area of a circle.*

fossil /'fɒsl/ *noun*, **B1**

★(Biology) the preserved remains, impressions, or chemical traces of an organism from a past geological age, embedded in rock strata: *Transitional **fossils** document the evolutionary link between theropod dinosaurs and modern birds.*

fraction /'frækʃən/ *noun*, **B1**

★(Math) a number expressed as one part over another, written as a/b where $b \neq 0$: *Three-quarters is written as the **fraction** $3/4$.*

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free body diagram /ˈfriː ˈbɒd.i ˈdaɪ.ə.græm/ *noun*, **C2**

★(Physics) a diagram showing all forces acting on a single object: *Draw a **free body diagram** before solving the problem.*

free fall /ˈfriː ˈfɔːl/ *noun*, **C1**

★(Physics) motion under the influence of gravity alone, with no air resistance: *Skydivers experience **free fall** before opening their parachutes.*

freezing point depression /ˈfriː.zɪŋ pɔɪnt dɪˈpreʃ.ən/ *noun*, **C2**

★(Chem)solutions freeze at lower temperatures than pure solvents: *Salt on icy roads causes **freezing point depression**.*

frequency /ˈfriː.kwən.si/ *noun*, **B2**

★(Physics) the number of cycles per second, measured in hertz (Hz): *Radio stations broadcast at different **frequencies**.*

friction /ˈfrɪk.jən/ *noun*, **C1**

★(Physics) a force that resists motion between two contact surfaces: ***Friction** between tires and road allows the car to brake.*

fuel cell /fjuːəl sel/ *noun*, **C1**

★(Chem) a device converting chemical fuel energy directly into electricity: *Hydrogen **fuel cells** power some vehicles.*

function /ˈfʌŋkʃən/ *noun*, **C1**

★(Math) a relation where each input value corresponds to exactly one output value: *$f(x) = 2x + 1$ is a **function**; $f(3) = 7$.*

function notation /'fʌŋkʃən nəʊ'teɪʃən/ *noun*, **C2**

★(Math) the notation $f(x)$ meaning 'the output of function f for input x ': *If $f(x) = x^2 + 1$, then $f(4) = 17$ using **function notation**.*

functional group /'fʌŋk.ʃən.əl gru:z/ *noun*, **C1**

★(Chem) a group of atoms determining chemical properties of an organic molecule: *The hydroxyl is a **functional group** of alcohols.*

fundamental frequency /ˌfʌn.də'men.təl 'fri:kwən.si/ *noun*, **C2**

★(Physics) the lowest natural vibration frequency in a system: *The **fundamental frequency** of a guitar string determines its note.*

Fundamental Theorem of Algebra

/ˌfʌndə'mentl 'θɪərəm əv 'ældʒɪbrə/ *noun*, **C2**

★(Math) every polynomial of degree n has exactly n roots in the complex number system: *By the **Fundamental Theorem of Algebra**, a degree-3 polynomial has 3 roots in total.*

fuse /fju:z/ *noun*, **B2**

★(Physics) a protective device that breaks the circuit when current exceeds a limit: *The **fuse** blew when the appliance shorted.*

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galvanic cell /gæl'væn.ɪk sel/ *noun*, **C2**

★(Chem) a cell that generates electricity from a spontaneous reaction: *A battery is a type of **galvanic cell**.*

gamma ray /'gæm.ə reɪ/ *noun*, **C1**

★(Physics) the highest-energy electromagnetic radiation, emitted from nuclei: ***Gamma rays** are used to treat cancer.*

★(Chem) high-energy electromagnetic radiation from a nucleus: ***Gamma rays** require lead shielding.*

gas chromatography /gæs ,krəʊ.mə'tɒɡ.rə.fi/ *noun*, **C2**

★(Chem) a method for separating and analyzing volatile mixtures: ***Gas chromatography** identifies chemical components.*

Gay-Lussac's law /,geɪ lu:'sæks lɔ:/ *noun*, **C2**

★(Physics) at constant volume, pressure is proportional to temperature: *Pressure cookers operate by **Gay-Lussac's law**.*

GCD /dʒi: si: di:/ *noun*, **C1**

★(Math) greatest Common Divisor; the largest positive integer that divides all given numbers evenly: *The **GCD** of 12 and 18 is 6.*

GCF /,dʒi: si: 'ef/ *noun*, **C1**

★(Math) greatest Common Factor; the largest factor that divides each term of an expression: *The **GCF** of $6x^2$ and $4x$ is $2x$.*

gene /dʒi:n/ *noun*, **B2**

★(Biology) a discrete chromosomal segment of DNA that encodes a functional RNA molecule or protein and

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constitutes the basic unit of heredity: *The **gene** encoding insulin is located on the short arm of human chromosome 11.*

gene therapy /dʒiːn ˈθerəpi/ *noun*, **C2**

★(Biology) clinical strategy in which functional genetic material is delivered into a patient's cells to correct a defective gene or supply a missing gene product: ***Gene therapy** using viral vectors has shown promise in treating certain hereditary blindness conditions.*

generator /ˈdʒen.ə.reɪ.tər/ *noun*, **B2**

★(Physics) a device that converts mechanical energy into electrical energy: *A backup **generator** provides power during outages.*

genetic engineering /dʒəˈnetɪk ˌendʒɪˈnɪərɪŋ/ *noun*, **C1**

★(Biology) the direct manipulation of an organism's genome using molecular biology techniques to introduce, delete, or modify specific genes: ***Genetic engineering** enabled the bacterial production of recombinant human insulin.*

genome /ˈdʒiːnəʊm/ *noun*, **C1**

★(Biology) the complete complement of genetic material—including all chromosomal and extrachromosomal DNA—present in a cell or organism: *The sequencing of the human **genome** revealed approximately 20,000 protein-coding genes.*

genotype /ˈdʒenəˌtaɪp/ *noun*, **C1**

★(Biology) the specific allelic composition of an individual at one or more genetic loci, representing its inherited genetic information: *An individual with **genotype** Aa is heterozygous and carries both dominant and recessive alleles.*

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geometric sequence /ˌdʒiːə'metɪk 'siːkwəns/ *noun*, **C2**

★(Math) a sequence where consecutive terms have a constant ratio called the common ratio: *In 2, 6, 18, 54, the common ratio $r = 3$.*

germination /ˌdʒɜːrmɪ'neɪʃən/ *noun*, **C1**

★(Biology) the resumption of metabolic activity and growth by a dormant seed following imbibition of water, typically requiring adequate temperature, moisture, and oxygen: *Seed **germination** is triggered by the activation of hydrolytic enzymes that mobilize stored reserves.*

glycolysis /glai'kɒləsɪs/ *noun*, **C2**

★(Biology) glycolysis is the universal first stage of glucose catabolism in all living cells: *Even when oxygen levels are low during intense exercise, muscle cells can rely on **glycolysis** to rapidly break down glucose and generate the energy needed for short bursts of activity.*

golgi body /'gɒʊldʒi 'bɒdi/ *noun*, **C2**

★(Biology) a stack of flattened, membrane-bound sacs that receives proteins and lipids from the ER, modifies them, and packages them into vesicles for export: *The **Golgi body** sorts and dispatches secretory proteins to their final destinations.*

gravitational PE /ˌgræv.ɪ'teɪ.ʃən.əl ˌpiː 'iː/ *noun*, **C2**

★(Physics) potential energy due to position in a gravitational field ($PE = mgh$): *Water held in a dam has **gravitational potential energy**.*

gravity /'græv.i.ti/ *noun*, **B2**

★(Physics) The attractive force between masses; Earth pulls objects at 9.8 m/s²: **Gravity** keeps the planets in orbit around the sun.

greenhouse effect /'gri:nhaʊs i'fekt/ *noun*, **B2**

★(Biology) the absorption and re-emission of infrared radiation by greenhouse gases in the atmosphere, trapping heat and raising the planet's average surface temperature: *Anthropogenic CO₂ emissions intensify the **greenhouse effect**, accelerating climate change.*

ground /graʊnd/ *noun*, **C1**

★(Physics) a reference point with zero electric potential: *Always **ground** electrical equipment for safety.*

group /gru:p/ *noun*, **C1**

★(Chem) a vertical column in the periodic table; elements share similar properties: ***Group 1** elements are highly reactive metals.*

H

habitat /'hæbi.tæt/ *noun*, **B1**

★(Biology) the natural environment in which an organism lives and to which it is adapted, providing the resources necessary for survival and reproduction: *Deforestation destroys the **habitat** of countless tropical species.*

hemoglobin /'hi:məˌɡlɒbɪn/ *noun*, **B2**

★(Biology) an iron-containing globular protein in erythrocytes that reversibly binds oxygen, facilitating its

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transport from the lungs to metabolically active tissues:
*Each **hemoglobin** molecule can carry up to four oxygen molecules simultaneously.*

half-life /'hɑ:f laɪf/ *noun*, **B2**

★(Math) the time required for a decaying quantity to reduce to half of its initial value: *A substance with a **half-life** of 10 years reduces to 25% after 20 years.*

★(Chem) the time for half the atoms in a sample to decay: *Carbon-14 has a **half-life** of 5,730 years.*

halogen /'hæl.ə.dʒən/ *noun*, **C1**

★(Chem) group 17 elements that are highly reactive, such as F, Cl, Br: *Chlorine is a **halogen** used to disinfect water.*

harmonic /hɑ:'mɒn.ɪk/ *noun*, **C1**

★(Physics) a frequency that is an integer multiple of a fundamental frequency: *Musical **harmonics** give instruments their characteristic sound.*

hazardous waste /'hæzədəs weɪst/ *noun*, **B2**

★(Biology) any discarded material exhibiting properties of toxicity, corrosivity, reactivity, or ignitability that poses a significant risk to human health or the environment: *Biological **hazardous waste** must be autoclaved before disposal to eliminate viable pathogens.*

heart /hɑ:rt/ *noun*, **A2**

★(Biology) a hollow muscular organ composed of cardiac muscle that pumps blood through the pulmonary and systemic circuits of the cardiovascular system: *The human **heart** contracts approximately 100,000 times per day to maintain blood circulation.*

heat /hi:t/ *noun*, **A2**

★(Physics) energy transferred from a hotter to a cooler object: **Heat** flows from your hand to the cold drink.

heat capacity /hi:t kə'pæs.ɪ.ti/ *noun*, **C1**

★(Physics) the heat required to raise an object's temperature by 1°C: Larger objects have greater **heat capacity**.

heat engine /hi:t 'en.dʒɪn/ *noun*, **C1**

★(Physics) a device that converts heat energy into work: Car engines are **heat engines**.

heat of combustion /hi:t əv kəm'bʌs.tʃən/ *noun*, **C2**

★(Chem) the energy released when one mole of a substance fully burns: The **heat of combustion** of methane is high.

heat of formation /hi:t əv fɔ: 'meɪ.ʃən/ *noun*, **C2**

★(Chem) ΔH for forming one mole of a compound from its elements: Look up the **heat of formation** in thermodynamic tables.

heat transfer /hi:t 'træns.fɜ:r/ *noun*, **B2**

★(Physics) the movement of thermal energy from one place to another: **Heat transfer** occurs by conduction, convection, and radiation.

Hess's law /'hes.ɪz lɔ:/ *noun*, **C2**

★(Chem) total ΔH is independent of the path between initial and final states: **Hess's law** allows indirect enthalpy calculation.

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heterogeneous mixture /ˌhet.ə.rəʊ'dʒiː.ni.əs 'mɪks.tʃər/
noun, **C2**

★(Chem) a mixture with visibly distinct components: *Salad is a **heterogeneous mixture**.*

heterozygous /ˌhetərəʊ'zaɪgəs/*adjective*, **C2**

★(Biology) describing an individual that carries two different alleles for a particular gene at the corresponding loci on homologous chromosomes: *A **heterozygous** individual (Aa) is phenotypically dominant but can pass on the recessive allele.*

homeostasis /ˌhoʊmiəʊ'steɪsɪs/*noun*, **C1**

★(Biology) the ability of an organism or system to maintain a stable internal environment in response to fluctuating external conditions through regulatory feedback mechanisms: *The hypothalamus coordinates **homeostasis** by regulating core body temperature.*

homogeneous mixture /ˌhəʊ.mə'dʒiː.ni.əs 'mɪks.tʃər/*noun*, **C2**

★(Chem) a mixture with uniform composition throughout, like solutions: *Saltwater is a **homogeneous mixture**.*

homozygous /ˌhoʊmoʊ'zaɪgəs/*adjective*, **C2**

★(Biology) describing an individual that carries two identical alleles for a particular gene at the corresponding loci on homologous chromosomes: *A **homozygous** dominant plant (AA) transmits the dominant allele to all offspring.*

Hooke's law /'hʊks lɔː/ *noun*, **C2**

★ (Physics) the force in a spring is proportional to its extension or compression: *Hooke's law helps design suspension systems.*

horizontal asymptote /ˌhɒrɪˈzɒntl 'æsɪmtəʊt/ *noun*, **C2**

★ (Math) a horizontal line $y = b$ that the graph approaches as x tends to infinity: $f(x) = 1/x$ has a **horizontal asymptote** at $y = 0$.

horizontal shift /ˌhɒrɪˈzɒntl ʃɪft/ *noun*, **C1**

★ (Math) a transformation that moves a graph left or right: $f(x - h)$ shifts right h units: $y = (x - 2)^2$ is $y = x^2$ shifted 2 units to the right.

hormone /'hɔːrmɒn/ *noun*, **B2**

★ (Biology) a chemical messenger produced by an endocrine gland and transported via the circulatory system to target cells or organs, where it elicits a specific regulatory response: *Insulin is a peptide hormone that stimulates the uptake of glucose by muscle and adipose cells.*

hydraulics /haɪ'drɔː.lɪks/ *noun*, **C1**

★ (Physics) the use of incompressible fluids to transmit force and energy: *Construction equipment relies on hydraulics.*

hydrocarbon /ˌhaɪ.drə'kɑː.bən/ *noun*, **C1**

★ (Chem) a compound containing only carbon and hydrogen: *Petroleum contains many hydrocarbons.*

hydrogen bond /'haɪ.drə.dʒən bɒnd/ *noun*, **C1**

★ (Chem) an attraction between H and an electronegative atom (F, O, N): *Hydrogen bonds give water its high boiling point.*

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hydrolysis /haɪ'drɒl.ə.sɪs/ *noun*, **C2**

★(Chem) a reaction of a salt with water producing acidic or basic solution: *Salt **hydrolysis** affects solution pH.*

hyperbola /haɪ'pɜːbələ/ *noun*, **C1**

★(Math) a curve with two open branches where the difference of distances from two foci is constant: *The **hyperbola** $x^2/9 - y^2/4 = 1$ opens left and right.*



ideal gas /aɪ'diəl gæs/ *noun*, **C1**

★(Physics) a theoretical gas model where particles do not interact: *Real gases behave like an **ideal gas** at low pressures.*

ideal gas law /aɪ'diəl gæs lɔː/ *noun*, **C2**

★(Physics) the relationship $PV = nRT$ among pressure, volume, and temperature: *Use the **ideal gas law** to find unknown gas properties.*

identity /aɪ'dentɪti/ *noun*, **C1**

★(Math) an equation that is true for every value of the variable(s): *$(a + b)^2 = a^2 + 2ab + b^2$ is an algebraic **identity**.*

identity matrix /aɪ'dentɪti 'meɪtrɪks/ *noun*, **C2**

★(Math) a square matrix with 1s on the main diagonal and 0s elsewhere; acts like the number 1 in multiplication: *Multiplying any matrix by the **identity matrix** gives the original matrix.*

identity property /aɪ'dentɪti 'prɒpəti/ *noun*, **C2**

★(Math) adding 0 or multiplying by 1 does not change the value: $a + 0 = a$ and $a \times 1 = a$: *By the **identity property**, $7 + 0 = 7$ and $7 \times 1 = 7$.*

image /'ɪm.ɪdʒ/ *noun*, **B1**

★(Physics) a picture formed by the convergence of light rays or their extensions: *The **image** in the mirror is reversed.*

imaginary number /ɪ'mædʒɪnəri 'nʌmbər/ *noun*, **C1**

★(Math) a multiple of i where $i = \sqrt{-1}$; arises when the discriminant is negative: $\sqrt{-9} = 3i$ is an **imaginary number**.

immune system /ɪ'mjuːn 'sɪstəm/ *noun*, **B2**

★(Biology) the complex network of cells, tissues, and molecules that defends the body against infection and disease through innate and adaptive immune mechanisms: *The adaptive **immune system** mounts a targeted response against specific antigens.*

impulse /'ɪm.pʌls/ *noun*, **C2**

★(Physics) force multiplied by time; equal to change in momentum: *An airbag reduces injury by extending the **impulse** time.*

incomplete dominance /ɪnkəm'pli:t 'dɒmɪnəns/ *noun*, **C2**

★(Biology) a pattern of inheritance in which the heterozygous phenotype is intermediate between those of the two homozygous parents, indicating neither allele is fully dominant: *Crossing red and white flowered snapdragons yields pink-flowered offspring via **incomplete dominance**.*

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inconsistent system /ɪnkən'sɪstənt 'sɪstəm/ *noun*, **C2**

★(Math) a system of equations that has no solution (lines are parallel and never meet): *The **system** $x + y = 3$ and $x + y = 7$ is **inconsistent**.*

increased by /ɪn'kriːst baɪ/ *phrase*, **B1**

★(Math) a phrase meaning addition in word problems: '*x increased by 7*' translates to $x + 7$.

increasing / decreasing /ɪn'kriːsɪŋ/dɪ'kriːsɪŋ/ *adjective*, **B1**

★(Math) a function is increasing when output rises as input increases; decreasing when output falls: $f(x) = x^2$ is **decreasing** on $(-\infty, 0)$ and **increasing** on $(0, \infty)$.

increasing function /ɪn'kriːsɪŋ 'fʌŋkʃn/ *noun*, **C2**

★(Math) a function where y increases as x increases; the graph rises from left to right: $f(x) = 2x$ is an **increasing function** on all real numbers.

independent events /,ɪndɪ'pendənt ɪ'vents/ *noun*, **C1**

★(Math) events where the occurrence of one does not affect the probability of the other: *Rolling a die and flipping a coin are **independent events**.*

independent variable /,ɪndɪ'pendənt 'veəriəbl/ *noun*, **C1**

★(Math) the input variable chosen freely; typically plotted on the x -axis: *In $d = 60t$, time t is the **independent variable**.*

indicator /'ɪn.dɪ.keɪ.tər/ *noun*, **C1**

★(Chem) a substance that changes color with pH; signals titration endpoint: *Litmus is a common pH **indicator**.*

inductance /ɪn'dʌk.təns/ *noun*, **C2**

★(Physics) the ability to induce EMF when current changes: *When the current flowing through a coil changes, the coil's **inductance** causes it to generate an electromotive force that opposes that very change in current.*

inductive reasoning /ɪn'dʌktɪv 'riːzənɪŋ/ *noun*, **C2**

★(Math) forming a general conclusion from specific examples or observations: *Observing a pattern in the sequence and stating a rule uses **inductive reasoning**.*

inductor /ɪn'dʌk.tər/ *noun*, **C2**

★(Physics) a device that stores energy in a magnetic field: ***Inductors** are common in radio circuits.*

inelastic collision /ɪn.ɪ'læs.tɪk kə'liʒ.ən/ *noun*, **C2**

★(Physics) a collision where momentum is conserved but kinetic energy is lost: *Car crashes are typically **inelastic collisions**.*

inequality /ɪnɪ'kwɒlɪti/ *noun*, **B2**

★(Math) a mathematical statement comparing two expressions using $<$, $>$, $\leq$, $\geq$, or $\neq$: *The **inequality** $x + 2 > 5$ means x must be greater than 3.*

inertia /ɪ'nɜː.ʃə/ *noun*, **C2**

★(Physics) an object's resistance to changes in its state of motion: *The car's **inertia** kept it moving even after the engine stopped.*

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infinite solutions /'ɪnfɪnət sə'luːʃnz/ *phrase*, **C2**

★(Math) a situation where every value of the variable satisfies the equation; the equation is an identity: $2(x+1) = 2x+2$ has **infinite solutions** because both sides are always equal.

infinity /ɪn'fɪnɪti/ *noun*, **B2**

★(Math) a concept representing an unbounded quantity; denoted by the symbol ∞ : The interval $(5, \infty)$ means all real numbers greater than 5.

informed consent /ɪn'fɔːrmd kən'sent/ *noun*, **C2**

★(Biology) the voluntary agreement of a competent individual to participate in research or undergo a medical procedure, given after receiving full disclosure of relevant information and risks: Obtaining **informed consent** is a mandatory ethical requirement for all clinical trial enrolment.

infrared /ɪn.frə'red/ *noun*, **C2**

★(Physics) EM waves with wavelengths longer than red light: **Infrared** cameras detect heat.

infrasound /ɪn.frə.saʊnd/ *noun*, **C2**

★(Physics) sound with frequencies below 20 Hz, inaudible to humans: Elephants communicate using **infrasound**.

inhibitor /ɪn'hɪb.ɪ.tər/ *noun*, **C2**

★(Chem) a substance that slows down a chemical reaction: Preservatives are **inhibitors** of food spoilage.

insulator /ɪn.sjə.leɪ.tər/ *noun*, **C1**

★(Physics) a material that doesn't allow current to flow, such as rubber: Rubber gloves act as an **insulator**.

insulator (thermal) /'ɪn.sjə.leɪ.tər/ *noun*, **C1**

★(Physics) a material that does not conduct heat well: *Wool is a good **thermal insulator**.*

integer /'ɪntɪdʒər/ *noun*, **C1**

★(Math) a whole number that can be positive, negative, or zero, with no fractional part: *The numbers -3, 0, and 7 are all **integers**.*

intensity /ɪn'ten.sɪ.ti/ *noun*, **C1**

★(Physics) sound energy per unit area per second: *Sound **intensity** decreases with distance.*

interference /,ɪn.tə'fɪə.rəns/ *noun*, **C1**

★(Physics) the combination of two or more waves: *Wave **interference** produces colorful patterns in soap bubbles.*

internal energy /ɪn'tɜː.nəl 'en.ə.dʒi/ *noun*, **C2**

★(Physics) the total energy of particles within a system: ***Internal energy** changes as the gas heats up.*

interpolation /ɪn,tɜːpə'leɪʃən/ *noun*, **C2**

★(Math) using a model to estimate values within the range of the observed data: ***Interpolation** finds the temperature at a time between measurements.*

intersection /,ɪntə'sekʃən/ *noun*, **C1**

★(Math) the set of elements common to two or more sets, written $A \cap B$: $\{1,2\} \cap \{2,3\} = \{2\}$.

interval /'ɪntəvəl/ *noun*, **C1**

★(Math) a set of real numbers lying between two boundary values: *The **interval** $[2, 5)$ contains all real x such that $2 \leq x < 5$.*

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interval notation /'ɪntəvəl nəʊ'teɪʃən/ *noun*, **C2**

★(Math) a compact way to write a set of real numbers between two values using brackets and parentheses: $[2, 5]$ means $2 \leq x < 5$; the bracket includes 2 but the parenthesis excludes 5.

inverse /'ɪnvɜːs/ *noun*, **C1**

★(Math) a value that, when combined with another under an operation, yields the identity element: The additive **inverse** of 5 is -5, since $5 + (-5) = 0$.

inverse function /'ɪnvɜːs 'fʌŋkʃən/ *noun*, **C2**

★(Math) a function f^{-1} that reverses the action of f ; if $f(a) = b$ then $f^{-1}(b) = a$: If $f(x) = 2x + 1$, the **inverse function** is $f^{-1}(x) = (x - 1)/2$.

inverse matrix /'ɪnvɜːs 'meɪtrɪks/ *noun*, **C2**

★(Math) the matrix A^{-1} such that $A \times A^{-1} = I$; exists only when the determinant is non-zero: Find A^{-1} to solve the matrix equation $AX = B$.

inverse variation /'ɪnvɜːs ,veəri'eɪʃən/ *noun*, **C2**

★(Math) a relationship where $y = k/x$; as x increases, y decreases proportionally: If $xy = 12$, then $y = 12/x$ shows **inverse variation**.

ion /'aɪ.ən/ *noun*, **C1**

★(Chem) an atom or molecule with a net electric charge: Sodium **ions** are essential for nerve function.

ionic bond /aɪ'ɒn.ɪk bɒnd/ *noun*, **C2**

★(Chem) a bond formed by attraction between positive and negative ions: Table salt has **ionic bonds** between Na^+ and Cl^- .

ionization energy /ˌaɪ.ə.naɪˈzeɪ.ʃən 'en.ə.dʒi/ *noun*, **C2**

★(Chem) the energy needed to remove an electron from a gaseous atom: *Noble gases have high **ionization energy**.*

irrational number /ɪ'ræʃənəl 'nʌmbər/ *noun*, **C1**

★(Math) a number that cannot be written as a simple fraction; its decimal never terminates or repeats: π and $\sqrt{2}$ are **irrational numbers**.

isolate /'aɪsəleɪt/ *verb*, **C1**

★(Math) to get the variable alone on one side of an equation: **Isolate** x in $3x = 12$ by dividing both sides by 3.

isolate the variable /'aɪsəleɪt ðə 'veəriəbl/ *phrase*, **C2**

★(Math) to rearrange an equation so that one variable stands alone on one side: **Isolate** x in $3x + 6 = 15$: subtract 6, then divide by 3 to get $x = 3$.

isomer /'aɪ.sə.mər/ *noun*, **C2**

★(Chem) compounds with the same formula but different structure: *Butane and isobutane are **isomers**.*

isotope /'aɪ.sə.təʊp/ *noun*, **C1**

★(Chem) atoms of the same element with different numbers of neutrons: *Carbon-14 is a radioactive **isotope** of carbon.*

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Kelvin scale /'kel.vɪn skeɪl/ *noun*, **C1**

★(Physics) an absolute temperature scale starting at absolute zero (0 K): *Scientists prefer the **Kelvin scale** for absolute measurements.*

ketone /'ki:.təʊn/ *noun*, **C2**

★(Chem) an organic compound with a C=O between two carbons: *Acetone is a common **ketone** used as a solvent.*

kidney /'kɪdni/ *noun*, **B2**

★(Biology) one of a pair of bean-shaped organs in the retroperitoneal space that filters blood plasma, selectively reabsorbs essential solutes, and excretes metabolic waste as urine: *Each **kidney** contains approximately one million nephrons that perform blood filtration.*

kinematics /,kɪn.ə'mæt.ɪks/ *noun*, **C1**

★(Physics) The study of motion without considering its causes (forces): ***Kinematics** helps engineers analyze car crash scenarios.*

kinetic energy /kɪ'net.ɪk 'en.ə.dʒi/ *noun*, **C1**

★(Physics) energy due to motion ($KE = \frac{1}{2}mv^2$): *A moving car has significant **kinetic energy**.*

kinetic friction /kɪ'net.ɪk 'frɪk.ʃən/ *noun*, **C2**

★(Physics) friction that opposes motion of a sliding object: ***Kinetic friction** slows the sliding block on the floor.*

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kinetic theory of gases /kɪ'net.ɪk 'θiə.ri əv 'gæs.ɪz/

noun, C2

★(Physics) a model explaining gas behavior through particle motion: *Kinetic theory of gases* explains pressure and temperature.

Kirchhoff's current law /'kɪrk.hɒfs 'kʌr.ənt lɔː/ *noun, C2*

★(Physics) the current entering a node equals the current leaving: *Kirchhoff's current law* analyzes complex circuits.

Kirchhoff's voltage law /'kɪrk.hɒfs 'vəʊl.tɪdʒ lɔː/ *noun, C2*

★(Physics) the sum of voltages in any closed loop equals zero: Apply *Kirchhoff's voltage law* around the loop.

Krebs cycle /krɛbz 'saɪkəl/ *noun, C2*

★(Biology) a cyclic series of reactions in the mitochondrial matrix that oxidizes acetyl-CoA to CO₂, generating NADH, FADH₂, and GTP as products: *Each turn of the Krebs cycle* yields three NADH, one FADH₂, one GTP, and two CO₂.

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laminar flow /'læm.ɪ.nər fləʊ/ *noun, C1*

★(Physics) smooth fluid flow with parallel layers: *Laminar flow* is desirable in many engineering applications.

large intestine /lɑːrdʒ ɪn'testɪn/ *noun, B2*

★(Biology) the terminal segment of the alimentary canal that reabsorbs water and electrolytes from undigested residue and consolidates it into feces for excretion: *The commensal microbiota of the large intestine* ferments undigested dietary fiber.

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laser /'leɪ.zər/ *noun*, **B1**

★(Physics) a device producing intense, coherent, single-wavelength light: ***Lasers** are used in surgery and barcode scanners.*

latent heat /'leɪ.tənt hi:t/ *noun*, **C1**

★(Physics) heat used to change phase without changing temperature: ***Latent heat** causes ice to melt at 0°C.*

latent heat of fusion /'leɪ.tənt hi:t əv 'fju:zən/ *noun*, **C2**

★(Physics) heat needed to change a solid to a liquid: *The **latent heat of fusion** of ice is 334 J/g.*

latent heat of vaporization

/'leɪ.tənt hi:t əv ,veɪ.pər.əɪ'zeɪ.jən/ *noun*, **C2**

★(Physics) heat needed to change a liquid to a gas: *Sweating cools the body using **latent heat of vaporization**.*

law of conservation of mass /lɔ: əv ,kɒn.sə'veɪ.jən əv mæs/ *noun*, **C1**

★(Chem) total mass of reactants equals total mass of products: *The **law of conservation** of mass is fundamental.*

law of reflection /lɔ: əv rɪ'flek.jən/ *noun*, **C1**

★(Physics) the angle of incidence equals the angle of reflection: *The **law of reflection** applies to all mirrors.*

LCM /el si: em/ *noun*, **B2**

★(Math) least Common Multiple; the smallest positive integer divisible by two or more given numbers: *The **LCM** of 4 and 6 is 12.*

Le Chatelier's principle /lə ʃæt.ə'ljeɪz 'prɪn.sɪ.pəl/ *noun*, **C2**

★(Chem) a system at equilibrium will shift to counteract disturbances: ***Le Chatelier's principle** predicts reaction shifts.*

leading coefficient /'liːdɪŋ ,kəʊɪ'fɪjnt/ *noun*, **C2**

★(Math) the coefficient of the term with the highest degree in a polynomial: *In $-3x^4 + x^2 - 5$, the **leading coefficient** is -3.*

leaf /liːf/ *noun*, **A2**

★(Biology) the primary photosynthetic organ of a vascular plant, typically a flattened, chlorophyll- rich structure optimized for light capture and gas exchange: *The spongy mesophyll of the **leaf** contains large intercellular air spaces that facilitate CO₂ diffusion.*

lenz's law /'lents.ɪz lɔː/ *noun*, **C2**

★(Physics) induced current opposes the change in flux that produced it: ***Lenz's law** determines the direction of induced current.*

lever /'liː.vər/ *noun*, **B2**

★(Physics) a simple machine using moments to amplify force: *A crowbar acts as a **lever** to lift heavy objects.*

Lewis structure /'luː.ɪs 'strʌk.tʃər/ *noun*, **C2**

★(Chem) a diagram showing bonds and lone electron pairs in molecules: *Draw the **Lewis structure** of CO₂.*

like terms /laɪk tɜːmz/ *noun*, **C1**

★(Math) terms that have the same variable part and can be combined by adding or subtracting: *$4x$ and $-2x$ are **like terms**; they combine to give $2x$.*

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limit /'lɪmɪt/ *noun*, **C2**

★(Math) the value that a function approaches as the input approaches a specific value: *The **limit** of $f(x) = 2x$ as $x \rightarrow 3$ is 6.*

limiting reagent /'lɪm.ɪ.tɪŋ ri'eɪ.dʒənt/ *noun*, **C2**

★(Chem) the reactant that runs out first and stops the reaction: *Identify the **limiting reagent** to find maximum product.*

line of best fit /laɪn əv best fɪt/ *noun*, **C1**

★(Math) a straight line drawn through a scatter plot that best represents the trend in the data: *Use the **line of best fit** to predict future values in the data set.*

linear equation /'lɪniər ɪ'kweɪʒən/ *noun*, **C1**

★(Math) an equation whose graph is a straight line; variables have degree 1: *$y = 2x + 3$ is a **linear equation**.*

linear programming /'lɪniər 'prəʊgræmɪŋ/ *noun*, **C1**

★(Math) a method for finding the maximum or minimum of an objective function subject to linear constraints: ***Linear programming** is used to maximize profit given limited resources.*

linked genes /lɪŋkt dʒi:nz/ *noun*, **C1**

★(Biology) genes located on the same chromosome that tend to be inherited together because they do not assort independently during meiosis: ***Linked genes** violate Mendel's law of independent assortment.*

lipid /'lɪp.ɪd/ *noun*, **C1**

★(Biology) a diverse class of hydrophobic organic molecules—including fats, phospholipids, and steroids—that serve as energy reserves, membrane components, and

signalling molecules: **Phospholipids** are the principal structural components of biological membranes.

★(Chem) a water-insoluble biomolecule including fats and oils: **Lipids** store energy in the body.

literal equation /'lɪtərəl ɪ'kweɪʃən/ noun, C2

★(Math) an equation involving two or more variables that can be solved for one variable in terms of the others: *The formula $A = lw$ is a **literal equation**; solve for l to get $l = A/w$.*

liver /'lɪvər/ noun, B2

★(Biology) the largest internal organ, performing essential metabolic functions including bile synthesis, glycogen storage, lipid and protein metabolism, and blood detoxification: *The **liver** detoxifies ingested alcohol and metabolizes bilirubin derived from red blood cell breakdown.*

logarithm /'lɒɡərɪðəm/ noun, C1

★(Math) the inverse of exponentiation; $\log_b(x) = y$ means $b^y = x$: $\log_2(8) = 3$ because $2^3 = 8$.

logarithm properties /'lɒɡərɪðəm 'prɒpətɪz/ noun, C2

★(Math) rules for simplifying logarithms: Product $\log(ab) = \log a + \log b$; Quotient; Power: $\log(a^n) = n \cdot \log a$: Use **log properties** to write $\log(8)$ as $3 \cdot \log(2)$.

London dispersion /'lʌn.dən dɪ'spɜː.ʃən/ noun, C2

★(Chem) the weakest intermolecular force, from temporary polarities: **London dispersion forces** exist in all molecules.

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longitudinal wave /ˌlɒŋ.gɪˈtʃuː.dɪ.nəl weɪv/ *noun*, **C1**

★(Physics) a wave where particle vibration is parallel to its direction of travel: *Sound waves are **longitudinal waves**.*

loudness /ˈlaʊd.nəs/ *noun*, **B2**

★(Physics) the perception of sound intensity: *Turn down the **loudness** to avoid hearing damage.*

lung /lʌŋ/ *noun*, **B1**

★(Biology) a paired, spongy organ situated within the thoracic cavity that provides an extensive surface area for efficient gas exchange between inhaled air and the bloodstream: *Pulmonary surfactant reduces alveolar surface tension, preventing **lung** collapse during exhalation.*

lysosome /ˈlaɪsəˌsɒm/ *noun*, **C2**

★(Biology) a membrane-bound organelle containing an array of hydrolytic enzymes that digest macromolecules, cellular debris, and invading pathogens: ***Lysosomes** fuse with phagosomes to degrade engulfed bacteria.*

M

magnetic field /mægˈnet.ɪk fiːld/ *noun*, **C1**

★(Physics) the region around a magnet or current where magnetic forces act: *Earth's **magnetic field** protects us from solar radiation.*

magnetic flux /mægˈnet.ɪk flʌks/ *noun*, **C2**

★(Physics) the amount of magnetic field passing through an area: ***Magnetic flux** is measured in weber.*

magnification /ˌmæɡ.nɪ.fɪˈkeɪ.ʃən/ *noun*, **C1**

★(Physics) the ratio of image size to object size: *The microscope has a **magnification** of 100x.*

mapping diagram /ˈmæpɪŋ ˈdaɪəɡræm/ *noun*, **C2**

★(Math) a diagram using arrows to show how each element of the domain maps to an element of the range: *Use a **mapping diagram** to check if each input has only one output.*

mass /mæs/ *noun*, **B1**

★(Physics) the amount of matter in an object; a measure of inertia: *The **mass** of the box is 5 kilograms.*

mass number /mæs ˈnʌm.bər/ *noun*, **C2**

★(Chem) the total number of protons and neutrons in the nucleus: *The **mass number** of common carbon is 12.*

matrix /ˈmeɪtrɪks/ *noun*, **C1**

★(Math) a rectangular array of numbers arranged in rows and columns: *A 2×3 **matrix** has 2 rows and 3 columns, containing 6 elements.*

maximum value /ˈmæksɪməm ˈvæljuː/ *noun*, **C1**

★(Math) the greatest y-value of a function; occurs at the vertex when $a < 0$: *The **maximum value** of $f(x) = -x^2 + 4$ is 4, at $x = 0$.*

mean /miːn/ *noun*, **B2**

★(Math) the average of a data set; calculated by dividing the sum by the number of values: *The **mean** of $\{2, 4, 6\} = 12/3 = 4$.*

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mechanical advantage /mə'kæn.ɪ.kəl əd'vɑːn.tɪdʒ/
noun, C2

★(Physics) the ratio of output force to input force in a machine: *Pulleys provide **mechanical advantage** when lifting loads.*

mechanics /mə'kæn.ɪks/ *noun, C1*

★(Physics) the branch of physics that studies motion and the forces acting on objects: ***Mechanics** is the foundation of engineering studies.*

median /'miːdiən/ *noun, B2*

★(Math) the middle value of a data set arranged in order; the average of two middle values if even: *The **median** of {1, 3, 5, 7, 9} is 5.*

meiosis /maɪ'əʊsɪs/ *noun, C1*

★(Biology) a specialized two-division process that reduces the chromosome number by half, producing four genetically distinct haploid cells from a single diploid parent cell: ***Meiosis** generates gametes containing half the somatic chromosome number.*

melting point /'mel.tɪŋ pɔɪnt/ *noun, B2*

★(Physics) the temperature at which a solid changes to a liquid: *Ice has a **melting point** of 0°C.*

Mendel's laws /'mɛndəlz lɔːz/ *noun, C2*

★(Biology) the two foundational principles of heredity formulated by Gregor Mendel: the Law of Segregation and the Law of Independent Assortment: ***Mendel's laws** accurately predict phenotypic ratios in monohybrid and dihybrid crosses.*

metabolism /mə'tæbəˌlɪzəm/ *noun*, **B2**

★(Biology) the complete set of enzyme-catalyzed chemical reactions occurring within a living organism that sustain life, encompassing both anabolic and catabolic pathways: *Regular aerobic exercise, such as running or swimming, can significantly boost a person's resting **metabolism**, allowing their body to burn more calories even when at rest.*

metal /'met.əl/ *noun*, **A2**

★(Chem) an element that conducts electricity and heat well; shiny and malleable: *Copper is an excellent **metal** for wiring.*

metallic bond /mə'tæl.ɪk bɒnd/ *noun*, **C2**

★(Chem) a bond from free electrons surrounding positive metal ions: ***Metallic bonds** make metals conduct electricity.*

metalloid /'met.əˌlɔɪd/ *noun*, **C1**

★(Chem) an element with properties of both metals and nonmetals, such as silicon: *Silicon is a **metalloid** used in computer chips.*

microbiology /ˌmaɪkrəʊbaɪˈɒlədʒi/ *noun*, **C1**

★(Biology) the branch of biology that investigates microorganisms, bacteria, viruses, fungi, algae, and protozoa, including their physiology, ecology, genetics, and pathological effects: ***Microbiology** has been pivotal in the development of antibiotics and live attenuated vaccines.*

microscope /ˌmaɪkrəˌskəʊp/ *noun*, **B1**

★(Biology) an optical or electronic instrument that magnifies objects too small to be resolved by the unaided eye, enabling detailed examination of cells and

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microorganisms: A *transmission electron microscope* can resolve structures at the sub-nanometer scale.

microwave /'maɪ.krə.weɪv/ *noun*, **A2**

★(Physics) EM waves between radio waves and infrared: **Microwaves** are used in ovens and Wi-Fi.

midpoint /'mɪdpɔɪnt/ *noun*, **C1**

★(Math) the point exactly halfway between two given points; $M = ((x_1+x_2)/2, (y_1+y_2)/2)$: The maximum value of $f(x) = -x^2 + 4$ is 4, at $x = 0$.

minimum value /'mɪnɪməm 'vælju:/ *noun*, **C1**

★(Math) smallest y-value of a function; occurs at the vertex when $a > 0$: The **minimum value** of $f(x) = x^2 - 2$ is -2, at $x = 0$.

mitochondria /,maɪtə'kɒndrɪə/ *noun*, **C2**

★(Biology) double membrane-bound organelles that generate most of the cell's ATP supply through the process of aerobic cellular respiration: **Mitochondria** are often described as the powerhouses of the cell.

mitosis /maɪ'toʊsɪs/ *noun*, **C1**

★(Biology) a type of nuclear division that produces two daughter nuclei genetically identical to the parent nucleus, underpinning growth, tissue repair, and asexual reproduction: **Mitosis** proceeds through the sequential stages of prophase, metaphase, anaphase, and telophase.

mixture /'mɪks.tʃər/ *noun*, **B1**

★(Chem) a combination of two or more substances without chemical reaction: Air is a **mixture** of gases.

mode /məʊd/ *noun*, **C1**

★(Biology) the value that occurs most frequently in a data set: *The **mode** of {2, 3, 3, 5, 7} is 3.*

molality /məʊ'læl.i.ti/ *noun*, **C2**

★(Chem) moles of solute per kilogram of solvent: ***Molality** stays constant with temperature changes.*

molar mass /'məʊ.lər mæs/ *noun*, **C2**

★(Chem) the mass of one mole of a substance, in grams per mole: *The **molar mass** of water is 18 g/mol.*

molarity /məʊ'lær.i.ti/ *noun*, **C2**

★(Chem) moles of solute per liter of solution (mol/L): *Prepare a 0.1 M solution of NaCl.*

mole /məʊl/ *noun*, **C1**

★(Physics) a unit equal to 6.022×10^{23} particles: *One **mole** of carbon weighs 12 grams.*

★(Chem) a unit equal to 6.022×10^{23} particles (Avogadro's number): *One **mole** of carbon weighs 12 grams.*

mole fraction /məʊl 'fræk.ʃən/ *noun*, **C2**

★(Chem) the ratio of moles of one component to total moles in a mixture: *Calculate the **mole fraction** of nitrogen in air.*

molecular formula /mə'lek.jə.lər 'fɔː.mjə.lə/ *noun*, **C1**

★(Chem) a formula showing the actual number of each atom in a molecule: *The **molecular formula** of glucose is $C_6H_{12}O_6$.*

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molecular geometry /mə'lek.jə.lər dʒi'ɒm.i.tri/ *noun*, **C2**

★(Chem) the 3D shape of a molecule, such as linear or tetrahedral: *Methane has tetrahedral **molecular geometry**.*

molecule /'mɒl.i.kju:l/ *noun*, **B1**

★(Chem) a group of atoms bonded by covalent bonds: A water **molecule** contains two hydrogens and one oxygen.

moment of inertia /'məʊ.mənt əv i'nɜː.jə/ *noun*, **C2**

★(Physics) resistance to rotation, depending on mass and its distribution: A flywheel has high **moment of inertia**.

momentum /mə'men.təm/ *noun*, **C1**

★(Physics) the product of an object's mass and velocity ($p = mv$): A heavy truck has more **momentum** than a small car at the same speed.

monomer /'mɒn.ə.mər/ *noun*, **C2**

★(Biology) a small molecular subunit that can be covalently joined to other identical or similar monomers to form a larger polymer: *Glucose is the **monomer** from which the polysaccharides starch and cellulose are assembled*

★(Chem) a small unit that joins to form a polymer: *Ethylene is the **monomer** of polyethylene.*

monomial /'mɒnəʊ'miəl/ *noun*, **C2**

★(Math) a polynomial with exactly one term: $5x^3$ and $-7y$ are **monomials**.

motor /'məʊ.tər/ *noun*, **B1**

★(Physics) a device that converts electrical energy into mechanical energy: *Electric **motors** power most household appliances.*

multimeter /'mʌl.tɪ.mi:tər/ *noun*, **C2**

★(Physics) a device combining ammeter, voltmeter, and ohmmeter functions: *Every electronics technician owns a multimeter.*

multiple /'mʌltɪpl/ *noun*, **B2**

★(Math) the result of multiplying a number by any positive integer: *The **multiples** of 4 are 4, 8, 12, 16, and so on.*

multiple alleles /'mʌltɪpəl ə'li:lz/ *noun*, **C2**

★(Biology) a condition in which three or more allelic variants exist for a single gene locus within a population, although any diploid individual carries only two: *The ABO blood group system is governed by three **multiple alleles**: I^A , I^B , and i .*

multiplication /,mʌltɪplɪ'keɪʃən/ *noun*, **A2**

★(Math) the process of adding a number to itself a specified number of times: ***Multiplication** of 6 by 4 equals 24.*

multiplicative inverse /,mʌltɪ'plɪkətɪv ɪn'vɜ:s/ *noun*, **C2**

★(Math) the number that, when multiplied by the original, gives 1; the reciprocal: *The **multiplicative inverse** of 4 is $1/4$, since $4 \times (1/4) = 1$.*

multiplicity /,mʌltɪ'plɪsɪti/ *noun*, **C2**

★(Math) the number of times a particular root appears as a factor of a polynomial: *In $(x - 2)^3$, the root $x = 2$ has **multiplicity** 3.*

muscle system /'mʌsəl 'sɪstəm/ *noun*, **C1**

★(Biology) the organ system comprising skeletal, smooth, and cardiac muscle tissues that generates the forces

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responsible for locomotion, posture maintenance, and visceral organ function: *The **muscle system** works in concert with the skeleton to produce coordinated, controlled movements.*

mutation /mju:'teɪʃən/ *noun*, **C1**

★(Biology) a heritable alteration in the nucleotide sequence of an organism's DNA that may affect gene expression and result in a change in phenotype: *A single-nucleotide **mutation** in the haemoglobin gene causes sickle-cell anaemia.*

mutualism /'mju:tʃuəlɪzəm/ *noun*, **C1**

★(Biology) a form of symbiosis in which both interacting species derive a net benefit, often resulting in mutual dependence: *The **mutualism** between legumes and nitrogen-fixing Rhizobium bacteria enriches soil fertility.*

mutually exclusive /'mju:tʃuəli ɪk'sklu:ʃɪv/ *adjective*, **C1**

★(Math) events that cannot happen at the same time; $P(A \cap B) = 0$: *Rolling an odd number and rolling an even number are **mutually exclusive**.*

N

natural logarithm /'nætʃərəl 'lɒɡərɪðəm/ *noun*, **C2**

★(Math) the logarithm with base e, written $\ln(x)$; $\ln(e) = 1$: *Solve $e^x = 5$ by taking the **natural logarithm**: $x = \ln(5) \approx 1.609$.*

natural selection /'nætʃərəl sɪ'lekʃən/ *noun*, **B2**

★(Biology) the mechanism of evolution proposed by Charles Darwin in which heritable traits that enhance reproductive success become more prevalent in successive

generations: **Natural selection** has refined the sonar system of bats over millions of generations.

nervous system /'nɜːrvəs 'sɪstəm/ noun, **B2**

★(Biology) the organ system comprising the central nervous system (brain and spinal cord) and the peripheral nervous system, which coordinates bodily functions via electrical and chemical signals: *The **nervous system** integrates sensory information and coordinates appropriate motor responses.*

net force /net fɔːs/ noun, **C2**

★(Physics) the vector sum of all forces acting on an object: *When the **net force** is zero, the object is in equilibrium.*

neuron /'njʊərɒn/ noun, **C1**

★(Biology) a specialised, electrically excitable cell that constitutes the functional unit of the nervous system, transmitting information via action potentials and neurotransmitters: *Sensory **neurons** convey signals from peripheral receptors to the central nervous system.*

neurotransmitter /,njʊərɒʊtrænz'mɪtər/ noun, **C2**

★(Biology) a chemical messenger released from the presynaptic terminal of a neuron that diffuses across the synaptic cleft and binds to receptors on the postsynaptic cell: *Acetylcholine is a **neurotransmitter** that triggers skeletal muscle contraction at the neuromuscular junction.*

neutralization /,njuː.trəl.aɪ'zeɪ.ʃən/ noun, **C1**

★(Chem) a reaction between acid and base producing salt and water: *Antacids work by **neutralization**.*

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neutron /'njuː.trən/ *noun*, **C1**

★(Chem) a neutral particle in the nucleus that determines atomic mass: **Neutrons** help stabilize the atomic nucleus.

Newton's first law /'njuː.tənz fɜːst lɔː/ *noun*, **C2**

★(Physics) an object stays at rest or in uniform motion unless acted on by a net force: **Newton's first law** explains why seatbelts are essential.

Newton's second law /'njuː.tənz 'sek.ənd lɔː/ *noun*, **C2**

★(Physics) net force equals mass times acceleration ($F = ma$): **Newton's second law** is fundamental to engineering design.

Newton's third law /'njuː.tənz θɜːd lɔː/ *noun*, **C2**

★(Physics) for every action there is an equal and opposite reaction: Rocket propulsion demonstrates **Newton's third law**.

niche /niːʃ/ *noun*, **C1**

★(Biology) the multidimensional role of a species within an ecosystem, encompassing its resource use, spatial range, temporal activity, and interactions with other organisms: The ecological **niche** of the barn owl includes nocturnal predation on small mammals.

no solution /nəʊ sə'luːʃən/ *phrase*, **B2**

★(Math) a situation where no value of the variable satisfies the equation; the equation is a contradiction: $x + 1 = x + 2$ has **no solution** because it simplifies to $1 = 2$.

noble gas /'nəʊ.bəl ɡæs/ *noun*, **C1**

★(Chem) group 18 elements with full outer shells; very unreactive: Helium is a **noble gas** used in balloons.

node /nəʊd/ *noun*, **C2**

★(Physics) a point in a standing wave with zero amplitude (no vibration): **Nodes** are points of no motion on a vibrating string.

nonmetal /ˌnɒn'met.əl/ *noun*, **C1**

★(Chem) an element that doesn't conduct electricity; often gaseous or brittle: *Oxygen and nitrogen are **nonmetals**.*

nonpolar covalent bond /ˌnɒn'pəʊ.lər ˌkəʊ'veɪ.lənt bɒnd/ *noun*, **C2**

★(Chem) a covalent bond with equal electron sharing: *Oxygen gas has a **nonpolar covalent bond**.*

normal distribution /'nɔːml ˌdɪstrɪ'bjuːʃn/ *noun*, **C2**

★(Math) a symmetric, bell-shaped probability distribution centered at the mean: *Test scores often follow a **normal distribution** with most scores near the mean.*

normal force /'nɔː.məl fɔːs/ *noun*, **C2**

★(Physics) the force a surface exerts perpendicular to an object resting on it: *The **normal force** balances the book's weight on the table.*

nuclear fission /'njuː.kli.ər 'fɪʃ.ən/ *noun*, **C2**

★(Chem) the splitting of a heavy nucleus into lighter nuclei plus energy: **Nuclear fission** powers most nuclear reactors.

nuclear fusion /'njuː.kli.ər 'fjuː.zən/ *noun*, **C2**

★(Chem) the combining of light nuclei into heavier ones, releasing energy: **Nuclear fusion** powers the sun.

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nucleic acid /njuːˌkleɪɪk 'æsɪd/ *noun*, **C2**

★(Biology) a biopolymer, either DNA or RNA, composed of nucleotide monomers that stores, transmits, and expresses genetic information: ***Nucleic acids** direct the synthesis of every protein produced by a living cell.*

nucleus /'njuːˌkli.əs/ *noun*, **C1**

★(Chem) the dense central core of an atom containing protons and neutrons: *Most of an atom's mass is in the **nucleus**.*
 ★(Biology) the membrane- enclosed organelle in eukaryotic cells that houses the chromosomal DNA and directs cellular activity: *The **nucleus** contains the genetic blueprint required for protein synthesis.*

number line /'nʌmbər laɪn/ *noun*, **B1**

★(Math) a straight line with numbers placed at equal intervals, used to show position and order: *Mark -3 and 5 on the **number line** to compare them.*

number pattern /'nʌmbər 'pætərn/ *phrase*, **B1**

★(Math) a sequence of numbers that follows a predictable rule or relationship: *1, 4, 9, 16, 25 is a **number pattern** of perfect squares.*

numerator /'njuːməreɪtər/ *noun*, **B2**

★(Math) the top number in a fraction, showing how many parts are taken: *In 5/8, the **numerator** is 5.*

O

objective function /əbˈdʒektɪv ˈfʌŋkʃən/ *noun*, **C2**

★(Math) the function to be maximized or minimized in a linear programming problem: *In the problem, the **objective function** $P = 3x + 2y$ is maximized.*

octet rule /ˈɒk.tet ruːl/ *noun*, **C2**

★(Chem) Atoms tend to react to have eight electrons in their outer shell.: *The **octet rule** explains many chemical bonds.*

odd number /ɒd ˈnʌmbər/ *noun*, **A2**

★(Math) an integer that leaves a remainder of 1 when divided by 2: 3, 5, and 7 are **odd numbers**.

ohm /əʊm/ *noun*, **C2**

★(Physics) the SI unit of electrical resistance: *The resistor was marked 100 **ohms**.*

ohmmeter /ˈəʊm.miː.tər/ *noun*, **C2**

★(Physics) an instrument for measuring electrical resistance: *An **ohmmeter** checks if the wire is broken.*

Ohm's law /ˈəʊmz lɔː/ *noun*, **C2**

★(Physics) Voltage equals current times resistance ($V = IR$): *Use **Ohm's law** to calculate circuit values.*

open circle /ˈəʊpən ˈsɜːkl/ *noun*, **C2**

★(Math) a hollow dot on a number line graph indicating that the endpoint is not included (strict inequality): *Graph $x > 3$ with an **open circle** at 3.*

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open circuit /ˌəʊ.pən 'sɜː.kɪt/ *noun*, **C2**

★(Physics) a broken circuit where no current flows: *A blown fuse creates an **open circuit**.*

optics /'ɒp.tɪks/ *noun*, **C1**

★(Physics) the branch of physics studying the properties and behavior of light: ***Optics** is essential in camera and lens design.*

order of operations /'ɔːdər əv ˌɒrə'reɪʃənz/ *noun*, **C2**

★(Math) the agreed sequence for evaluating expressions: parentheses, exponents, multiply/ divide, add/ subtract: *Apply **order of operations** to $3 + 4 \times 2$: do $4 \times 2 = 8$ first, then $3 + 8 = 11$.*

ordered pair /'ɔːdəd peər/ *noun*, **C1**

★(Math) a pair of numbers (x, y) that identifies a unique point on the coordinate plane: *The **ordered pair** (4, -1) locates a point 4 right and 1 down from the origin.*

organelle /ˌɔːrgə'næl/ *noun*, **C1**

★(Biology) a membrane-bound subunit within a eukaryotic cell that performs a specific, essential biological function: *The mitochondrion is an **organelle** responsible for ATP synthesis.*

Organic Chemistry /ɔː'gæn.ɪk 'kɛm.ɪ.stri/ *noun*, **C1**

★(Chem) the branch of chemistry studying carbon compounds: ***Organic chemistry** is fundamental to medicine.*

origin /'ɒrɪdʒɪn/ *noun*, **B2**

★(Math) the point (0, 0) where the x-axis and y-axis intersect on the coordinate plane: *All distances on the coordinate plane are measured from the **origin**.*

osmosis /ɒz'moʊsɪs/ *noun*, **C1**

★(Biology) the passive movement of water molecules across a selectively permeable membrane from a region of lower solute concentration to one of higher solute concentration: ***Osmosis** draws water into root hair cells when soil water potential exceeds that of the cytoplasm.*

★(Chem) the flow of solvent through a semipermeable membrane: ***Osmosis** allows plants to absorb water from soil.*

osmotic pressure /ɒz'mɒt.ɪk 'pref.ər/ *noun*, **C2**

★(Chem) the pressure needed to stop osmosis: ***Osmotic pressure** is important in cell biology.*

output /'aʊtpʊt/ *noun*, **B2**

★(Math) the value produced by a function for a given input: *For $f(x) = 2x + 1$, an input of $x = 4$ gives an **output** of 9.*

overtone /'əʊ.və.təʊn/ *noun*, **C2**

★(Physics) a frequency higher than the fundamental, giving sound its quality: ***Overtones** give each instrument its unique timbre.*

oxidation /,ɒk.sɪ'deɪ.ʃən/ *noun*, **C1**

★(Chem) the loss of electrons; oxidation number increases: *Iron undergoes **oxidation** when it rusts.*

oxidation number /,ɒk.sɪ'deɪ.ʃən 'nʌm.bər/ *noun*, **C2**

★(Chem) a value indicating an atom's oxidation state for redox reactions: *Find the **oxidation number** of sulfur in H_2SO_4 .*

oxidation state /,ɒk.sɪ'deɪ.ʃən steɪt/ *noun*, **C2**

★(Chem) a number representing an atom's oxidation level: *The **oxidation state** of oxygen is usually -2.*

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oxidation-reduction /ˌɒk.sɪˈdeɪ.ʃən rɪˈdʌk.ʃən/ *noun*, **C2**

★(Chem) a reaction involving electron transfer (Redox):
*Rusting is an **oxidation-reduction** reaction.*

oxidizing agent /ˌɒk.sɪ.daɪ.zɪŋ ˈeɪ.dʒənt/ *noun*, **C2**

★(Chem) a substance that gains electrons, causing oxidation in another: *Oxygen is a common **oxidizing agent**.*

P

pancreas /ˈpæŋkriəs/ *noun*, **C1**

★(Biology) a mixed exocrine–endocrine gland that secretes digestive enzymes into the duodenum and releases insulin and glucagon into the blood to regulate glucose homeostasis: *The exocrine **pancreas** secretes lipase, amylase, and proteases that digest dietary macronutrients.*

parabola /pəˈræbələ/ *noun*, **C1**

★(Math) the U-shaped or inverted U-shaped graph of a quadratic function: *The **parabola** opens upward when the leading coefficient is positive.*

parabola (conic) /pəˈræbələ/ *noun*, **C2**

★(Math) the set of points equidistant from a fixed point (focus) and a fixed line (directrix): *The satellite dish is shaped like a **parabola**.*

parallel circuit /ˈpær.ə.lel ˈsɜː.kɪt/ *noun*, **C1**

★(Physics) a circuit where components connect across the same voltage: *Home wiring uses **parallel circuits**.*

parallel lines /'pærəlel laɪnz/ *noun*, **C1**

★(Math) lines in the same plane that never intersect and have the same slope: *Lines with slopes $m = 3$ are parallel to each other.*

parameter /pə'ræmɪtər/ *noun*, **C1**

★(Math) a constant in a mathematical model or equation that can be changed to produce different results: *In $y = a(x-h)^2+k$, the **parameters** a , h , and k control the parabola's shape and position.*

parasitism /'pærəsi'tɪzəm/ *noun*, **C1**

★(Biology) a form of symbiosis in which one organism (the parasite) benefits at the direct expense of the other (the host), often causing harm without immediate death: *The tapeworm exemplifies **parasitism** by absorbing nutrients directly from the host intestine.*

parent function /'peərənt 'fʌŋkʃən/ *noun*, **C2**

★(Math) the simplest form of a function family, before any transformations are applied: *$y = x^2$ is the **parent function** of all quadratic functions.*

Pascal's principle /pæ'skælz 'prɪn.sɪ.pəl/ *noun*, **C2**

★(Physics) pressure applied to a confined fluid transmits equally throughout: *Hydraulic brakes use **Pascal's principle**.*

Pascal's triangle /'pæskəlz 'traɪæŋgl/ *noun*, **C2**

★(Math) a triangular array of numbers where each row gives the binomial coefficients: *Row 3 of **Pascal's triangle** is 1, 3, 3, 1 — the coefficients of $(a+b)^3$.*

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passive transport /'pæsɪv 'trænsɒːrt/ *noun*, **C1**

★(Biology) the movement of substances across a biological membrane along their concentration or electrochemical gradient without expenditure of metabolic energy: *Facilitated diffusion is a form of **passive transport** mediated by integral membrane proteins.*

pedigree /'pedɪɡriː/ *noun*, **C2**

★(Biology) a diagrammatic representation of family relationships used by geneticists to trace the inheritance of specific traits across multiple generations: ***Pedigree analysis** revealed that the disorder followed an autosomal recessive inheritance pattern.*

pendulum /'pen.dʒə.ləm/ *noun*, **C1**

★(Physics) a weight suspended by a string that swings under gravity: *Grandfather clocks use a **pendulum** to keep time.*

percent /pə'sent/ *noun*, **A2**

★(Math) a ratio expressed as parts per 100, written with the symbol %: *45 **percent** means 45 out of every 100.*

percent change /pə'sent tʃeɪndʒ/ *noun*, **B2**

★(Math) the ratio of the change in a quantity to the original amount, expressed as a percent: ***Percent change** = [(new – old) / old] × 100.*

percent decrease /pə'sent dɪ'kriːs/ *noun*, **B2**

★(Math) the percentage by which a quantity falls: *[(old – new) / old] × 100%: A price falling from \$80 to \$68 is a 15% **percent decrease**.*

percent increase /pə'sent ɪn'kri:s/ *noun*, **B2**

★(Math) the percentage by which a quantity grows: [(new – old) / old] × 100%: *A price rising from \$50 to \$60 is a 20% **percent increase**.*

percent yield /pə'sent ji:ld/ *noun*, **C1**

★(Chem) the ratio of actual yield to theoretical yield times 100: *The **percent yield** was only 75 percent.*

perfect square /'pɜ:fɪkt skweər/ *noun*, **C1**

★(Math) a number whose square root is a whole integer: *25 is a **perfect square** because its square root is 5.*

perfect square trinomial /'pɜ:fɪkt skweər traɪ'nəʊmiəl/ *noun*, **C2**

★(Math) a trinomial of the form $a^2 \pm 2ab + b^2$ that factors as $(a \pm b)^2$: $x^2 + 6x + 9 = (x + 3)^2$ is a **perfect square trinomial**.

period /'pɪəriəd/ *noun*, **B1**

★(Chem) a horizontal row in the periodic table: *Sodium and chlorine are in the same period.*

★(Math) the horizontal length of one complete cycle of a periodic function: *The **period** of $y = \sin(x)$ is 2π (one full cycle).*

★(Physics) the time taken for one complete oscillation cycle: *The **period** of a clock pendulum is exactly one second.*

periodic table /,pɪə.ri.'bd.ɪk 'teɪ.bəl/ *noun*, **C1**

★(Chem) a chart organizing elements by atomic number and chemical properties: *Chemists use the **periodic table** daily.*

permutation /,pɜ:mjʊ'teɪʃən/ *noun*, **C1**

★(Math) an arrangement of objects where order matters; $P(n, r) = n!/(n-r)!$: *The number of ways to arrange 3 books from 5 is $P(5,3) = 60$.*

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perpendicular lines /ˌpɜːpənˈdɪkjələr laɪnz/ *noun*, **C1**

C

★(Math) lines that intersect at a right angle (90°); their slopes multiply to give -1 : *Lines with slopes 2 and $-1/2$ are **perpendicular lines**.*

E

pH scale /ˌpiːˈeɪtʃ skeɪl/ *noun*, **C1**

F

★(Chem) a scale measuring acidity from 0-14; 7 is neutral: *Pure water has a pH of 7 on the **pH scale**.*

G

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phase /feɪz/ *noun*, **B2**

I

★(Physics) the position in a wave's cycle at a given moment: *Two waves in **phase** reinforce each other.*

J

K

phase change /feɪz tʃeɪndʒ/ *noun*, **C1**

L

★(Physics) the transformation of matter between solid, liquid, and gas: *Boiling water undergoes a **phase change**.*

M

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phase shift /feɪz ʃɪft/ *noun*, **C2**

O

★(Math) the horizontal translation of a trigonometric graph: *$y = \sin(x - \pi/2)$ has a **phase shift** of $\pi/2$ units to the right.*

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phenotype /ˈfiːnəˌtaɪp/ *noun*, **C1**

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★(Biology) the observable physical, biochemical, and physiological characteristics of an organism, arising from the interaction of its genotype with the environment: *Coat color in Labrador retrievers is a **phenotype** determined by two independently assorting gene pairs.*

U

phloem /ˈfloʊɛm/ *noun*, **C1**

V

W

★(Biology) a complex vascular tissue composed of sieve-tube elements and companion cells that translocate photosynthetically produced assimilates from source to

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sink tissues: *Sucrose synthesized in leaves is loaded into **phloem** sieve tubes for distribution to roots and fruits.*

photon /'fəʊ.tɒn/ *noun*, **C1**

★(Physics) a particle of light energy with $E = hf$: *Solar cells convert **photons** into electrical energy.*

photosynthesis /ˌfəʊtəʊ'sɪnθəsis/ *noun*, **C1**

★(Biology) the process by which photoautotrophs use light energy, water, and carbon dioxide to synthesize organic compounds, principally glucose, and release oxygen as a byproduct: ***Photosynthesis** proceeds via the light- dependent reactions and the light-independent Calvin cycle.*

phototropism /ˌfəʊtəʊ'trɒpɪzəm/ *noun*, **C2**

★(Biology) a directional growth response of a plant organ toward (positive) or away from (negative) a light source, mediated by asymmetric auxin distribution: *Shoot **phototropism** ensures that leaves are oriented for maximum light capture.*

piecewise function /'pi:swaɪz 'fʌŋkʃn/ *noun*, **C2**

★(Math) a function defined by different rules over different intervals of the domain: $f(x) = x$ if $x \geq 0$, and $f(x) = -x$ if $x < 0$ is the absolute value as a **piecewise function**.

pitch /pɪtʃ/ *noun*, **B2**

★(Physics) the perception of sound frequency; high or low tone: *Female voices generally have a higher **pitch**.*

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place value /pleɪs 'væljuː/ *noun*, **C1**

C

★(Math) the value of a digit based on its position in a number: *In 3,456, the digit 4 is in the hundreds place, so its **value** is 400.*

E

plant hormone /plænt 'hɔːrməʊn/ *noun*, **C2**

F

★(Biology) a signaling molecule synthesized in one region of a plant and transported to another where, at low concentrations, it regulates growth and developmental responses: *Auxins are **plant hormones** that promote cell elongation in response to unilateral light.*

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plasma /'plæzmə/ *noun*, **B2**

K

★(Biology) the pale-yellow, acellular liquid component of blood in which erythrocytes, leucocytes, platelets, proteins, and dissolved substances are suspended: ***Plasma** transports clotting factors, antibodies, and nutrients throughout the circulatory system.*

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plastic /'plæstɪk/ *noun*, **A2**

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★(Chem) a synthetic polymer moldable by heat or pressure: ***Plastic** bottles are recyclable.*

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plotting points /'plɒtɪŋ pɔɪnts/ *noun*, **C2**

S

★(Math) marking the location of ordered pairs on the coordinate plane: ***Plot the points** (2, 3) and (-1, 4) on the coordinate plane.*

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point-slope form /pɔɪnt sləʊp fɔːm/ *noun*, **C2**

V

★(Math) the form $y - y_1 = m(x - x_1)$, used when a point and slope are known: *With slope 2 through (1, 4): $y - 4 = 2(x - 1)$.*

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polar covalent bond /ˈpəʊ.lər ˌkəʊ'veɪ.lənt bɒnd/ *noun*, **C2**

★(Chem) a covalent bond with unequal electron sharing: *Water has **polar covalent bonds**.*

polarization /ˌpəʊ.lər.aɪ'zeɪ.ʃən/ *noun*, **C2**

★(Physics) restricting wave vibrations to a single plane: *Polarized sunglasses reduce glare; 3D glasses in modern movie theaters use the principle of light **polarization** to filter different images into each eye, creating the illusion of three-dimensional depth.*

pollen /'pɒlən/ *noun*, **B1**

★(Biology) the powdery mass of male gametophytes produced by the anthers of seed plants, each grain containing the sperm cells required for fertilization: ***Pollen** grains are adapted for dispersal by wind, water, or animal pollinators.*

pollination /ˌpɒlə'neɪʃən/ *noun*, **C1**

★(Biology) the transfer of pollen from a stamen to the receptive stigma of the same or another flower, a prerequisite for fertilization and seed development: ***Cross-pollination** between plants promotes genetic diversity within a population.*

polymer /'pɒlɪmər/ *noun*, **C1**

★(Biology) a large macromolecule consisting of many repeating monomer units linked by covalent bonds, exhibiting properties distinct from its constituent monomers: *DNA is a biological **polymer** composed of nucleotide monomers.*

★(Chem) a large molecule formed by repeating monomer units: *Plastic is a synthetic **polymer**.*

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polymer (synthetic) /ˈpɒl.ɪ.mər/ *noun*, **C2**

★(Chem) a human-made polymer such as plastic or nylon:
Synthetic polymers are everywhere in modern life.

Polymerase Chain Reaction, PCR

/pəˈlɪməˌreɪz tʃeɪn rɪˈækʃən/ *noun*, **C2**

★(Biology) an in vitro technique that exponentially amplifies a defined DNA sequence through repeated cycles of denaturation, primer annealing, and enzymatic extension: *PCR is routinely used in diagnostic laboratories to detect pathogen-specific DNA.*

polynomial /ˌpɒlɪˈnəʊmiəl/ *noun*, **C1**

★(Math) an expression with one or more terms involving variables raised to non-negative integer powers: $3x^2 - 5x + 2$ is a **polynomial** with three terms.

population /ˌpɒpjuˈleɪʃən/ *noun*, **B1**

★(Biology) a group of individuals of the same species inhabiting a defined area at a given time and capable of interbreeding: *The **population** of grey wolves in Yellowstone has expanded since their reintroduction in 1995.*

potential energy /pəˈten.ʃəl ˈen.ə.dʒi/ *noun*, **C1**

★(Physics) stored energy based on position or condition: *A stretched bow stores **potential energy**.*

power /ˈpaʊər/ *noun*, **B1**

★(Math) the result of raising a base to an exponent; also refers to the exponent itself: *4 to the **power** of 3 equals 64.*

★(Physics) the rate of doing work or transferring energy ($P = W/t$): *The engine has a **power** output of 200 horsepower.*

precipitation reaction /prɪˌsɪp.ɪˈteɪ.ʃən rɪˈæk.ʃən/ *noun*, **C2**

★(Chem) a reaction producing an insoluble solid (precipitate): *Mixing the two solutions caused a **precipitation reaction**.*

predation /prəˈdeɪʃən/ *noun*, **C1**

★(Biology) a biological interaction in which one organism (the predator) kills and consumes another (the prey), exerting selective pressure on both populations: *The reintroduction of wolves to Yellowstone altered elk behavior through **predation**.*

pressure /ˈpreʃ.ər/ *noun*, **C1**

★(Physics) force per unit area ($P = F/A$): *Tire **pressure** should be checked regularly.*

prime factorization /praɪm ˈfæktəraɪˈzeɪʃən/ *noun*, **C2**

★(Math) expressing a number as a product of its prime factors: *The **prime factorization** of 60 is $2^2 \times 3 \times 5$.*

prime number /praɪm ˈnʌmbər/ *noun*, **C1**

★(Math) a number greater than 1 that has exactly two factors: 1 and itself: *7 is a **prime number** because only 1 and 7 divide it evenly.*

prism /ˈprɪz.əm/ *noun*, **C1**

★(Physics) a transparent triangular object used to refract and separate light: *A **prism** splits sunlight into a rainbow of colors.*

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probability /ˌprɒbəˈbɪlɪti/ *noun*, **B2**

★(Math) the likelihood of an event occurring; $P(\text{event}) = \frac{\text{favorable outcomes}}{\text{total outcomes}}$: *The **probability** of rolling a 3 on a fair die is 1/6.*

E

producer /prəˈdjuːsər/ *noun*, **B2**

★(Biology) an autotrophic organism that synthesises organic compounds from inorganic substances using solar or chemical energy, forming the base of every food web: *Phytoplankton are the primary **producers** that sustain virtually all marine food webs.*

J

product /ˈprɒdʌkt/ *noun*, **B1**

★(Math) the result of multiplying two or more numbers together: *The **product** of 6 and 4 is 24.*

L

★(Chem) a substance formed by a chemical reaction, shown on the right: *Water is a **product** of combustion.*

N

profit /ˈprɒfɪt/ *noun*, **B1**

★(Math) the financial gain when revenue exceeds cost: *The shop made a **profit** of \$200 after selling 50 items.*

P

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projectile motion /prəˈdʒek.taɪl ˈməʊ.ʃən/ *noun*, **C2**

★(Physics) curved- path motion under the influence of gravity: *A basketball shot follows **projectile motion**.*

S

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prokaryote /prɒˈkæriəʊt/ *noun*, **C2**

★(Biology) a unicellular organism lacking a membrane-bound nucleus and membrane-enclosed organelles, whose genetic material resides as a circular chromosome in the cytoplasm: *Bacteria and archaea are the two domains of **prokaryotes**.*

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proof /pruːf/ *noun*, **C1**

★(Math) a logical argument showing that a mathematical statement is true: *Provide a formal **proof** that the sum of two even numbers is always even.*

proportion /prə'pɔːʃən/ *noun*, **B2**

★(Math) an equation stating that two ratios are equal, written as $a/b = c/d$: *Solve the **proportion** $3/4 = x/12$ to find x .*

proportion method /prə'pɔːʃən 'meθəd/ *noun*, **C2**

★(Math) solving problems by setting up an equation stating that two ratios are equal: *Use the **proportion method**: $3/4 = x/20$ to find $x = 15$.*

protein /'prəʊ.tiːn/ *noun*, **B2**

★(Chem) polymers of amino acids serving as structural and enzymatic molecules: ***Proteins** are essential for muscle growth.*

★(Biology) a macromolecule composed of amino acid chains folded into specific three-dimensional conformations that confer enzymatic, structural, regulatory, and transport functions: *Collagen is a structural **protein** that provides tensile strength to connective tissue.*

proton /'prəʊ.tən/ *noun*, **C1**

★(Chem) a positively charged particle in the nucleus that defines the element: *Hydrogen has only one **proton** in its nucleus.*

pure substance /pjʊə 'sʌb.stəns/ *noun*, **C2**

★(Chem) a material with a constant composition and properties: *Distilled water is a **pure substance**.*

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Pythagorean identity /paɪˌθæɡəˈriːən aɪˈdentəti/ *noun*, **C2**

★(Math) the trigonometric identity $\sin^2\theta + \cos^2\theta = 1$ for all values of θ : *Use the **Pythagorean identity** to find $\sin \theta$ when $\cos \theta$ is known.*

Pythagorean theorem /paɪˌθæɡəˈriːən ˈθiərəm/ *noun*, **C2**

★(Math) in a right triangle, the square of the hypotenuse equals the sum of the squares of the other two sides: *Use $a^2 + b^2 = c^2$ to find the missing side of a right triangle.*



Quadrant /ˈkwɒdrənt/ *noun*, **C1**

★(Math) one of the four regions of the coordinate plane separated by the x- and y- axes: *The point (3, -2) lies in **Quadrant IV** (positive x, negative y).*

quadratic formula /kwɒˈdrætik ˈfɔːmjʊlə/ *noun*, **C2**

★(Math) the formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ used to solve $ax^2 + bx + c = 0$: *Apply the **quadratic formula** to solve $2x^2 - 5x + 2 = 0$.*

quadratic function /kwɒˈdrætik/ *noun*, **C2**

★(Math) a function of the form $f(x) = ax^2 + bx + c$ where $a \neq 0$; its graph is a parabola: *$f(x) = 2x^2 - 3x + 1$ is a **quadratic function**.*

quotient /ˈkwɒʃjənt/ *noun*, **C1**

★(Math) the result of dividing one number by another: *The **quotient** of 20 and 4 is 5.*

R

radian /ˈreɪdiən/ *noun*, **C1**

★(Math) a unit of angle measure equal to the angle subtended by an arc equal to the radius; π radians = 180° :
 Convert 180° to **radians**: $180^\circ \times (\pi/180) = \pi$ radians.

radiation /ˌreɪ.dɪˈeɪ.ʃən/ *noun*, **B2**

★(Physics) heat transfer by electromagnetic waves, requiring no medium: *The sun's heat reaches Earth by radiation.*

radical /ˈrædɪkəl/ *noun*, **C1**

★(Math) an expression involving a root symbol ($\sqrt{}$); the radicand is the number under the sign: $\sqrt{25} = 5$ is a **radical** expression.

radicand /ˈrædɪkænd/ *noun*, **C2**

★(Math) the number or expression placed under the radical sign: In $\sqrt{x+5}$, the **radicand** is $x+5$.

radio wave /ˈreɪ.di.əʊ weɪv/ *noun*, **C1**

★(Physics) the lowest-frequency electromagnetic waves, used for communication: **Radio waves** carry signals to your phone.

Radioactive decay /ˌreɪ.di.əʊˈæk.tɪv dɪˈkeɪ/ *noun*, **C1**

★(Chem) the process by which unstable nuclei transform to become stable: **Radioactive decay** produces radiation over time.

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radioactive isotope /ˌreɪ.di.əʊ'æk.tɪv 'aɪ.sə.təʊp/ *noun*, **C1**

★(Chem) an isotope with an unstable nucleus that emits radiation: *Medical scans use **radioactive isotopes**.*

radioactivity /ˌreɪ.di.əʊ.æk'tɪv.ɪ.ti/ *noun*, **C1**

★(Chem) spontaneous emission of radiation from unstable nuclei: *Uranium exhibits natural **radioactivity**.*

radius /'reɪdiəs/ *noun*, **B2**

★(Math) the distance from the center of a circle to any point on its circumference: *A circle with **radius** 6 has diameter 12.*

range /reɪndʒ/ *noun*, **B2**

★(Math) the set of all possible output (y) values produced by a function: *The **range** of $f(x) = x^2$ is all non-negative real numbers.*

★ the difference between the maximum and minimum values in a data set: *The **range** of {2, 5, 9} is $9 - 2 = 7$.*

rarefaction /ˌreə.ɪ'fæk.ʃən/ *noun*, **C2**

★(Physics) a region where particles are spread apart in a longitudinal wave: ***Rarefaction** follows compression in a sound wave.*

rate of change /reɪt əv tʃeɪndʒ/ *noun*, **C1**

★(Math) the amount one quantity changes relative to a unit change in another; equivalent to slope: *A **rate of change** of 5 means y increases by 5 for every 1-unit increase in x.*

ratio /'reɪʃiəʊ/ *noun*, **B2**

★ (Math) a comparison of two quantities showing how many times one contains the other: *The **ratio** of boys to girls in the class is 3:4.*

rational exponent /'ræʃənəl ɪk'spəʊnənt/ *noun*, **C2**

★ (Math) a fractional exponent; $a^{(m/n)}$ = the n th root of a raised to the m : $8^{(2/3)} = (\sqrt[3]{8})^2 = 2^2 = 4$.

rational expression /'ræʃənəl ɪk'spreʃən/ *noun*, **C2**

★ (Math) a fraction whose numerator and denominator are polynomials: $(x^2+1)/(x-3)$ is a **rational expression**, undefined when $x = 3$.

rational number /'ræʃənəl 'nʌmbər/ *noun*, **C1**

★ (Math) any number that can be expressed as a fraction p/q where p, q are integers and $q \neq 0$: $0.75 = 3/4$ is a **rational number**.

Rational Root Theorem /'ræʃənəl ru:t 'θiərəm / *noun*, **C2**

★ (Math) the possible rational roots of a polynomial are $\pm(\text{factors of the constant})/(\text{factors of leading coefficient})$: *Apply the **Rational Root Theorem** to list the possible rational roots of $2x^3 - 5x + 3$.*

rationalize /'ræʃənəlaɪz/ *verb*, **C1**

★ (Math) to rewrite a fraction so the denominator contains no radical expressions: **Rationalize** $1/\sqrt{3}$ by multiplying by $\sqrt{3}/\sqrt{3}$ to get $\sqrt{3}/3$.

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ray /reɪ/ *noun*, **B2**

★(Physics) a line showing the direction of light, perpendicular to the wavefront: *A laser produces a thin **ray** of light.*

reactant /ri'æk.tənt/ *noun*, **C1**

★(Chem) a starting substance in a chemical reaction, shown on the left: ***Reactants** combine to form products.*

reaction rate /ri'æk.fən reɪt/ *noun*, **C1**

★(Chem) the speed of a chemical reaction, measured by concentration change over time: *Temperature affects **reaction rate**.*

real image /rɪəl 'ɪm.ɪdʒ/ *noun*, **C1**

★(Physics) an image formed by actually converging rays; can be projected on a screen: *A projector forms a **real image** on the screen.*

real number /rɪəl 'nʌmbər/ *noun*, **C1**

★(Math) any number on the number line, including all rational and irrational numbers: *Every point on the number line represents a **real number**.*

rearranging a formula /,ri:ə'reɪndʒɪŋ/ *verb*, **C2**

★(Math) rewriting a formula to isolate a different variable on one side: ***Rearrange** $v = u + at$ to solve for t : $t = (v - u)/a$.*

recessive /rɪ'sɛsɪv/ *adjective*, **C1**

★(Biology) describing an allele whose phenotypic effect is masked by the dominant allele in heterozygous individuals and is expressed only in the homozygous state: *Albinism*

results from inheriting two copies of a **recessive** allele affecting melanin production.

reciprocal /rɪ'sɪprəkəl/ *noun*, **C1**

★(Math) the multiplicative inverse of a number; flipping a fraction upside down: *The **reciprocal** of $3/4$ is $4/3$, since $(3/4) \times (4/3) = 1$.*

reducing agent /rɪ'djuː.sɪŋ 'eɪ.dʒənt/ *noun*, **C1**

★(Chem) a substance that loses electrons, causing reduction in another: *Hydrogen is a strong **reducing agent**.*

reduction /rɪ'dʌk.fən/ *noun*, **C1**

★(Chem) the gain of electrons; oxidation number decreases: *Copper ions are reduced to copper metal.*

reference angle /'refərəns 'æŋɡl/ *noun*, **C2**

★(Math) the acute angle formed between the terminal side of an angle and the x-axis: *$y = -f(x)$ reflects the graph over the x-axis.*

★(Physics) the bouncing back of a wave when it strikes an obstacle: *Mirror reflection follows the law of reflection.*

reflexive property /rɪ'fleksɪv 'prɒpəti/ *noun*, **C2**

★(Math) a number or expression is equal to itself: $a = a$: *By the **reflexive property**, $x^2 + 1 = x^2 + 1$ is always true.*

refraction /rɪ'fræk.fən/ *noun*, **C1**

★(Physics) the change in wave direction as it passes between different media: ***Refraction** makes a pencil appear bent in water.*

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refrigeration /rɪˈfrɪdʒ.əˈreɪ.ʃən/ *noun*, **B2**

★(Physics) the process of removing heat to maintain a low temperature: **Refrigeration** keeps food from spoiling.

regression line /rɪˈɡreʃən laɪn/ *noun*, **C1**

★(Math) the line that best fits a set of data points in a scatter plot, minimizing the total squared distances: *Use the **regression line** to predict future values from the trend.*

remainder /rɪˈmeɪndər/ *noun*, **C1**

★(Math) the amount left over after division when the dividend is not evenly divisible: $17 \div 5 = 3$ **remainder** 2.

remainder theorem /rɪˈmeɪndər ˈθɪərəm/ *noun*, **C2**

★(Math) when $f(x)$ is divided by $(x - c)$, the remainder equals $f(c)$: *Find $f(2)$ to get the **remainder** when $f(x)$ is divided by $(x - 2)$.*

replication /ˌrɛplɪˈkeɪʃən/ *noun*, **C1**

★(Biology) the enzymatic process by which a cell produces two identical copies of its DNA from a single template, following a semiconservative mechanism: *DNA **replication** must be completed with high fidelity before mitosis can proceed.*

reproductive system /ˌriːprəˈdʌktɪv ˈsɪstəm/ *noun*, **C1**

★(Biology) the organ system responsible for producing gametes, enabling fertilization, and—in viviparous species—supporting gestation and birth of offspring: *The **reproductive system** is regulated by gonadal and pituitary hormones.*

restriction enzyme /rɪˈstrɪkʃən ˈɛnzaɪm/ *noun*, **C2**

★(Biology) a bacterial endonuclease that cleaves double-stranded DNA at or near a specific, short palindromic recognition sequence, generating defined fragments used

in cloning: *EcoRI* is a **restriction enzyme** that cuts DNA at the sequence 5'-GAATTC-3'.

resultant /rɪˈzʌl.tənt/ *noun*, **C1**

★(Physics) the single vector obtained by combining multiple vectors: *The **resultant** of two equal opposite forces is zero.*

Ribonucleic acid, RNA /ˌraɪboʊnjuːˌkleɪk 'æsaɪd/ *noun*, **C1**

★(Biology) a single-stranded polynucleotide transcribed from a DNA template that participates in protein synthesis, gene regulation, and catalytic activity: *Messenger **RNA** carries the genetic code from the nucleus to cytoplasmic ribosomes.*

ribosome /ˈraɪbəˌsəʊm/ *noun*, **C1**

★(Biology) a macromolecular complex composed of ribosomal RNA and proteins that catalyzes the translation of mRNA into polypeptide chains: ***Ribosomes** on the rough ER synthesise proteins destined for secretion.*

RMS speed /ˌɑːr.em.'es spiːd/ *noun*, **C2**

★(Physics) the root-mean-square speed of gas particles: ***RMS speed** represents the average speed of gas molecules.*

root /ruːt/ *noun*, **B1**

★(Biology) the typically subterranean organ of a vascular plant that anchors it in the substrate, absorbs water and mineral nutrients from the soil, and may store photosynthates: ***Root** hair cells maximize the surface area available for water and ion absorption.*

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root / zero /ru:t / 'ziərəʊ/ *noun*, **C2**

★(Math) a value of x that makes $f(x) = 0$; also where the graph crosses the x -axis: *The roots of $x^2 - 4 = 0$ are $x = 2$ and $x = -2$.*

rounding /'raʊndɪŋ/ *noun, verb*, **B2**

★(Math) approximating a number to a specified place value: **Round** 3.76 to one decimal place to get 3.8.

row reduction /rəʊ rɪ'dʌkʃən/ *noun*, **C2**

★(Math) a method of simplifying a matrix by applying elementary row operations to solve a system: Use **row reduction** to transform the augmented matrix into row echelon form.

rubber /'rʌb.ər/ *noun*, **A2**

★(Chem) a natural polymer (polyisoprene) with high elasticity: *Tires are made from rubber.*

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salt /sɔ:lt/ *noun*, **C1**

★(Chem) an ionic compound formed by acid-base neutralization: *Sodium chloride is a common salt.*

sample space /'sæmpl speɪs/ *noun*, **C1**

★(Math) the set of all possible outcomes of a random experiment: *The **sample space** for flipping a coin is {heads, tails}.*

saponification /sə,pɒn.i.fɪ'keɪ.jən/ *noun*, **C2**

★(Chem) a reaction of esters with a base; used to make soap: **Saponification** is used in soap production.

scalar /'skeɪ.lər/ *noun*, **C1**

★(Physics) a quantity having only magnitude, no direction (e.g., mass, temperature): *Temperature is a **scalar** quantity.*

scalar multiplication /'skeɪlər/'raɪbə,səʊm/ *noun*, **C2**

★(Math) multiplying every element of a matrix by a single number (scalar): *Multiplying matrix $[[1,2],[3,4]]$ by **scalar** 3 gives $[[3,6],[9,12]]$.*

scatter plot /'skætər plɒt/ *noun*, **C1**

★(Math) 1.a graph that displays data as individual points to show the relationship between two variables: *The **scatter plot** shows a positive correlation between study hours and test scores.*

★ a graph displaying data as individual dots to reveal patterns or trends between two variables: *Plot hours studied vs. test scores on a **scatter plot** to see the correlation.*

scientific notation /ˌsaɪəns'ɪfɪk nəʊ'teɪʃən/ *noun*, **C1**

★(Math) a way of writing very large or small numbers in the form $a \times 10^n$ where $1 \leq |a| < 10$: *3,200,000 is written as 3.2×10^6 in **scientific notation**.*

second law of thermodynamics

/ˈsek.ənd lɔː əv ˌθɜː.məʊ.dai'næm.ɪks/ *noun*, **C2**

★(Physics) heat naturally flows from hot to cold; entropy increases: *The **second law of thermodynamics** prohibits perfect engines.*

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sector area /'sektər 'eəriə/ *noun*, **C2**

★(Math) the area of a 'pie slice' of a circle; $A = \frac{1}{2}r^2\theta$ where θ is in radians: A **sector** with radius 4 and angle 1.5 radians has **area** = $\frac{1}{2}(16)(1.5) = 12$.

seed /si:d/ *noun*, **B1**

★(Biology) a mature, desiccation-tolerant plant propagule consisting of an embryo, nutritive endosperm, and a protective seed coat, capable of remaining dormant until conditions favor germination: **Seeds** may remain viable in the soil seed bank for decades before germinating.

semiconductor /'rʌb.ər/ *noun*, **C1**

★(Physics) a material with properties between conductor and insulator, such as silicon: Silicon is the basis of modern **semiconductor** technology.

sequence /'si:kwəns/ *noun*, **C1**

★(Math) an ordered list of numbers following a specific pattern or rule: The **sequence** 2, 5, 8, 11 increases by 3 each time.

series /'siəri:z/ *noun*, **C1**

★(Math) the sum of the terms of a sequence: The **series** $2 + 5 + 8 + 11$ is the sum of the arithmetic sequence.

series circuit /'siəri:z 'sɜ:.kɪt/ *noun*, **C1**

★(Physics) a circuit where components connect in a single line with one current: A **series circuit** has the same current at every point.

set /set/ *noun*, **C1**

★(Math) a well-defined collection of distinct objects or numbers: *The **set** {1, 2, 3} contains three elements.*

set-builder notation /set 'bɪldər/ *noun*, **C2**

★(Math) a notation $\{x \mid \text{condition}\}$ used to describe a set by the property its elements satisfy: $\{x \mid x > 3\}$ *is the set of all real numbers greater than 3.*

short circuit /ʃɔ:t 'sɜ:.kɪt/ *noun*, **C1**

★(Physics) a circuit with very low resistance causing dangerously high current.: *A **short circuit** can start a fire.*

sigma notation /'sɪgmə nəʊ'teɪʃən/ *noun*, **C2**

★(Math) the notation using Σ to represent the sum of a sequence of terms: $\Sigma(i=1 \text{ to } n) i = 1+2+3+\dots+n = n(n+1)/2$.

significant figures /sɪg'nɪfɪkənt 'fɪgəz/ *noun*, **C1**

★(Math) the meaningful digits in a measurement that carry precision: *3.14 has three **significant figures**.*

simple harmonic motion /'sɪm.pəl hɑ:'mɒn.ɪk 'məʊ.ʃən/ *noun*, **C2**

★(Physics) oscillating motion where restoring force is proportional to displacement: *A pendulum exhibits **simple harmonic motion**.*

simple interest /'sɪmpl 'ɪntrɪst/ *noun*, **C1**

★(Math) interest calculated only on the principal: $I = \text{Prt}$: ***Simple interest** on \$500 at 4% for 3 years = $500 \times 0.04 \times 3 = \60 .*

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simplify /'sɪmplɪfaɪ/ verb, **B1**

★(Math) to reduce an expression to its simplest form by combining like terms and removing unnecessary parts:
***Simplify** $3x + 5x - 2$ to get $8x - 2$.*

sine /saɪn/ noun, **C1**

★(Math) the ratio of the side opposite an angle to the hypotenuse in a right triangle: *In a right triangle, **sin** $30^\circ = 0.5$, meaning the opposite side is half the hypotenuse.*

single bond /'sɪŋ.gəl bɒnd/ noun, **C1**

★(Chem) a covalent bond sharing one pair of electrons:
*Methane has four **single bonds**.*

skeletal muscle /'skelɪtəl 'mʌsəl/ noun, **C1**

★(Biology) striated, voluntary muscle tissue attached to bones via tendons and innervated by somatic motor neurons, responsible for locomotion and postural control:
***Skeletal muscle** fibers contract through the sliding-filament mechanism of actin and myosin.*

skeletal system /'skelɪtəl 'sɪstəm/ noun, **C1**

★(Biology) the framework of bones, cartilage, ligaments, and tendons that provides structural support, protects internal organs, enables movement, and serves as a site of haematopoiesis: *The axial skeleton protects the brain and spinal cord, while the appendicular skeleton facilitates movement.*

slope /sləʊp/ noun, **C1**

★(Math) the measure of steepness of a line, calculated as rise divided by run: $m = (y_2 - y_1) / (x_2 - x_1)$: *The **slope** of a line through (1, 3) and (4, 9) is $m = 2$.*

slope formula /sləʊp 'fɔ:mjələ/ *noun*, **C2**

★(Math) the formula $m = (y_2 - y_1) / (x_2 - x_1)$ for finding the slope of a line through two points: *Apply the **slope formula** to find the slope through (1, 2) and (4, 8): $m = 2$.*

slope-intercept form /sləʊp 'ɪntəsept/ *noun*, **C2**

★(Math) the form $y = mx + b$, where m is the slope and b is the y -intercept: *Write the equation in **slope-intercept form**: $y = 3x - 5$.*

small intestine /smɔ:l ɪn'testɪn/ *noun*, **B2**

★(Biology) the elongated segment of the alimentary canal—comprising the duodenum, jejunum, and ileum—that is the principal site of enzymatic digestion and nutrient absorption: *Villi and microvilli of the **small intestine** create a vast absorptive surface area of $\sim 250 \text{ m}^2$.*

Snell's law /snelz lɔ:/ *noun*, **C2**

★(Physics) the relationship between angles and refractive indices in refraction: ***Snell's law** explains how lenses focus light.*

solubility /ˌsɒl.jə'bɪl.ɪ.ti/ *noun*, **C1**

★(Chem) the maximum amount of solute that dissolves in a given solvent: *Sugar has high **solubility** in hot water.*

solute /'sɒl.ju:t/ *noun*, **C1**

★(Chem) the substance being dissolved in a solution: *Salt is the **solute** in saltwater.*

solution /sə'lu:ʃən/, /sə'lu:ʃən/ *noun*, **B2**

★(Math) the value(s) of a variable that satisfy an equation or inequality: *The **solution** to $x + 2 = 5$ is $x = 3$.*

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★(Chem) a homogeneous mixture of a solute in a solvent: *Saltwater is a **solution**.*

solve /sɒlv/ verb, B1

★(Math) to find the value(s) of the variable that make an equation or inequality true: **Solve** $2x - 4 = 10$ to find $x = 7$.

solvent /'sɒl.vənt/ noun, C1

★(Chem) the substance that dissolves the solute: *Water is the most common **solvent**.*

sound /saʊnd/ noun, C1

★(Physics) a longitudinal mechanical wave that requires a medium to travel: **Sound** cannot travel through a vacuum.

speciation /ˌspiːʃi'eɪʃən/ noun, C1

★(Biology) the evolutionary process by which reproductively isolated populations diverge genetically until they constitute distinct species incapable of successful interbreeding: *Allopatric **speciation** occurred in Galápagos finches isolated on separate islands.*

species /'spiːʃiːz/ noun, B2

★(Biology) the basic taxonomic unit comprising a group of organisms sharing a common gene pool, capable of interbreeding to produce fertile offspring, and reproductively isolated from other groups: *The snow leopard (*Panthera uncia*) is a vulnerable **species** endemic to central Asian mountain ranges.*

specific heat capacity /spə'sɪf.ɪk hi:t kə'pæs.ɪ.ti/ noun, C2

★(Physics) heat required to raise 1 kg of a substance by 1°C: *Water has a **high specific heat capacity**.*

spectroscopy /spek'trɒs.kə.pi/ *noun*, **C2**

★(Chem) the study of light absorption or emission by matter: ***Spectroscopy** reveals what stars are made of.*

speed /spi:d/ *noun*, **A2**

★(Physics) the distance traveled per unit of time; a scalar quantity: *The car's **speed** was 80 km/h.*

speed of light /spi:d əv laɪt/ *noun*, **C1**

★(Physics) the speed of EM waves in vacuum, about 3×10^8 m/s: *Nothing travels faster than the **speed of light**.*

spinal cord /'spainəl kɔ:rd/ *noun*, **C1**

★(Biology) the cylindrical bundle of nervous tissue extending caudally from the brainstem through the vertebral canal, serving as the main conduit for signals between the brain and the periphery: *The **spinal cord** mediates reflex arcs that bypass the brain for rapid protective responses.*

spring constant /sprɪŋ 'kɒn.stənt/ *noun*, **C2**

★(Physics) the stiffness value (k) in Hooke's law, $F = kx$: *A stiff spring has a high **spring constant**.*

square /skweər/ *noun/verb*, **A2**

★(Math) to multiply a number by itself; the result of raising a number to the second power: *To **square** 9 means $9^2 = 81$.*

square root /skweər ru:t/ *noun*, **C1**

★(Math) a number that, when multiplied by itself, gives the original number: *The **square root** of 49 is 7, because $7 \times 7 = 49$.*

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standard deviation /'stændəd ,devi'eɪʃən/ *noun*, **C2**

★(Math) a measure of how spread-out data values are from the mean: A low **standard deviation** means data points are close to the mean.

★ the square root of the variance; measures the average spread of data from the mean: *Look up the standard electrode potential in the table.*

standard form /'stændəd fɔ:m/ *noun*, **C2**

★(Math) the form $Ax + By = C$ for linear equations, where A, B, C are integers: $3x + 2y = 12$ is in **standard form**.

standard state /'stæn.dəd steɪt/ *noun*, **C2**

★(Chem) reference state at 1 bar and 25°C (298 K): *Compare values at **standard state** conditions.*

standing wave /'stæn.dɪŋ weɪv/ *noun*, **C2**

★(Physics) a wave pattern formed by two waves traveling in opposite directions: *Guitar strings produce **standing waves** when plucked.*

static friction /'stæt.ɪk 'frɪk.ʃən/ *noun*, **C2**

★(Physics) friction that resists the start of motion in stationary objects: **Static friction** holds a parked car on a slope.

steam /sti:m/ *noun*, **A2**

★(Physics) water in its gaseous state, formed by boiling: **Steam** locomotives use boiling water for power.

Stefan-Boltzmann law /'jte.fən 'bəʊlts.mæn lɔ:/ *noun*, **C2**

★(Physics) radiated energy from a black body is proportional to temperature⁴: *The **Stefan-Boltzmann** law applies to stellar radiation.*

stem /stɛm/ *noun*, **B1**

★(Biology) the principal aerial axis of a vascular plant that provides structural support, bears leaves and reproductive structures, and contains vascular tissue for nutrient transport: *Herbaceous **stems** rely on turgor pressure for rigidity, whereas woody stems develop lignified xylem.*

stem cell /stɛm sɛl/ *noun*, **C1**

★(Biology) an undifferentiated cell with the capacity for self-renewal and the potential to differentiate into multiple specialized cell types given appropriate signals: *Haematopoietic **stem cells** in bone marrow continuously replenish the cellular components of blood.*

step function /stɛp 'fʌŋkʃən/ *noun*, **C2**

★(Math) a piecewise constant function whose graph looks like a staircase: *Postal rates that depend on weight categories form a **step function**.*

stereoisomer /ˌstɛr.i.əʊ'aɪ.sə.mər/ *noun*, **C2**

★(Chem) an isomer with the same connections but different 3D arrangement: ***Stereoisomers** can have very different properties.*

stoichiometry /stɔɪ.ki'ɒm.i.tri/ *noun*, **C2**

★(Chem) calculation of quantities in chemical reactions from balanced equations: ***Stoichiometry** predicts how much product will form.*

stomata /'stəʊmətə/ *noun*, **C2**

★(Biology) microscopic epidermal pores flanked by guard cells through which land plants exchange CO₂, O₂, and water

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vapor with the atmosphere: **Stomata** typically open in the light to admit CO_2 for photosynthesis and close in the dark.

stretch/compression /stretʃ/kəm'preʃən/ noun, C2

★(Math) a transformation that scales a graph vertically ($y = af(x)$) or horizontally: $y = 2x^2$ stretches $y = x^2$ vertically by a factor of 2.

strong acid /strɒŋ 'æs.ɪd/ noun, C2

★(Chem) an acid that fully dissociates in water, such as HCl: Hydrochloric acid is a **strong acid**.

strong base /strɒŋ beɪs/ noun, C2

★(Chem) a base that fully dissociates in water, such as NaOH: Sodium hydroxide is a **strong base**.

structural isomer /'strʌk.tʃər.əl 'aɪ.sə.mər/ noun, C2

★(Chem) an isomer with different atom connections: Pentane has three **structural isomers**.

sublimation /ˌsʌb.lɪ'meɪ.ʃən/ noun, C1

★(Physics) direct change from solid to gas, such as dry ice: Mothballs disappear by **sublimation**.

subset /'sʌbset/ noun, C1

★(Math) a set in which every element is also contained in another (larger) set: $\{1, 2\}$ is a **subset** of $\{1, 2, 3\}$.

substitute /'sʌbstɪtju:t/ verb, C1

★(Math) to replace a variable with a specific number or expression: **Substitute** $x = 2$ into $x^2 + 1$ to get $4 + 1 = 5$.

substitution method /ˌsʌbstɪ'tjuːʃən/ *noun*, **C2**

★(Math) solving a system by expressing one variable in terms of the other and substituting: *From $y = 2x$, **substitute** into $x + y = 9$ to find $x = 3$.*

substitution property /ˌsʌbstɪ'tjuːʃən/ *noun*, **C2**

★(Math) if $a = b$, then a may be replaced by b in any expression without changing the value: *If $y = 3x$, **substitute** into $x + y = 8$ using the **substitution property**.*

substrate /'sʌbstreɪt/ *noun*, **C2**

★(Biology) the specific molecule or molecules upon which an enzyme acts, binding to the active site and undergoing a chemical transformation to yield products: *Sucrose is the **substrate** for the enzyme sucrase in the small intestinal epithelium.*

subtraction /səb'trækʃən/ *noun*, **A2**

★(Math) the process of taking one number away from another: ***Subtraction** of 6 from 15 gives 9.*

succession /sək'sɛʃən/ *noun*, **C1**

★(Biology) the directional, predictable change in community composition and structure over time following disturbance or the creation of new habitat: *Primary **succession** on volcanic rock begins with lichens that weather the substrate into soil.*

sum /sʌm/ *noun*, **B1**

★(Math) the result of adding two or more numbers together: *The **sum** of 7 and 5 is 12.*

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surface chemistry /'sɜː.fɪs 'kem.i.stri/ *noun*, **C2**

★(Chem) the study of chemical phenomena at interfaces: *Surface chemistry* is key in catalysis.

surface tension /'sɜː.fɪs 'ten.ʃən/ *noun*, **C2**

★(Physics) a force at the surface of a liquid that makes it act like a membrane: *Surface tension* allows insects to walk on water.

suspension /sə'spen.ʃən/ *noun*, **C1**

★(Chem) a mixture with particles larger than colloids that settle out: *Muddy water* is a *suspension*.

symbiosis /ˌsɪmbaɪ'ʊʊsɪs/ *noun*, **C1**

★(Biology) a prolonged, intimate ecological interaction between individuals of two different species, which may be mutualistic, commensal, or parasitic: *The relationship between mycorrhizal fungi and plant roots* is a *symbiosis* of global ecological importance.

symmetry /'sɪmɪtri/ *noun*, **B2**

★(Math) a property where a figure or graph looks identical after a transformation such as a reflection: *The graph of $y = x^2$* has *symmetry* about the y-axis.

synthesis reaction /'sɪn.θə.sɪs ri'æk.ʃən/ *noun*, **C2**

★(Chem) a reaction where two substances combine to form one ($A + B \rightarrow AB$): *Forming water from hydrogen and oxygen* is a *synthesis reaction*.

synthetic division /sɪn'θetɪk dɪ'vɪʒən/ *noun*, **C2**

★(Math) a shortcut method for dividing a polynomial by a linear binomial ($x - c$): Use **synthetic division** to divide $x^3 - 6x + 5$ by $(x - 1)$.

system of equations /'sɪstəm əv ɪ'kweɪʒənz/ *noun*, **C2**

★(Math) a set of two or more equations with the same variables; the solution satisfies all equations: *The system $x + y = 10$ and $x - y = 2$ has the solution $x = 6, y = 4$.*

T

tangent /'tændʒənt/ *noun*, **C1**

★(Math) the ratio of the opposite side to the adjacent side in a right triangle; also $\tan = \sin/\cos$: **tan** $45^\circ = 1$ because the opposite and adjacent sides are equal.

taxonomy /tæk'sɒnəmi/ *noun*, **C1**

★(Biology) the branch of biology concerned with describing, naming, and classifying organisms into a hierarchical system based on shared morphological, genetic, and evolutionary characteristics: *Modern **taxonomy** increasingly relies on molecular phylogenetics to resolve evolutionary relationships.*

temperature /'tem.prə.tʃər/ *noun*, **A2**

★(Physics) a measure of the average kinetic energy of particles in matter: *The **temperature** was 25 degrees Celsius today.*

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tension /'ten.ʃən/ *noun*, **C1**

★(Physics) the pulling force transmitted along a rope or cable: *The **tension** in the bridge cables supports the deck.*

term /tɜːm/ *noun*, **C1**

★(Math) a single number, variable, or product of numbers and variables separated by + or - : *The expression $3x + 5$ has two **terms**: $3x$ and 5 .*

theorem /'θiərəm/ *noun*, **C1**

★(Math) a mathematical statement that has been proved to be true based on axioms and previously proved statements: *The Pythagorean **theorem** states $a^2 + b^2 = c^2$ for right triangles.*

theoretical yield /,θiə.rə'tɪk.əl jiːld/ *noun*, **C2**

★(Chem) the maximum product calculated from the balanced equation: *Compare actual to **theoretical yield** to measure efficiency.*

thermal conductivity /'θɜː.məl ˌkɒn.dʌk'tɪv.i.ti/ *noun*, **C2**

★(Physics) a material's ability to conduct heat: *Copper has **high thermal conductivity**.*

thermal equilibrium /'θɜː.məl ˌiː.kwɪ'lib.ri.əm/ *noun*, **C2**

★(Physics) a state where two objects share the same temperature with no heat flow: *Two objects in **thermal equilibrium** have equal temperatures.*

thermal expansion /'θɜː.məl ɪk'spæn.ʃən/ *noun*, **C2**

★(Physics) the increase in size of an object due to heating: *Bridges include gaps to allow **for thermal expansion**.*

thermochemistry /ˌθɜː.məʊˈkem.i.stri/ *noun*, **C2**

★(Chem) the study of heat changes in chemical reactions: *Thermochemistry calculates reaction heat.*

thermodynamics /ˌθɜː.məʊ.daɪˈnæm.iks/ *noun*, **C1**

★(Physics) the study of relationships among heat, work, and energy: *Thermodynamics is essential for engine design.*

thermometer /θəˈmɒm.i.tər/ *noun*, **B2**

★(Physics) an instrument for measuring temperature: *Use a thermometer to check the patient's fever.*

titration /taɪˈtreɪ.ʃən/ *noun*, **C2**

★(Chem) Measuring concentration using a known standard solution: *Use titration to find the unknown acid concentration.*

titration curve /taɪˈtreɪ.ʃən kɜːv/ *noun*, **C2**

★(Chem) a plot of pH versus volume of titrant added: *Plot a titration curve to find the equivalence point.*

torque /tɔːk/ *noun*, **C2**

★(Physics) a rotational force; force multiplied by lever-arm distance: *Use a wrench to apply torque to the bolt.*

total internal reflection /ˈtəʊ.təl ɪnˈtɜː.nəl rɪˈflek.ʃən/ *noun*, **C2**

★(Physics) light fully reflects when its angle exceeds the critical angle: *Fiber optics use total internal reflection.*

transcription /trænˈskripʃən/ *noun*, **C1**

★(Biology) the process in which RNA polymerase synthesizes a complementary RNA strand from a DNA template, transferring the genetic information of a gene

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into an RNA molecule: **Transcription** of a protein-coding gene produces a pre-mRNA that is processed before export.

transformation /ˌtrænsfəˈmeɪʃən/ noun, C1

★(Math) a change in the position, size, or shape of a graph such as a shift, stretch, or reflection: $f(x) + k$ shifts the graph of $f(x)$ upward by k units (a **transformation**).

transformer /trænsˈfɔː.mər/ noun, C1

★(Physics) a device for changing AC voltage levels: **Transformers** step down voltage from power lines for homes.

transistor /trænˈzɪs.tər/ noun, C1

★(Physics) a semiconductor device used to amplify or switch signals: Modern computers contain billions of **transistors**.

transition metal /trænˈzɪʃ.ən ˈmet.əl/ noun, C2

★(Chem)d-block elements; often colored and form multiple oxidation states: Iron is a **transition metal** essential for blood.

transitive property /ˈtrænsɪtɪv/ noun, C2

★(Math) if $a = b$ and $b = c$, then $a = c$; equality or inequality is passed through a chain: If $x = y$ and $y = 5$, then $x = 5$ by the **transitive property**.

translation /trænsˈleɪʃən/ noun, C1

★(Biology) the ribosomal process of decoding an mRNA nucleotide sequence into a specific amino acid sequence to produce a polypeptide chain: **Translation** of a 300-codon mRNA produces a polypeptide of 100 amino acid residues.

transpiration /ˌtrænspraɪˈreɪʃən/ *noun*, **C1**

★(Biology) the evaporative loss of water from the aerial surfaces of a plant, principally through stomatal pores, generating a negative pressure gradient that drives water uptake through the xylem: *Transpiration accounts for approximately 10% of the water entering the atmosphere.*

transverse wave /ˈtrænz.vɜːs weɪv/ *noun*, **C2**

★(Physics) a wave where particle vibration is perpendicular to its direction of travel: *Light is an example of a transverse wave.*

tree diagram /triː ˈdiːəgræm/ *noun*, **C1**

★(Math) a branching diagram showing all possible outcomes of a sequence of events: *Draw a tree diagram to find all outcomes when flipping two coins.*

trinomial /traɪˈnəʊmiəl/ *noun*, **C2**

★(Math) a polynomial with exactly three terms: $x^2 + 5x + 6$ is a *trinomial*.

triple bond /ˈtrɪp.əl bɒnd/ *noun*, **C2**

★(Chem) a covalent bond sharing three pairs of electrons: *Nitrogen gas has a triple bond.*

trough /trɒf/ *noun*, **C1**

★(Physics) the lowest point of a transverse wave: *The trough is where the wave dips lowest.*

turbulent flow /ˈtɜː.bjə.lənt fləʊ/ *noun*, **C2**

★(Physics) disorderly fluid flow with swirling movements: *Turbulent flow creates noise in pipes.*

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twice /ˈtwɑːs/ *adjective*, **A2**

★(Math) two times a quantity; indicates multiplication by 2: '**Twice** x ' means $2x$.

two-step equation /tuː step ɪˈkweɪʃən/ *noun*, **C2**

★(Math) an equation requiring exactly two operations to isolate the variable: Solve $2x + 3 = 11$: subtract 3, then divide by 2 to get $x = 4$.



ultrasound /ˈʌl.trə.saʊnd/ *noun*, **C1**

★(Physics) sound with frequencies above 20,000 Hz, inaudible to humans: **Ultrasound** is used in medical imaging.

ultraviolet /ˌʌl.trəˈvaɪ.ə.lət/ *noun*, **C1**

★(Physics) EM waves with wavelengths shorter than violet light: **Ultraviolet** rays can cause skin damage.

undefined slope /ˌʌndɪˈfaɪnd sləʊp/ *noun*, **C2**

★(Math) the slope of a vertical line, where the run equals zero so division is undefined: The line $x = 3$ has **undefined slope**.

uniform motion /ˈjuː.nɪ.fɔːm ˈməʊ.ʃən/ *noun*, **C2**

★(Physics) motion at constant velocity in the same direction: The train moved in **uniform motion** across the plain.

union /ˈjuːniən/ *noun*, **C1**

★(Math) the set containing all elements from two or more sets, written $A \cup B$: $\{1, 2\} \cup \{2, 3\} = \{1, 2, 3\}$.

unit circle /'juːnɪt 'sɜːkl/ *noun*, **C2**

★(Math) a circle with radius 1 centered at the origin, used to define trig functions for all angles: *On the **unit circle**, the coordinates of a point give $(\cos \theta, \sin \theta)$.*

unit rate /'juːnɪt reɪt/ *noun*, **C1**

★(Math) ratio with a denominator of 1, showing how much of one quantity corresponds to one unit of another: *60 km/h is a **unit rate**: 60 km per 1 hour.*

universal gravitation /ˌjuː.nɪ'vɜː.səl ˌgræv.ɪ'teɪ.ʃən/ *noun*, **C2**

★(Physics) the attractive force between any two masses in the universe: ***Universal gravitation** explains planetary orbits.*

V

vaccine /væk'siːn/ *noun*, **B1**

★(Biology) a biological preparation that introduces an antigen—in attenuated, inactivated, subunit, or nucleic acid form—to stimulate a protective adaptive immune response without causing disease: *The MMR **vaccine** confers long-lasting immunity against measles, mumps, and rubella.*

vacuole /'trɪp.əl bɒnd/ *noun*, **C1**

★(Biology) a membrane-enclosed compartment in the cytoplasm that stores water, metabolites, or waste products; the central vacuole of plant cells maintains turgor pressure: *The large central **vacuole** occupies up to 90% of the volume of a mature plant cell.*

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valence electron /'veɪ.ləns ɪ'lek.trɒn/ *noun*, **C1**

★(Chem) an outer shell electron involved in chemical bonding: **Valence electrons** determine how atoms bond.

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van der waals forces /,væn də 'wɑːlz 'fɔː.sɪz/ *noun*, **C2**

★(Chem) weak intermolecular forces caused by temporary polarities: **Van der Waals forces** hold geckos to walls.

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vapor pressure /'veɪ.pər 'preʃ.ər/ *noun*, **C1**

★(Physics) the pressure exerted by a vapor in equilibrium with its liquid: **Vapor pressure** increases with temperature.

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variable /'veəriəbl/ *noun*, **B2**

★(Math) a symbol, usually a letter, that represents an unknown or changing quantity: *In the equation $x + 5 = 10$, x is the **variable**.*

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variance /'veəriəns/ *noun*, **C1**

★(Math) the average of the squared differences from the mean; the square of the standard deviation: **Variance** = σ^2 measures the spread of a data set.

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vector /'vek.tər/ *noun*, **C1**

★(Physics) a quantity having both magnitude and direction (e.g., force, velocity): *Wind velocity is a **vector** quantity.*

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vein /veɪn/ *noun*, **B2**

★(Biology) a thin-walled blood vessel equipped with one-way valves that returns blood from peripheral tissues to the heart, typically carrying deoxygenated blood: **Veins** contain semilunar valves that prevent the retrograde flow of blood.

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velocity /və'lbs.i.ti/ *noun*, **C1**

★(Physics) displacement per unit time; a vector quantity with direction: *The **velocity** of the wind was 30 km/h northeast.*

venn diagram /ven 'daɪəgræm/ *noun*, **C1**

★(Math) overlapping circles used to show relationships between sets, including their unions and intersections: *Use a **Venn diagram** to show that {cats} and {pets} overlap.*

verify /'verɪfaɪ/ *verb*, **B2**

★(Math) to check that a found value actually satisfies the original equation: ***Verify** $x = 3$ in $2x + 1 = 7$: $2(3) + 1 = 7$. **Correct.***

vertex /'vɜːteks/ *noun*, **C1**

★(Math) the highest or lowest point of a parabola; found using $x = -b/(2a)$: *The **vertex** of $y = x^2 - 4x + 3$ is the point $(2, -1)$.*

vertex form /'vɜːteks fɔːm/ *noun*, **C2**

★(Math) the form $f(x) = a(x - h)^2 + k$ where (h, k) is the vertex of the parabola: *Rewrite in **vertex form** to quickly identify the vertex (h, k) .*

vertical asymptote /'vɜːtɪkl 'æsmɪtəʊt/ *noun*, **C2**

★(Math) a vertical line $x = a$ that the graph of a function approaches but never crosses: *$f(x) = 1/x$ has **a vertical asymptote** at $x = 0$.*

vertical line test /'vɜːtɪkl laɪn test/ *noun*, **C2**

★(Math) a method to check if a graph represents a function: no vertical line crosses it more than once: *Apply the **vertical line test**: if it passes, the relation is a function.*

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vertical shift /'vɜːtɪkl ʃɪft/ *noun*, **C2**

★(Math) a transformation that moves a graph up or down by adding or subtracting a constant: $f(x) + k$: $y = x^2 + 3$ is $y = x^2$ shifted up 3 units.

E

virtual image /'vɜːtʃu.əl 'ɪm.ɪdʒ/ *noun*, **C1**

★(Physics) an image formed by extending rays backward; cannot be projected: *Mirrors form **virtual images** behind them.*

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viscosity /vɪ'skɒs.ɪ.ti/ *noun*, **C1**

★(Physics) a fluid's resistance to flow: *Honey has higher **viscosity** than water.*

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visible light /'vɪz.ə.bəl laɪt/ *noun*, **C1**

★(Physics) the portion of the EM spectrum the human eye can see (380-750 nm): ***Visible light** makes up only a small part of the spectrum.*

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volt /vəʊlt/ *noun*, **C1**

★(Physics) the SI unit of voltage and electric potential difference: *A standard AA battery is 1.5 **volts**.*

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voltage /'vəʊl.tɪdʒ/ *noun*, **C1**

★(Physics) the potential difference between two points, measured in volts (V): *Household **voltage** in Thailand is 220 volts.*

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voltmeter /'vəʊlt.miː.tər/ *noun*, **C1**

★(Physics) an instrument for measuring voltage, connected in parallel: *Use a **voltmeter** to check the battery's voltage.*

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volume /'vɒl.juːm/ *noun*, **B2**

★(Math) the amount of space occupied by an object or substance: *Calculate the **volume** of the rectangular box.*

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VSEPR theory /'ves.pər 'θɪə.ri/ *noun*, **C2**

★(Chem) a theory predicting molecular shape based on electron pair repulsion: **VSEPR theory** predicts water's bent shape.

W

watt /wɒt/ *noun*, **C1**

★(Physics) the SI unit of power, equal to one joule per second: A 100-**watt** bulb consumes 100 joules per second.

wave /weɪv/ *noun*, **B2**

★(Physics) a disturbance that travels through a medium transferring energy: **Waves** carry energy across the ocean.

wave speed /weɪv spiːd/ *noun*, **C2**

★(Physics) the speed at which a wave travels through a medium ($v = f\lambda$): **Wave speed** depends on the medium.

wavefront /'weɪv.fɾʌnt/ *noun*, **C2**

★(Physics) a surface where all points of a wave have the same phase: Spherical **wavefronts** spread from a point source.

wavelength /'weɪv.leŋθ/ *noun*, **C1**

★(Physics) the distance between two adjacent points of the same phase: Visible light **wavelengths** range from 380 to 750 nanometers.

weak acid /wiːk 'æs.ɪd/ *noun*, **C2**

★(Chem) an acid that partially dissociates in water, such as CH_3COOH : Vinegar contains the **weak acid** acetic acid.

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weak base /wi:k beɪs/ *noun*, **C2**

★(Chem) a base that partially dissociates, such as NH_3 : *Ammonia is a **weak base**.*

weight /weɪt/ *noun*, **B2**

★(Physics) the gravitational force acting on an object, equal to mg : *Your **weight** on the Moon is about one-sixth of Earth's.*

white blood cell (Leukocyte) /waɪt blʌd sɛl/ *noun*, **C1**

★(Biology) any of the diverse, nucleated blood cells—including neutrophils, lymphocytes, monocytes, and eosinophils—that collectively constitute the cellular arm of the immune system: *Neutrophils are the most abundant **white blood cells** and are first responders to bacterial infection.*

whole number /həʊl 'nʌmbər/ *noun*, **B1**

★(Math) a non-negative integer including zero; a number without fractions or decimals: *0, 1, 2, and 3 are **whole numbers**.*

work /wɜ:k/ *noun*, **B2**

★(Physics) force applied over a distance in the force's direction ($W = Fd$): *Lifting a box requires **work** against gravity.*

X

x-intercept /eks 'ɪntəsept/ *noun*, **C2**

★(Math) the point where a graph crosses the x-axis, occurring when $y = 0$: *Set $y = 0$ in $y = 2x - 6$ to find the **x-intercept** at (3, 0).*

X-ray /'eks.reɪ/ *noun*, **B1**

★(Physics) high- energy electromagnetic waves used in medical imaging: *Doctors use **X-rays** to view bones.*

xylem /'zaɪləm/ *noun*, **C2**

★(Biology) a complex vascular tissue composed primarily of dead, lignified tracheary elements that conducts water and dissolved mineral salts from roots to aerial organs: ***Xylem** vessels form a continuous conduit from root tips to leaf mesophyll.*

Y

y-intercept /waɪ 'ɪntəsept/ *noun*, **C2**

★(Math) the point where a graph crosses the y- axis, occurring when $x = 0$: *The **y-intercept** of $y = 3x + 2$ is the point $(0, 2)$.*

Young's double slit /ˌjʌŋz ˌdʌb.əl slɪt/ *noun*, **C2**

★(Physics) an experiment showing the interference of light: ***Young's double slit** experiment proved light's wave nature.*

Z

zero product property /'ziərəʊ 'prɒdʌkt/ *noun*, **C2**

★(Math) if the product of two factors equals zero, then at least one factor must be zero: *If $(x - 2)(x + 3) = 0$, then $x = 2$ or $x = -3$.*

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B

zero slope /'ziərəʊ sləʊp/ *noun*, **C2**

★(Math) a slope of $m = 0$, producing a horizontal line parallel to the x-axis: *The line $y = 5$ has **zero slope**.*

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zygote /'zaɪɡoʊt/ *noun*, **C2**

★(Biology) the diploid cell formed by the fusion of a haploid sperm with a haploid ovum, constituting the first cell of a new organism: *The **zygote** undergoes rapid cleavage divisions to produce the multicellular blastocyst.*

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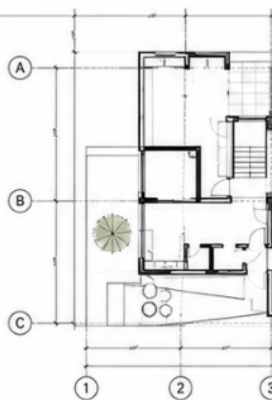
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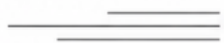
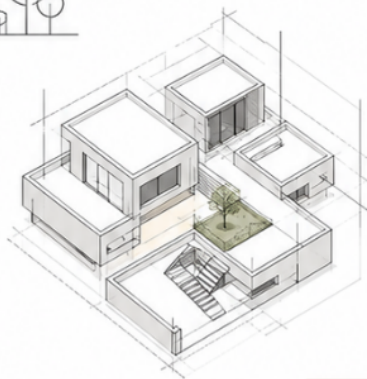
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Architecture



A

annotation /ˌænə'teɪʃn/ noun, B2, Y.2

★ a note added to a drawing to give extra information: *Each **annotation** refers to a specific material specification.*

anthropometrics /ˌænθrəpə'metrɪks/ noun, C2, Y.3

★ the study of human body measurements applied to design: ***Anthropometrics** determine the standard height of a kitchen counter.*

arch /ɑ:tʃ/ noun, B1, Y.1

★ A curved structure that spans an opening and supports the weight above it: *Roman **arches** carry the weight of the aqueduct.*

architect /'ɑ:kɪtekt/ noun, B1, Y.1

★ a person whose profession is designing buildings and supervising their construction: *The **architect** presented three design options to the client.*

architecture /'ɑ:kɪtektʃə(r)/ noun, B2, Y.1

★ the art and study of designing buildings, including their structure and aesthetic appearance: *She studies **architecture** at university and dreams of designing skyscrapers.*

atrium /'eɪtriəm/ noun, C1, Y.1

★ a large open central space inside a building, often with a glass roof: *Plants and a fountain fill the hotel's **atrium**.*

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axonometric /ˌæksənə'metɪk/ *noun*, **C2**, **Y.1**

★ a type of three-dimensional drawing where parallel lines remain parallel, used to show buildings clearly: *The **axonometric** drawing helps clients visualize the building in 3D.*

B

beam /bi:m/ *noun*, **B1**, **Y.2**

★ a long horizontal piece of wood, steel, or concrete that supports loads above it: *Wooden **beams** span the ceiling of the old hall.*

bill of quantities /ˌbɪl əv 'kwɒntətɪz/ *noun*, **C2**, **Y.2**

★ a document listing all the materials and labor needed for a construction project: *The **bill of quantities** helps contractors prepare accurate bids.*

BIM /bɪm/ *noun* **C1**, **Y.2**

★ *Building Information Modelling*; a digital 3D process for designing and managing buildings: ***BIM** allows the team to coordinate every system in one model.*

blueprint /'blu:prɪnt/ *noun*, **B2**, **Y.1**

★ a detailed technical drawing of a building or machine, traditionally white on a blue background: *The contractor checked the **blueprint** before pouring the foundation.*

built-in /ˌbɪlt 'ɪn/ *adjective*, **B2**, **Y.3**

★ forming a permanent part of a structure, especially furniture: *The apartment comes with **built-in** wardrobes.*

buttress /'bʌtrəs/ *noun*, **C2**, **Y.1**

★ a structure made of stone or brick that sticks out from and supports a wall of a building: *Flying **buttresses** are a famous feature of Gothic cathedrals.*

C

CAD /kæd/ *noun*, **B2**, **Y.1**

★ *Computer-Aided Design*; the use of software to draw and model buildings: *All final drawings are produced in **CAD**.*

canopy /'kænəpi/ *noun*, **B2**, **Y.2**

★ a cover, often supported on posts, that provides shelter or shade: *A wooden **canopy** shades the main entrance from the midday sun.*

cantilever /'kæntɪli:və(r)/ *noun*, **C2**, **Y.3**

★ a long bar that is fixed at only one end to a vertical support and is used to hold a structure: *The balcony is a 3-meter **cantilever** from the main façade.*

capital /'kæpɪtl/ *noun*, **B2**, **Y.1**

★ the decorative top part of a column: *The **capitals** are carved with leaves in the Corinthian style.*

circulation /,sɜːkjə'leɪʃn/ *noun*, **C1**, **Y.1**

★ the movement of people through a building or space: *Wide stairs improve the vertical **circulation** in the school.*

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cladding /'klædɪŋ/ *noun*, **C1**, **Y.3**

★ material that covers the surface of something, for example a pipe or a building, and protects it: *The new **cladding** will improve the building's energy performance.*

column /'kɒləm/ *noun*, **B1**, **Y.2**

★ a tall vertical structural member that supports a building's beams or roof: *Six **columns** line the entrance of the temple.*

composition /,kɒmpə'zɪʃn/ *noun*, **B2**, **Y.1**

★ the way design elements are arranged together in a unified whole: *The facade **composition** balances solid wall and open glazing.*

concept /'kɒnsept/ *noun*, **B2**, **Y.1**

★ the main idea behind a design: *Their **concept** is to bring the garden inside the house.*

concrete /'kɒŋkri:t/ *noun*, **A2**, **Y.2**

★ a very hard building material made by mixing cement, sand, small stones, and water: ***Concrete** sets harder over many years.*

contour /'kɒntʊə(r)/ *noun*, **A2**, **Y.2**

★ a line on a map joining points of equal elevation, showing the shape of the land: *The **contour** lines indicate a steep slope behind the building.*

contractor /kən'træktə(r)/ *noun*, **B2**, **Y.1**

★ a person or company that agrees to do construction work for a fee: *The **contractor** will start work next Monday.*

cornice /'kɔːnɪs/ *noun*, **C1**, **Y.1**

★ a decorative border of wood or stone at the edge of the ceiling of a room or under the roof of a building: *A heavy **cornice** runs along the top of the façade.*

corridor /'kɒrɪdɔː(r)/ *noun*, **B1**, **Y.2**

★ A long narrow passage inside a building, with doors leading off it: *The hospital **corridor** was painted in calming colors.*

courtyard /'kɔːtjɑːd/ *noun*, **B2**, **Y.1**

★ an open area surrounded by walls or buildings: *A small **courtyard** provides natural light to every room.*

D

daylighting /'deɪlaɪtɪŋ/ *noun*, **C1**, **Y.3**

★ the use of natural light from the sun in a building, rather than artificial light: *Effective **daylighting** can cut electricity use by half.*

detail drawing /'diːteɪl ˌdrɔːɪŋ/ *noun*, **C1**, **Y.3**

★ a drawing at a larger scale showing how parts of a building fit together: *The **detail drawing** shows the connection between the roof and the wall.*

diagram /'daɪəgræm/ *noun*, **B1**, **Y.1**

★ a simple drawing that explains an idea or shows how something works: *The **diagram** explains the flow of users through the gallery.*

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dimension /daɪ'menʃn/ *noun*, **B2**, **Y.1**

★ a measurement of length, width, or height of an object:
*Please add the **dimensions** to every wall on the plan.*

dome /dəʊm/ *noun*, **B2**, **Y.1**

★ a rounded roof shaped like the top half of a sphere: *The mosque is crowned by a golden **dome**.*



eaves /i:vz/ *noun*, **B2**, **Y.1**

★ the edge of a roof that sticks out over the walls: *Wide **eaves** protect the wall from heavy rain.*

elevation /,elɪ'veɪʃn/ *noun*, **B2**, **Y.1**

★ the front or side of a building as shown on a drawing: *The front **elevation** reveals the symmetrical arrangement of windows.*

energy-efficient /'enədʒi ɪ'fɪʃnt/ *adjective*, **B2**, **Y.3**

★ using as little energy as possible to perform a given task:
***Energy-efficient** windows reduce heat loss.*

ergonomics /,ɜ:gə'nɒmɪks/ *noun*, **C1**, **Y.3**

★ the study of how furniture and equipment fit the human body comfortably: *Good **ergonomics** make the workstation safe to use for long hours.*

estimate /'estɪmət/ *noun*, **B2**, **Y.2**

★ a guess of what the size, value, amount, cost, etc. of something might be: *The contractor's **estimate** came in below budget.*

F

façade /fə'saɪd/ *noun*, B2, Y.1

★ the front or main face of a building: *The glass **façade** reflects the city skyline.*

finish /'fɪnɪʃ/ *noun*, B2, Y.2

★ the final surface treatment applied to walls, floors, or furniture: *A matte **finish** was chosen for the bedroom walls.*

floor plan /'floː plæn/ *noun*, B2, Y.2

★ a drawing showing the arrangement of rooms on one level of a building: *The **floor plan** locates the bedrooms on the upper level.*

footing /'fʊtɪŋ/ *noun*, C1, Y.2

★ the widened base at the bottom of a foundation that spreads the building's load: *The engineer designed a reinforced concrete **footing** for each column.*

form /fɔːm/ *noun*, B1, Y.1

★ the shape and visual appearance of a three-dimensional object: *The pavilion's curved **form** was inspired by a leaf.*

foundation /faʊn'deɪʃn/ *noun*, B1, Y.2

★ the base that is built below the surface of the ground to support a building: *The **foundation** must be deep enough to reach solid soil.*

foyer /'fɔɪeɪ/ *noun*, B2, Y.2

★ An entrance hall in a hotel, theatre, or public building: *Guests waited in the **foyer** before the performance began.*

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frieze /friːz/ *noun*, **C1**, **Y.1**

★ a narrow strip of decoration, often cut from stone or wood and usually placed at the top of a wall: *A sculpted **frieze** depicts scenes from mythology.*

furnishing /'fɜːnɪʃɪŋ/ *noun*, **B2**, **Y.3**

★ the furniture, curtains and other movable items in a room: *Soft **furnishings** give the lounge a warm atmosphere.*

G

gable /'geɪbl/ *noun*, **C1**, **Y.1**

★ the triangular top end of the wall of a building where it meets the sloping parts of a roof: *The traditional Lanna house has a steep **gable**.*

glazing /'gleɪzɪŋ/ *noun*, **B1**, **Y.3**

★ the glass used in windows, doors, or façades, including its installation: *Double **glazing** helps reduce heat loss in winter.*

green roof /,ɡriːn 'ruːf/ *noun*, **B2**, **Y.3**

★ a roof of a building that is covered with plants, grass, etc.: *The **green roof** cools the building and supports urban biodiversity.*

H

hardscape /'hɑːdskeɪp/ *noun*, **C2**, **Y.2**

★ the non-living parts of a landscape, such as paving, walls, and steps: *The **hardscape** includes a stone terrace and a brick walkway.*

hatching /'hætʃɪŋ/ *noun*, **C1**, **Y.1**

★ a series of closely spaced parallel lines used in drawings to show materials or shading: *Diagonal **hatching** indicates a wall cut in section.*

hierarchy /'haɪərəʊki/ *noun*, **C1**, **Y.1**

★ a system in which design elements are arranged according to their importance: *Spatial **hierarchy** guides visitors from public to private zones.*

I

insulation /ˌɪnsjuˈleɪʃn/ *noun*, **B2**, **Y.3**

★ material that is used to stop heat, sound, or electricity from escaping or entering: *Foam **insulation** keeps the house warm in the cool season.*

isometric /ˌaɪsəˈmetrɪk/ *noun*, **C1**, **Y.1**

★ relating to a drawing method where three axes are equally inclined, showing three sides at once: *An **isometric** view is useful for showing furniture from a single angle.*

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J

joinery /ˈdʒɔɪnəri/ *noun*, **C1**, **Y.3**

★ the wooden parts of a building made by a joiner, such as doors, windows and stairs: *The **joinery** in this house was hand-crafted by local carpenters.*

joist /dʒɔɪst/ *noun*, **C1**, **Y.1**

★ a long, thick piece of wood, metal, or concrete, used in buildings to support a floor or ceiling: *Wooden **joists** run across the room every 40 centimeters.*

L

landscape /ˈlændskeɪp/ *noun*, **B1**, **Y.1**

★ the natural and designed features of an area of land: *The garden **landscape** combines local plants and stone paths.*

layout /ˈleɪaʊt/ *noun*, **B2**, **Y.1**

★ the way different parts of a space are arranged: *The open-plan **layout** encourages teamwork.*

lintel /ˈlɪntl/ *noun*, **C1**, **Y.2**

★ a horizontal beam over a door or window that supports the wall above it: *The stone **lintel** above the door has been there for 200 years.*

load-bearing /ˈləʊd ˌbeərɪŋ/ *adjective*, **C1**, **Y.2**

★ supporting the weight of the building above it: *You cannot remove that wall because it is **load-bearing**.*

loft /lɒft/ *noun*, **B2**, **Y.1**

★ a space directly under a roof, often used as a room or storage area: *They converted the **loft** into a cozy studio.*

M

masonry /'meɪsənri/ *noun*, **C1**, **Y.2**

★ the bricks and pieces of stone that are used to make a building: *The **masonry** of the old wall is still in good condition.*

massing /'mæsiŋ/ *noun*, **C1**, **Y.1**

★ the overall shape and bulk of a building or group of buildings: *The **massing** of the new wing respects the height of its neighbors.*

mezzanine /'mezəniːn/ *noun*, **C1**, **Y.1**

★ a small extra floor between one floor of a building and the next floor up: *The library has a reading area on the **mezzanine**.*

microclimate /'maɪkrəʊklaɪmət/ *noun*, **C2**, **Y.2**

★ the particular climate conditions of a small specific area, such as a courtyard: *Trees and water features create a cool **microclimate** around the house.*

mock-up /'mɒk ʌp/ *noun*, **B2**, **Y.2**

★ a full-size model of a design used for testing or showing to clients: *A **mock-up** of the façade was built on site to test the materials.*

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model /'mɒdl/ *noun*, **A2, Y.2**

★ a small three-dimensional copy of a building, used to show its appearance: *The students built a foam **model** of their final project.*

mortar /'mɔ:tə(r)/ *noun*, **C1, Y.2**

★ a mixture of sand, water, and cement or lime that is used to fix bricks or stones to each other when building walls: *The mason spread a layer of **mortar** between the bricks.*

mullion /'mʌliən/ *noun*, **C2, Y.2**

★ a vertical bar that divides the panes of a window: *Slim aluminum **mullions** divide the curtain wall.*

N

niche /ni:ʃ/ *noun*, **C1, Y.1**

★ a shallow recess in a wall, often used to display a statue or vase: *A small **niche** in the hallway holds a Buddha image.*

O

orientation /'leɪ.ər/ *noun*, **B2, Y.2**

★ the position of something in relation to its surroundings: *Southern **orientation** maximizes solar gain in winter.*

P

partition /pɑ:ˈtɪʃn/ *noun*, B2, Y.3

★ a thin wall that divides a room into smaller spaces: *A glass **partition** separates the meeting room from the office.*

passive design /ˈpæsɪv dɪˈzaɪn/ *noun*, C1, Y.3

★ a design approach that controls indoor comfort using sun, wind and shade without machines: ***Passive design** strategies reduce the need for air conditioning.*

pavilion /pəˈvɪliən/ *noun*, B2, Y.1

★ a small building, often open-sided, used for shelter or display in a park or garden: *A bamboo **pavilion** stands at the center of the lake.*

pedestal /ˈpedɪstl/ *noun*, B2, Y.1

★ the base on which a column or statue stands: *A bronze sculpture rests on a marble **pedestal**.*

pediment /ˈpedɪmənt/ *noun*, C1, Y.1

★ a triangular part at the top of the front of a building that supports the roof and is often decorated: *The Parthenon's **pediment** was once filled with sculptures.*

permit /ˈpɜ:mit/ *noun*, B2, Y.2

★ an official document that allows you to do something or go somewhere: *Construction cannot begin until the building **permit** is issued.*

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Perspective /pə'spektɪv/ *noun*, **B2**, **Y.1**

★ a drawing technique that represents three-dimensional objects on a flat surface to create depth: *She drew a one-point **perspective** of the corridor.*

pier /pɪə(r)/ *noun*, **C1**, **Y.3**

★ a thick, strong column used to support a structure such as a bridge: *Massive **piers** carry the weight of the bridge.*

pilaster /pɪ'læstə(r)/ *noun*, **C2**, **Y.1**

★ a column that is flat at the back and sticks out from the wall of a building or other structure: *Classical **pilasters** frame each window of the façade.*

plan /plæn/ *noun*, **A2**, **Y.1**

★ a drawing that shows the arrangement of rooms in a building seen from above: *The floor **plan** clearly shows the kitchen next to the dining area.*

plaster /'plɑːstə(r)/ *noun*, **B2**, **Y.2**

★ a soft paste that hardens on walls and ceilings to give a smooth finish: *She applied a second coat of **plaster** to the wall.*

plywood /'plaɪwʊd/ *noun*, **B2**, **Y.2**

★ wood in sheets that is made of several thin layers glued together: ***Plywood** panels were used to enclose the construction site.*

proportion /prə'pɔːʃn/ *noun*, **B2**, **Y.1**

★ the relationship between the size of different parts of a building: *Classical buildings follow strict rules of **proportion**.*

R

rafter /'rɑ:ftə(r)/ *noun*, **C1, Y.1**

★ one of the sloping beams that support a pitched roof: *The **rafters** were exposed in the cathedral-style ceiling.*

rebar /'ri:bɑ:/ *noun*, **C1, Y.2**

★ a steel bar used to reinforce concrete: *Workers tied the **rebar** before pouring the slab.*

reinforced concrete /,ri:ɪn,fɔ:st 'kɒŋkri:t/ *noun*, **C1, Y.2**

★ concrete that contains metal rods to make it stronger: *Modern buildings rely on **reinforced concrete** for their frame.*

rendering /'rendərɪŋ/ *noun*, **B2, Y.3**

★ a finished image of a proposed design showing realistic colors, materials and lighting: *The client was impressed by the photorealistic **rendering** of the lobby.*

renovation /,renə'veɪʃn/ *noun*, **B2, Y.2**

★ the process of repairing and improving an old building: *The **renovation** of the temple took two years.*

S

scale /skeɪl/ *noun*, **B1, Y.1**

★ the ratio between the size of a drawing and the actual size of the object it represents: *This plan is drawn at a **scale** of 1:100.*

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section /'sekʃn/ *noun*, **B2, Y.1**

★ a drawing or model that shows the structure of something by cutting part of it away: *The cross **section** shows three floors and a basement.*

setback /'setbæk/ *noun*, **C1, Y.1**

★ the required distance between a building and its property line: *The zoning code requires a 3-metre **setback** from the road.*

Site /saɪt/ *noun*, **B1, Y.2**

★ the piece of land where a building is or will be built: *The **site** slopes gently towards the river.*

site plan /'saɪt plæn/ *noun*, **B2, Y.2**

★ a drawing that shows a proposed building in its surrounding plot of land: *The **site plan** indicates where the trees should be preserved.*

site survey /'saɪt ,sɜːveɪ/ *noun*, **C1, Y.2**

★ a measurement and assessment of a piece of land before design or construction: *A topographical **site survey** was completed last week.*

sketch /sketʃ/ *noun*, **B1, Y.1**

★ a simple, quickly made drawing that does not have many details: *He made a quick **sketch** of the building on a napkin.*

skylight /'skaɪlaɪt/ *noun*, **B2, Y.3**

★ a window set into a roof or ceiling to let daylight in: *A central **skylight** illuminates the stairwell.*

slab /slæb/ *noun*, **B2**, **Y.2**

★ a thick, flat, usually square or rectangular piece of a solid substance: *Workers poured the concrete **slab** for the second floor today.*

softscape /'sɒftskeɪp/ *noun*, **C2**, **Y.2**

★ the living plant elements of a landscape, such as trees and shrubs: *The **softscape** was chosen to bloom in different seasons.*

specification /ˌspesɪfɪ'keɪʃn/ *noun*, **C1**, **Y.2**

★ a detailed written description of the materials and work required for a building: *The **specification** calls for FSC-certified timber only.*

steel /stiːl/ *noun*, **A2**, **Y.2**

★ a strong metal alloy of iron and carbon, widely used in building structures: ***Steel** beams form the skeleton of the high-rise.*

stucco /'stʌkəʊ/ *noun*, **C2**, **Y.1**

★ a type of plaster used to coat outside walls or create decorative details: *The Italian villa is famous for its ornate **stucco** work.*

sustainable /sə'steɪnəbl/ *adjective*, **B2**, **Y.3**

★ designed in a way that minimizes impact on the environment over time: ***Sustainable** architecture uses renewable materials and energy.*

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symmetry /'sɪmətri/ *noun*, **B2**, **Y.1**

★ a balanced arrangement of parts on either side of a central line: *The Renaissance villa is built around perfect bilateral **symmetry**.*

T

texture map /'tekstʃə(r) mæp/ *noun*, **C1**, **Y.3**

★ a 2D image applied to the surface of a 3D model to make it look realistic: *A wood **texture map** was applied to the floor in the rendering.*

threshold /'θreʃhəʊld/ *noun*, **B2**, **Y.1**

★ the part of a floor at the entrance to a building or room: *She paused at the **threshold** before entering the temple.*

tile /taɪl/ *noun*, **A2**, **Y.2**

★ a thin, usually square or rectangular piece of baked clay, plastic, etc. used for covering roofs, floors, walls, etc. : *Terracotta **tiles** cover the kitchen floor.*

timber /'tɪmbə/ *noun*, **B2**, **Y.2**

★ a long piece of wood used for building, especially houses and ships: *The frame of the house is made of treated **timber**.*

topography /tə'pɒgrəfi/ *noun*, **C1**, **Y.2**

★ the shape and physical features of an area of land: *The architect respected the existing **topography** of the hillside.*

transom /'trænsəm/ *noun*, **C1**, **Y.2**

★ a small window over the top of a door: *A glass **transom** above the door brings light into the corridor.*

truss /trʌs/ *noun*, **C1, Y.2**

★ a support for a roof or bridge that is usually made of stone or brick: *A steel **truss** supports the wide span of the stadium roof. He prefers traditional art over digital art.*

transparency /træns'pær.ənənsi/ *noun*, **C1, Y.2**

★ the quality of being see-through or allowing light to pass through: *The layer has low **transparency**.*

V

vault /vɔːlt/ *noun*, **C1, Y.1**

★ an arched ceiling or roof, usually made of stone or brick: *The cathedral has a magnificent, ribbed **vault**.*

veneer /və'niə(r)/ *noun*, **C1, Y.3**

★ a thin layer of decorative wood or plastic used to cover a cheaper material: *The cabinets have a walnut **veneer** on a plywood base.*

ventilation /ˌventɪ'leɪʃn/ *noun*, **B2, Y.2**

★ the flow of fresh air in and out of a building: *Cross **ventilation** is essential in a tropical climate.*

veranda /və'rændə/ *noun*, **B2, Y.2**

★ a roofed open platform along the outside of a house: *Guests gathered on the **veranda** to enjoy the evening breeze.*

vernacular /və'nækjələ(r)/ *adjective*, **C1, Y.1**

★ relating to traditional local building styles using local materials and techniques: ***Vernacular** houses in northern Thailand are raised on stilts.*

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W

wireframe /'waɪəfreɪm/ *noun*, C1, Y.2

★ a 3D model that shows only the edges and lines of objects, not their surfaces: A **wireframe** view helps you check the geometry quickly.

Z

zoning /'zəʊnɪŋ/ *noun*, C1, Y.2

★ the division of a building or city into areas with different functions: *Functional **zoning** separates the kitchen from the dining hall.*

Arts — and — Design



A

aesthetic /es'θetɪk/ *adjective*, **B2**, **Y.1**

★ connected with beauty and art and the understanding of beautiful things: *An **aesthetic** object or a work of art is one that shows great beauty.*

art /ɑ:t/ *noun*, **A1**, **Y.1**

★ the making of objects, images, music, etc. that are beautiful or that express feelings: *I enjoyed the ballet, but it wasn't really great **art**.*

artificial intelligence /,ɑ:tɪfɪl ɪn'telɪdʒəns/ *noun*, **C2**, **Y.2**

★ the study and development of computer systems that can copy intelligent human behavior: *Language is crucial to the development of **artificial intelligence**.*

artist /'ɑ:tɪst/ *noun*, **A2**, **Y.1**

★ someone who paints, draws, or makes sculptures: *The **artist** painted this picture using tiny brushstrokes.*

artwork /'ɑ:t wɜ:k/ *noun*, **B2**, **Y.1**

★ the pieces of art, such as drawings and photographs, that are used in books, newspapers, and magazines: *All **artwork** must be accompanied by three hard copy printouts.*

B

background /'bækgraʊnd/ *noun*, **A2**, **Y.1**

★ the things that can be seen behind the main things or people in a picture: *The artist himself did not paint the **backgrounds** to his pictures - they were done by his pupils.*

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balance /'bæl.əns/ *noun*, **B1**, **Y.1**

★ the ability to remain standing, especially because your weight is equally distributed: *He had to hold onto the railings to keep her **balance**.*

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bas-relief /,bæs.rɪ'li:f/ *noun*, **C2**, **Y.1**

★ a type of sculpture where the design is carved so it only sticks out a little from a flat surface.: *We saw a famous **bas-relief** at the museum yesterday.*

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base /beɪs/ *noun*, **B1**, **Y.1**

★ the bottom part of an object, on which it rests, or the lowest part of something: *There is a crystal glass with a heavy **base**.*

J

K

L

basic design /'beɪ.sɪkdi'zaɪn/ *noun*, **A2**, **Y.1**

★ the fundamentals or insights into design areas, starting from scratch, with special focus on the application of the basic elements of design in terms of line, color, shape, space, and form: *But behind the **basic design** are hundreds of math games, exercises, quizzes and a glossary to explain math terms.*

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beauty /'bju:ti/ *noun*, **B1**, **Y.1**

★ the quality of giving pleasure to the senses or to the mind: *The woods were designated an area of outstanding natural **beauty**.*

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blend /blend/ *noun*, **C2**, **Y.2**

★ a mixture of different things or styles: *Their music is a **blend** of jazz and African rhythms.*

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branding /'brændɪŋ/ *noun*, **B2, Y.1**

★ the act of making a product, organization, person, or place easy to recognize as different from others by connecting it with a particular name, design, symbol, set of qualities, etc.: *The successful **branding** and marketing of the new beer has already boosted sales.*

brightness /'braɪt.nəs/ *noun*, **B2, Y.1**

★ the fact of being full of light or of shining strongly: *She was momentarily blinded by the **brightness** of the room.*

brush /brʌʃ/ *noun*, **A2, Y.1**

★ an object with short pieces of stiff hair, plastic, or wire attached to a base or handle, used for cleaning, arranging your hair, or painting: *I can't find my **brush**, but I still have my comb.*

C

canvas /'kænvəs/ *noun*, **C1, Y.2**

★ a strong heavy rough material used for making tents, sails, etc. and by artists for painting on: *The artist painted a beautiful picture on the **canvas**.*

character /'kær.ək.tər/ *noun*, **B1, Y.2**

★ a person or an animal in a book, play or film: *He loves to draw and create his own cartoon **characters**.*

charcoal /'tʃɑ:kəʊl/ *noun*, **C2, Y.1**

★ a black substance made by burning wood slowly in an oven with little air; charcoal is used as a fuel or for drawing: *I prefer sketching in **charcoal** to pencil.*

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cityscape /'sɪt.i.skeɪp/ *noun*, **C2**, **Y.1**

★ a view or image of a city: *His watercolors show people in a desolate, ash-grey **cityscape**.*

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clay /kleɪ/ *noun*, **B2**, **Y.1**

★ thick, heavy soil that is soft when wet, and hard when dry or baked, used for making bricks and containers: ***Clay** is used for making bricks and pots.*

collage /'kɒl.ɑːʒ/ *noun*, **C2**, **Y.1**

★ the art of making a picture in which various materials or objects, for example paper, cloth, or photographs, are stuck onto a larger surface: *The children made a **collage** of postcards.*

color /'kʌl.ər/ *noun*, **A1**, **Y.1**

★ the appearance that something has as a result of reflecting light: *Some of the pictures in the book are in **color**, and some are in black and white.*

color theory /'kʌl.ər 'θɪə.rɪ/ *noun*, **A2**, **Y.1**

★ the practical guidance on mixing colors and the visual effects of specific color combinations: *By understanding **color theory**, you can mix custom palettes that evoke specific emotions in the viewer.*

color wheel /'kʌl.ər wiːl/ *noun*, **A2**, **Y.1**

★ a circular visual tool that organizes colors by their relationships, serving as a fundamental guide for artists to create color schemes, mix paints, and establish harmony or contrast: *Using a **color wheel**, she chose a complementary color scheme, pairing blue with its opposite, orange, to make the painting pop.*

composition /,kəm.pə'zɪʃ.ən/ *noun*, **C1, Y.1**

★ the way that people or things are arranged in a painting or photograph: *At music school I studied piano and **composition**.*

conceptual art /kən'septʃuəl 'ɑ:t/ *noun*, **C1, Y.3**

★ art in which the idea or concept presented by the artist is considered more important than its appearance or execution: *The breakthrough of **conceptual art** was to privilege the idea driving a work over its physical form.*

contemporary /kən'tem.pər.ər.i/ *adjective*, **B2, Y.2**

★ existing or happening now and therefore seeming modern: *Although the play was written hundreds of years ago, it still has a **contemporary** feel to it.*

contour drawing /'kɒn.tɔːr'drɔː.ɪŋ/ *noun*, **B1, Y.1**

★ an artistic technique focusing on sketching the outline and essential edges of a subject using continuous or intentional lines, without shading or modeling: *A **contour drawing** focuses on the outline of an object.*

contrast /'kɒn.trɑːst/ *verb*, **B1, Y.1**

★ to compare two people or things in order to show the differences between them: *The styles of the two film makers **contrast** quite dramatically.*

craft /kraːft/ *noun*, **B2, Y.1**

★ skill and experience, especially in relation to making objects; a job or activity that needs skill and experience, or something produced using skill and experience: *He talked about the **craft** of writing popular fiction.*

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creative /kri'eɪ.tɪv/ *adjective*, **B1**, **Y.1**

★ producing or using original and unusual ideas: *They used rather **creative** methods to impress investors.*

creative drawing /kri'eɪ.tɪv 'drɔʊ.ɪŋ/ *noun*, **B1**, **Y.2**

★ the act of using lines and artistic techniques to express emotions, imagination, and original ideas, prioritizing innovative concepts over strict realism: *The students made a **creative drawing** of their dream city.*

creativity /kriː.ɪ'tɪv.ə.ti/ *noun*, **B2**, **Y.1**

★ the ability to produce or use original and unusual ideas: *The significant correlations between levels of **creativity** and levels of optimal experience suggest that students who produced high-quality creative work really enjoyed the experience.*

D

decoration /ˌdekə'reɪʃn/ *noun*, **B2**, **Y.1**

★ a thing that makes something look more attractive on special occasions: *Halloween **decorations** hung from every corner.*

decorative /'dekərətɪv/ *adjective*, **B2**, **Y.1**

★ (of an object or a building) decorated in a way that makes it attractive; intended to look attractive or pretty: *These are purely **decorative** arches.*

design /dɪ'zaɪn/ *noun*, **B1**, **Y.1**

★ a plan, pattern, or style used to create something: *I like the modern **design** of this building.*

designer /dɪ'zaɪnə(r)/ *noun*, B1, Y.1

★ a person whose job is to decide how things such as clothes, furniture, tools, etc. will look or work by making drawings, plans or patterns: *She works as a set **designer** for the Royal Opera House.*

detail /'di:teɪl/ *noun*, B1, Y.1

★ a small individual fact or item: *The Ministry refused to reveal any more **details** of the attack.*

digital art /'dɪdʒ.ɪ.təl ɑ:t/ *noun*, A2, Y.2

★ any creative work that uses digital technology—computers, software, or electronic devices—as an essential part of the creation or presentation process: *She creates beautiful **digital art** on her tablet.*

dimension /,daɪ'men.ʃən/ *noun*, B2, Y.1

★ a measurement of something in a particular direction, especially its height, length, or width: *His personality has several **dimensions**.*

direction /daɪ'rek.ʃən/ *noun*, A2, Y.1

★ the position towards which someone or something moves or faces: *She keeps looking in my **direction**.*

display /dɪ'spleɪ/ *verb*, B1, Y.1

★ to show something so people can see it: *There were photographs of all her children proudly **displayed** on the mantelpiece.*

draft /dræft/ *noun*, B2, Y.1

★ a piece of text, a formal suggestion, or a drawing in its original state, often containing the main ideas and

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intentions but not the developed form: *I've knocked out a first **draft** of the report which we can amend at a later date.*

drawing /'drɔːɪŋ/ noun, **A2, Y.1**

★ the act of making a picture with a pencil or pen, or a picture made in this way: *We were taught painting and **drawing** at art college.*

E

element /'el.ɪ.mənt/ noun, **B2, Y.1**

★ a part of something: *All these different political **elements** have somehow been yoked together to form a new alliance.*

experimental art /ɪkˌsper.ɪ'men.təl ɑːt/ noun, **C1, Y.3**

★ innovative, avant-garde artistic creations that challenge traditional techniques, materials, or forms, often exploring new ideas and “testing” boundaries: *The artist's latest **experimental art** used live bacteria to create shifting colors on a canvas.*

Expressionism /ɪk'spreʃ.ən.ɪ.zəm/ noun, **C2, Y.2**

★ a style of art, music, or writing, beginning in the 1900s, that tries to express feelings and emotions rather than trying to accurately represent how things appear: *Bohrod dismissed abstract **expressionism** and other major postwar art movements.*

F

feel /fi:l/ *verb*, **A1, Y.1**

★ linking verb to experience a particular feeling or emotion: *The bus ride made me **feel** sick.*

figure drawing /'fig.ər'drɔ:ɪŋ/ *noun*, **B1, Y.3**

★ the artistic practice of drawing the human form in various poses, focusing on anatomy, proportion, structure, and gesture: *The Renaissance master's **figure drawing** demonstrated an incredible understanding of human anatomy.*

form /fɔ:m/ *noun/verb*, **A1, Y.1**

★ a document with spaces in which answers to questions can be written or information can be recorded in an organized way: *Please fill in the **form** with black ink.*

★ to begin to exist or to make something begin to exist: *A solution began to **form** in her mind.*

frame /freɪm/ *noun*, **B1, Y.2**

★ a rigid border—typically wood or metal—that surrounds a painting, drawing, or photograph, acting as a functional protective barrier while visually separating the artwork from its surroundings to create focus: *A picture **frame** often has beveled edges.*

function /'fʌŋk.ʃən/ *noun*, **B2, Y.1**

★ the natural purpose (of something) or the duty (of a person): *He performs several important **functions** within the organization.*

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gallery /'gæl.ər.i/ *noun*, **B1**, **Y.2**

★ a room or building that is used for showing works of art, sometimes so that they can be sold: *The National Portrait **Gallery** has reopened after its renovation.*

geometric form /,dʒiː.ə'met.rɪk fɔːm/ *noun*, **C2**, **Y.1**

★ precise, mathematically defined, three-dimensional shapes—such as cubes, spheres, and pyramids—that signify order, stability, and artificial structure: *The artist used rigid, **geometric forms**, specifically cubes and cones, to construct a stable and orderly cityscape in the painting.*

gesture drawing /'dʒes.tʃər 'drɔː.ɪŋ/ *noun*, **C1**, **Y.1**

★ a rapid, expressive sketching technique used to capture the essential action, pose, and energy of a subject rather than its minute details: *Before starting the painting, the artist made several fast **gesture drawings** to capture the dancer's fluid motion.*

graphic /'græf.ɪk/ *adjective*, **B1**, **Y.1**

★ visual expressions emphasizing lines, flat surfaces, and clear, often bold, communication over 3D modeling, covering techniques like drawing, printmaking, and illustration: *The museum's new wing is dedicated exclusively to **graphic** arts, featuring an impressive collection of etchings, lithographs, and woodcuts.*

H

harmony /'hɑː.mə.ni/ *noun*, **C2, Y.1**

★ a pleasant musical sound made by different notes being played or sung at the same time: *It's thrilling to hear the four-part **harmony**, with the voices perfectly balanced.*

highlight /'haɪ.laɪt/ *noun*, **B2, Y.1**

★ a bright or lighter-colored area on the surface of something, esp. on a painting/ the best or most exciting, entertaining, or interesting part of something: *The artist meticulously added a tiny dot of white paint to the pupil of the eye, creating a **highlight** that brought the entire portrait to life.*

horizontal /,hɒr.ɪ'zɒn.təl/ *adjective*, **C1, Y.1**

★ parallel to the ground or to the bottom or top edge of something: *The flag has three **horizontal** stripes.*

hue /hjuː/ *noun*, **C2, Y.1**

★ (a degree of lightness, darkness, strength, etc. of) a color: *Different **hues** can change the feeling of artwork.*

I

idea /aɪ'diə/ *noun*, **A2, Y.1**

★ a suggestion or plan for doing something: *I've had an **idea** - why don't we go to the coast?*

identity /aɪ'denəʊntə.ti/ *noun*, **B2, Y.2**

★ a person's name and other facts about who they are: *The man's **identity** was being kept secret while he was helping police with their enquiries.*

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illustration /ˌɪ.ləˈstreɪ.ʃən/ *noun*, **C1, Y.1**

★ a picture in a book, magazine, etc. or the process of illustrating something: *The **illustrations** show monstrous beasts with bodies like bears and heads like tigers.*

image /'ɪm.ɪdʒ/ *noun*, **A2, Y.1**

★ a picture in your mind or an idea of how someone or something is: *I have an **image** in my mind of how I want the garden to be.*

impression /ɪmˈpreʃ.ən/ *noun*, **B2, Y.2**

★ an idea or opinion of what something or someone is like: *I don't tend to trust first **impressions**.*

Impressionism /ɪmˈpreʃ.ən.i.zəm/ *noun*, **C1, Y.2**

★ a style of painting, which began in France in the 1860s, in which the artist tries to represent the effects of light on an object, person, area of countryside, etc.: *The artist utilized **Impressionism** to capture the shifting colors and light of the harbor in a single, spontaneous moment.*

inspiration /ˌɪnəʊnspɪˈreɪ.ʃən/ *noun*, **C1, Y.2**

★ someone or something that gives you ideas for doing something: *The golden autumn light provided the **inspiration** for the painting.*

installation art /ˌɪn.stəˈleɪ.ʃən ɑ:t/ *noun*, **C1, Y.3**

★ a 3D, often site-specific, mixed-media genre designed to transform the viewer's perception of space: *The artist's immersive **installation art** transformed the gallery into a sensory experience, using light, sound, and reclaimed materials to protest environmental destruction.*

interaction /ˌɪnəʊntəˈræk.ʃən/ *noun*, **C1**, **Y.3**

★ an occasion when two or more people or things communicate with or react to each other: *It's a friendly environment and there's a great deal of **interaction** with the rest of the team.*

L

landscape /ˈlændskeɪp/ *noun*, **B1**, **Y.1**

★ everything you can see when you look across a large area of land, especially in the country: *The woods and fields that are typical features of the English **landscape**.*

label /ˈleɪ.bəl/ *noun*, **B1**, **Y.1**

★ a piece of paper or other material that gives you information about the object it is attached to: *Remember to put some address **labels** on the suitcases.*

layer /ˈleɪ.ər/ *noun*, **B2**, **Y.1**

★ a level of material, such as a type of rock or gas, that is different from the material above or below it, or a thin sheet of a substance: *There was a thin **layer** of oil on the surface of the water.*

layout /ˈleɪ.aʊt/ *noun*, **C1**, **Y.1**

★ the way that something is arranged: *Application forms vary greatly in **layout** and length.*

light /laɪt/ *noun*, **A1**, **Y.1**

★ the brightness that comes from the sun, fire, etc. and from electrical devices, and that allows things to be seen: *It's a north-facing room so it doesn't get much **light**.*

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line /laɪn/ *noun*, A2, Y.1

★ a long, thin mark on the surface of something: *She was very old and her face was covered with **lines**.*

linseed oil /'lɪn.siːd ɔɪl/ *noun*, B1, Y.2

★ a thick liquid from the seeds of the flax plant, used for making linoleum (= a material for covering floors), paint, and ink, and for protecting wood: *Oil paints use **linseed oil** as a binder, which contributes to their slower drying rate.*

logo /'ləʊ.ɡoʊ/ *noun*, B1, Y.1

★ a design or symbol used by a company to advertise its products: *The players wore shirts with the sponsor's **logo**.*

M

magazine /'mæɡ.ə.ziːn/ *noun*, A2, Y.1

★ a type of thin book with large pages and a paper cover that contains articles and photographs and is published every week or month: *They are launching a new **magazine** aimed at younger readers.*

masterpiece /'mæs.tə.piːs/ *noun*, C2, Y.2

★ a work of art such as a painting, film, or book that is made with great skill: *Leonardo's "Last Supper" is widely regarded as a **masterpiece**.*

material /mə'tɪr.i.əl/ *noun*, A2, Y.1

★ a physical substance that things can be made from: *The meteorites contained only inorganic **material**.*

mixed media art /'leɪ.bəl/ *noun*, **Y.2**

★ an artwork created by combining different artistic materials or techniques, such as paint, collage, ink, fabric, or digital elements, within a single piece: *The exhibition features **mixed media art** that combines painting and photography.*

mockup /'mɒk.ʌp/ *noun*, **Y.1**

★ a full-size or scale model of a design used to demonstrate, test, or present how the final product will look: *The designer created a **mockup** to show how the logo would look on packaging.*

model /'mɔː.dəl/ *noun*, **A2, Y.1**

★ a representation or example of something, often used to show how it looks, works, or is structured: *The architect built a **model** of the building before construction.*

modern /'mɔː.dən/ *adjective*, **A2, Y.2**

★ Relating to the present or recent times; characterized by contemporary styles, ideas, or technology: ***Modern** technology has changed the way we communicate.*

Modernism /'mɔː.dən.ɪ.zəm/ *noun*, **C1, Y.2**

★ a cultural and artistic movement that emerged in the late 19th and early 20th centuries, emphasizing innovation, experimentation, and a break from traditional forms and conventions: ***Modernism** influenced many fields, including art, literature, and architecture.*

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monochrome /'mɑː.nə.kroʊm/ *noun*, **C2**, **Y.1**

★ a style or image that uses only one color or different shades, tones, and tints of a single color: *The designer chose a **monochrome** palette for a clean and elegant look.*

mood /muːd/ *noun*, **B1**, **Y.1**

★ the feeling, atmosphere, or emotional tone created by an artwork, design, or environment: *The lighting creates a warm and relaxing **mood** in the room.*



negative space /'neg.ə.tɪv speɪs/ *noun*, **B2**, **Y.2**

★ the empty or blank space around and between the subjects of an image: *The logo uses **negative space** creatively.*



object /'ɑːb.dʒekt/ *noun*, **B1**, **Y.1**

★ a visible or tangible thing that can be seen or represented in art or design: *The main **object** in the painting is a vase.*

oil painting /'ɔɪl 'peɪn.tɪŋ/ *noun*, **Y.2**

★ a painting made using oil-based paints: *This **oil painting** shows great detail and depth.*

P

packaging /'pæk.ɪ.dʒɪŋ/ *noun*, **B1**, **Y.2**

★ the design and materials used to wrap or present a product: *Good **packaging** attracts customers.*

perspective /pə'sɒʊ.nə/ *noun*, **C2**, **Y.1**

★ a technique used to represent depth and space in art: *The drawing uses **perspective** to show distance.*

pigment /'pɪɡ.mənt/ *noun*, **C2**, **Y.1**

★ a substance used to give color to paint, ink, or other materials: *Natural **pigments** were used in the painting.*

pixel /'pɪk.səl/ *noun*, **C2**, **Y.1**

★ the smallest unit of a digital image or display: *The image looks blurry because of low **pixel** resolution.*

pop art /'pɒp ɑ:t/ *noun*, **Y.2**

★ a style of art, developed in the 1950s and 1960s, that was based on popular culture and used material such as advertisements, film images, etc.: ***Pop art** often features bold colors and famous icons.*

portrait /'pɔ:r.trət/ *noun*, **B2**, **Y.1**

★ a representation of a person, especially the face: *She painted a **portrait** of her friend.*

printmaking /'prɪnt.meɪ.kɪŋ/ *noun*, **C2**, **Y.1**

★ the process of creating artworks by printing, typically on paper: ***Printmaking** includes techniques like etching and lithography.*

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primary color /'praɪ.mə.ri 'kʌl.ər/ *noun*, **Y.1**

★ basic colors that cannot be created by mixing other colors (e.g., red, blue, yellow): *Red is a **primary color**.*

progress /'prɒʊ.fai/ *noun/adjective*, **B1, Y.1**

★ the process of improving or developing, or of getting nearer to achieving or completing something: *We hope to see some real **progress** by March.*

S

sculpture /'skʌlp.tʃər/ *noun*, **B1, Y.1**

★ a three-dimensional artwork created by shaping or combining materials: *The museum displays modern **sculptures**.*

secondary color /'sek.ənəʊndər.i 'kʌl.ər/ *noun*, **Y.1**

★ a color made by mixing two primary colors (e.g., green, orange, purple): *Green is a **secondary color**.*

shade /ʃeɪd/ *noun*, **B2, Y.1**

★ a darker version of a color created by adding black: *This **shade** of blue is very deep.*

shadow /'ʃæd.ʊ/ *noun*, **B1, Y.1**

★ a dark area created when light is blocked by an object: *The **shadow** adds depth to the drawing.*

shape /ʃeɪp/ *noun*, **A2, Y.1**

★ the form or outline of an object: *The design uses simple geometric **shapes**.*

sketch /sketʃ/ *noun*, **C1, Y.1**

★ a quick or rough drawing used to plan or explore ideas: *He made a **sketch** before starting the painting.*

space /speɪs/ *noun*, **A2, Y.1**

★ the area around or between elements in a design: *Proper use of **space** improves readability.*

still life /ˌstɪl ˈlaɪf/ *noun*, **Y.1**

★ a type of artwork that depicts inanimate objects such as fruits, flowers, or everyday items: *He painted a **still life** of fruits and bottles.*

stimulation /ˌstɪmjʊˈleɪʃn/ *noun*, **C1, Y.3**

★ the act of encouraging of something so that it develops or becomes more active: *Kids' interest is often caught by visual **stimulation**.*

surface /ˈsɜːfɪs/ *noun*, **A2, Y.1**

★ the outer layer or top area of an object: *The **surface** of the table is smooth.*

symbol /ˈsɪm.bəl/ *noun*, **B1, Y.2**

★ a visual sign that represents an idea or concept: *The dove is a **symbol** of peace.*

T

texture /ˈteks.tʃər/ *noun*, **C1, Y.1**

★ the surface quality or feel of an object, either real or visual: *The painting has a rough **texture**.*

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traditional art /trə'dɪʃ.ən.əl ɑːrt/ *noun*, **Y.1**

★ art created using traditional methods and materials such as painting or drawing by hand: *He prefers **traditional art** over digital art.*

transparency /træns'pær.ənənsi/ *noun*, **C1, Y.2**

★ the quality of being see-through or allowing light to pass through: *The layer has low **transparency**.*

U

unity /'juː.nə.ti/ *noun*, **C1, Y.1**

★ the sense of harmony and consistency among elements in a design: ***Unity** makes the layout feel complete.*

user experience /'juː.zər ɪk'spiə.ri.əns/ *noun*, **Y.3**

★ How a person feels when they use a website, app, product, or service: *The website has a great **user experience** because it is easy to navigate.*

user interface /'juː.zər 'ɪnəʊntə.feɪs/ *noun*, **Y.3**

★ the visual and interactive elements through which users interact with a system: *The **user interface** is simple and intuitive.*

V

visual art /'vɪʒ.u.əl ɑːrt/ *noun*, **Y.1**

★ forms of art that focus on visual expression, such as painting or sculpture: *She studies **visual art**.*

visual element /'vɪʒ.u.əl 'el.i.mənt/ *noun*, **Y.1**

★ basic components used in design, such as line, shape, or color: *Color is an important **visual element**.*



watercolor /'wɔː.t̬ə.kəl.ə/ *noun*, **C1, Y.1**

★ a painting method using water-based paints: *She painted the landscape in **watercolor**.*

woodcut /'wʊd.kʌt/ *noun*, **B1, Y.1**

★ a printmaking technique where an image is carved into wood: *The artwork was created using **woodcut**.*

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Business

Administration



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abroad /ə'brɔ:d/ *adverb*, **A2 (Trade)**

★ in or to a foreign country: *The company is looking to expand its sales **abroad** next year.*

access /'ækses/ *noun*, **B1 (ICT)**

★ the right or ability to use something: *Only managers have **access** to confidential payroll information.*

accessibility /æk'sesə'bɪləti/ *noun*, **B1 (ICT)**

★ designing websites for people with disabilities: *Adding **accessibility** features allows visually impaired users to navigate our site.*

account /ə'kaʊnt/ *noun*, **B1 (Accounting, ICT)**

★ a record of money received, spent, or owed: *I paid the money into my savings **account**.*

★ an arrangement to use a service or site: *You need to create an **account** on the Book.com website to save your favorite hotels and manage your reservations.*

across /ə'krɒs/ *preposition/ adverb*, **A1 (Trade)**

★ from one side to the other: *We need to collaborate with teams **across** different departments.*

active /'æktɪv/ *adjective*, **A2 (Marketing)**

★ involved in a particular activity: *The brand keeps an **active** presence on TikTok to engage with teenagers.*

activity /æk'tɪvəti/ *noun*, **A1 (Marketing)**

★ a thing that a person or group does: *Online shopping **activity** usually spikes during the evening hours.*

ad /æd/ *noun*, **B1 (Marketing)**

★ short form for an advertisement: *A simple image **ad** on Instagram helped us double our website traffic.*

add /æd/ *verb*, **A1 (Accounting)**

★ to put something together with something else so as to increase the size, number, amount, etc.: *They are looking at ways to **add** further value to their products.*

address /ə'dres/ *noun*, **A1 (Trade, ICT)**

★ the details of where a building is or where to send mail: *I'll give you my **address** and phone number.*

★ the details of where to find data: *You can find our main office street **address** on our contact page.*

adult /'ædʌlt/ *noun*, **A1 (Marketing)**

★ a person who is fully grown and developed: *The campaign targets the **adult** market rather than children or teens.*

advertise /'ædvɜːtaɪz/ *verb*, **A2 (Marketing)**

★ to tell the public about a product to encourage buying: *Small businesses often **advertise** on local radio stations to find buyers.*

advertisement /,ædvɜː'taɪzmənt/ *noun*, **A2 (Marketing)**

★ a notice or display used to advertise something: *I saw an online **advertisement** for their new software program.*

advertising /'ædvɜːtaɪzɪŋ/ *noun*, **A2 (Marketing)**

★ the activity or profession of producing advertisements: *The company increased its **advertising** budget to promote the summer line.*

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agent /'eɪdʒənt/ *noun*, **B1 (Trade)**

★ a person who acts on behalf of another person or group: *Our purchasing **agent** negotiates the best prices with suppliers.*

airline /'erlaɪn/ *noun*, **A2 (Trade)**

★ a company that provides regular flights for passengers or goods: *The corporate travel policy requires us to book with a partner **airline**.*

airport /'erpoːrt/ *noun*, **A1 (Trade)**

★ a place where aircraft land and take off: *The new warehouse is located just five minutes from the **airport**.*

alt text /,ælt 'tekst/ *noun*, **B1 (ICT)**

★ descriptive text for images for accessibility: *Remember to write **alt text** for the product photos so screen readers can describe them.*

amazing /ə'meɪzɪŋ/ *adjective*, **A1 (Marketing)**

★ causing great surprise or wonder: *Customers left **amazing** reviews about our new skincare product.*

amount /ə'maʊnt/ *noun*, **A2 (Accounting)**

★ a quantity of money: *Everyone has paid the same **amount**.*

analytics /,ænə'lɪtiks/ *noun*, **B1 (ICT)**

★ analyzing data to evaluate campaign performance: *The marketing **analytics** show that most of our web traffic comes from mobile phones.*

announce /ə'naʊns/ *verb*, **B1 (Marketing)**

★ to tell people something officially: *The CEO will **announce** the new product line at the conference.*

announcement /ə'naʊnsmənt/ *noun*, **B1 (Marketing)**

★ a formal public statement: *We made a major **announcement** on our blog about the merger.*

app /æp/ *noun*, **A2 (ICT)**

★ a software program for a specific task: *Customers can track their deliveries directly inside our mobile **app**.*

area /'eriə/ *noun*, **A1 (Trade)**

★ a particular part of a place, piece of land, or country: *She is responsible for managing our sales in the tri-state **area**.*

arrival /ə'raɪvl/ *noun*, **B1 (Trade)**

★ the act of reaching a place: *Please confirm the estimated time of **arrival** for the shipment.*

arrive /ə'raɪv/ *verb*, **A1 (Trade)**

★ to reach a destination: *The raw materials are scheduled to **arrive** at the factory tomorrow.*

ask /æsk/ *verb*, **A1 (Marketing)**

★ to say something to get information: *We always **ask** our customers for feedback after a purchase.*

attention /ə'tenʃn/ *noun*, **A2 (Marketing)**

★ notice or awareness of something: *Bright colors in an ad are great for catching a user's **attention**.*

attractive /ə'træktɪv/ *adjective*, **A2 (Marketing)**

★ pleasant to look at or causing interest: *The package has an **attractive** design that stands out on shelves.*

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audience /'ɔːdiəns/ *noun*, **A2 (Marketing)**

★ the group of people who watch, read, or listen to something: *We need to create engaging video content to grow our online **audience**.*

author /'ɔːθər/ *noun*, **A2 (Marketing)**

★ a person who writes a book or article: *The guest **author** wrote a brilliant article for our corporate blog.*

B

backup /'bækʌp/ *noun*, **B1 (ICT)**

★ a copy of data stored separately to protect against loss: *We make a daily **backup** of our files, so we never lose important client data.*

balance /'bæləns/ *noun*, **B1 (Accounting)**

★ the amount of money remaining in an account: *You have to check your bank **balance**.*

bank /bæŋk/ *noun*, **A1 (Accounting)**

★ an organization where people keep and borrow money: *I don't have much money in the **bank** at the end of the month.*

basic /'beɪsɪk/ *adjective*, **B1 (Marketing)**

★ forming the most important or simplest part: *The free plan offers **basic** features, while the paid plan has more options.*

battery /'bætəri/ *noun*, **B1 (ICT)**

★ a device that stores electrical energy: *The **battery** in my work laptop died right before the conference call.*

beautiful /'bjʊ:tɪfl/ *adjective*, **A1 (Marketing)**

★ very attractive to look at: *The agency created a **beautiful** video for our holiday campaign.*

believe /bɪ'li:v/ *verb*, **A1 (Marketing)**

★ to think that something is true or real : *We want our customers to **believe** in our eco-friendly mission.*

bill /bɪl/ *noun* **A1 (Accounting)**

★ a document showing how much money you owe for goods/services: *She always pays her **bills** on time.*

bit /bɪt/ *noun*, **A2 (Marketing)**

★ a small amount or piece of something: *Spending a **bit** more on quality ads can lead to much higher sales.*

Bluetooth /'blu:tʊ:θ/ *noun*, **B1 (ICT)**

★ a short-range wireless technology to connect devices: *The wireless mouse connects to the office laptop via **Bluetooth**.*

boat /bəʊt/ *noun*, **A1 (Trade)**

★ a vessel for travelling on water: *We shipped the heavy machinery by cargo **boat** to save on costs.*

border /'bɔ:rdə/ *noun*, **B1 (Trade)**

★ the line that separates two countries: *Customs delays at the **border** slowed down our supply chain.*

borrow /'bɔ:roʊ/ *verb*, **A2 (Accounting)**

★ to take money that you agree to pay back later: *The goal is to **borrow** funds at a low interest rate.*

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bounce rate /'baʊns reɪt/ *noun*, (Marketing)

★ percentage of visitors who leave without interacting: *A high **bounce rate** means users are leaving the website too quickly.*

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box /bɔːks/ *noun*, A1 (Trade)

★ a square or rectangular container: *Pack the product securely in a cardboard **box** before shipping.*

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brand /brænd/ *noun*, B1 (Marketing)

★ the identity of a company, including its name and logo: *Our **brand** is known for high quality and excellent customer service.*

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brand awareness /brænd ə'wɛrnəs/ *noun*, (Marketing)

★ measure of how familiar people are with a brand: *Running social media ads helps build **brand awareness** among new buyers.*

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bridge /brɪdʒ/ *noun*, A2 (Trade)

★ a structure built over a river or road: *The plan includes a pedestrian **bridge** connecting the arena with the convention center.*

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brilliant /'brɪliənt/ *adjective*, A2 (Marketing)

★ extremely clever or talented: *The marketing team came up with a **brilliant** slogan for the campaign.*

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broadband /'brɔːdbænd/ *noun*, B1 (ICT)

★ a high-speed internet connection for large data: *Our office upgraded to high-speed **broadband** to ensure faster internet connections for everyone.*

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bus /bʌs/ *noun*, A1 (Trade)

★ a large road vehicle for carrying many people: *The hotel provides a shuttle **bus** for corporate guests.*

business /'bɪznəs/ *noun*, **A1 (Accounting)**

★ the activity of making, buying, or selling goods or services: *It's been a pleasure to do **business** with you.*

buy /baɪ/ *verb*, **A1 (Accounting)**

★ to get something by paying money for it: *They **buy** all their groceries in bulk.*

C

calculate /'kælkjuleɪt/ *verb*, **B2 (Accounting)**

★ to find an answer or amount using mathematics: *The ratio is **calculated** by dividing a company's share price by its earnings per share.*

campaign /kæm'peɪn/ *noun*, **B1 (ICT)**

★ coordinated series of activities for a goal: *The holiday ad **campaign** successfully boosted our sales by twenty percent.*

card /kɑːrd/ *noun*, **A1 (Accounting)**

★ a small plastic card used to pay for things (credit/debit): *Thieves used her **cards** to go on a spending spree.*

cargo /'kɑːrgoʊ/ *noun*, **B1 (Trade)**

★ goods carried on a ship, aircraft, or motor vehicle: *The aircraft is designed specifically to carry heavy commercial **cargo**.*

carrier /'kæriər/ *noun*, **B1 (Trade)**

★ a person or company that transports goods: *We hired a reliable shipping **carrier** to handle local deliveries.*

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carry /'kæri/ verb, **A2 (Trade)**

★ to move something from one place to another: *Retail stores must **carry** enough stock to meet customer demand.*

D

case /keɪs/ noun, **A2 (Trade)**

★ a container used for protecting or carrying things: *The museum was full of stuffed animals in glass **cases**.*

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cash /kæʃ/ noun, **A2 (Accounting)**

★ money in the form of coins or notes: *Customers are offered a 10% discount if they pay **cash**.*

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category /'ætəɡɔːri/ noun, **B1 (Marketing)**

★ a group of people or things with similar features: *Our app is currently number one in the business **category**.*

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celebrate /'selɪbreɪt/ verb, **A2 (Marketing)**

★ to show that an occasion is important: *We ran a special promo to **celebrate** our tenth year in business.*

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celebration /ˌselɪ'breɪʃn/ noun, **B1 (Marketing)**

★ a social event to celebrate something: *The company hosted a **celebration** for reaching its sales goals.*

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cent /sent/ noun, **A1 (Accounting)**

★ a unit of money worth 1/100 of a dollar or euro: *A one-minute phone call to the UK cost 10 **cents**.*

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center /'sentər/ noun, **A1 (Trade)**

★ the middle point or part of something: *The customer service **center** handles over a thousand calls a day.*

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certain /'sɜːrtɪn/ *adjective*, **A2 (Marketing)**

★ completely sure about something: *We use data to be **certain** that our ads are reaching the right people.*

certainly /'sɜːrtɪnli/ *adverb*, **A2 (Marketing)**

★ without any doubt: *This new feature will **certainly** appeal to our current users.*

change /tʃeɪndʒ/ *noun*, **B1 (Accounting)**

★ the money that you get back when you pay with more than it costs: *The cashier handed him his receipt and \$5 in **change**.*

channel /'tʃænl/ *noun*, **B1 (Marketing)**

★ a way of communicating or expressing something: *Email is our most profitable **channel** for driving return sales.*

character /'kærəktər/ *noun*, **A2 (Marketing)**

★ all the qualities that make a person or thing different: *Honest messaging helps build a brand **character** that customers can genuinely trust.*

charge /tʃɑːrdʒ/ *noun/verb*, **B1 (Accounting)**

★ the amount of money that somebody asks for a service: *We have to make a small **charge** for refreshments.*

cheap /tʃiːp/ *adjective*, **A1 (Accounting)**

★ costing little money: *Their **cheap** prices have helped them pick up new customers.*

check /tʃek/ (U.S.) *verb*, **B1 (Accounting)**

★ a printed form used to pay instead of cash: *After a minute, she wrote out the **check** and placed it on the table.*

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choice /tʃɔɪs/ noun, **A2 (Trade)**

★ the act of picking between two or more possibilities: *Customers appreciate having a **choice** between standard and express shipping.*

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choose /tʃuːz/ verb, **A1 (Trade)**

★ to pick out someone or something from a group: *Clients can **choose** to pay by credit card or bank transfer.*

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city /ˈsɪti/ noun, **A1 (Trade)**

★ a large and important town: *Our corporate headquarters is located in the center of the **city**.*

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claim /kleɪm/ verb, **B1 (Marketing)**

★ to say that something is true: *Do not **claim** your product can do things it actually cannot.*

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clear /klɪr/ adjective, **A2 (Marketing)**

★ easy to understand or see: *The ad must have a **clear** call to action so users know where to click.*

P

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clearly /ˈklɪrli/ adverb, **A2 (Marketing)**

★ in a way that is easy to see or hear: *The graphic **clearly** shows the benefits of upgrading to premium.*

S

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clever /ˈklevər/ adjective, **A2 (Accounting)**

★ quick at learning and understanding things: *A **clever** headline makes people want to stop and read the ad.*

V

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click /kɪk/ verb, **B1 (ICT)**

★ to press a button on a mouse or screen: *Just **click** the link below to sign up for the company newsletter.*

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cloud storage /klaʊd 'stɔːrɪdʒ/ *noun*, **B1 (ICT)**

★ saving data on remote servers via the internet: *We save all our project folders in **cloud storage** so the whole team can access them.*

coast /koʊst/ *noun*, **A2 (Trade)**

★ the part of the land near the sea: *The logistics firm operates major distribution hubs along the East **coast**.*

code /koʊd/ *noun*, **A2 (ICT)**

★ a set of instructions for a computer: *The software developer wrote new **code** to fix the bug in our app.*

coin /kɔɪn/ *noun*, **B1 (Accounting)**

★ a small, flat piece of metal used as money: *I used to collect **coins** when I was a kid.*

combine /kəm'baɪn/ *verb*, **B1 (Marketing)**

★ to join two or more things together: *We **combine** email marketing with social ads for the best results.*

comment /'kɑːment/ *noun*, **A2 (ICT)**

★ something written to give an opinion: *The customer left a positive **comment** on our social media post.*

commercial /kə'mɜːrʃl/ *adjective*, **B1 (Marketing)**

★ connected with buying and selling: *The brand sees great **commercial** success with its new line of running shoes.*

company /'kʌmpəni/ *noun*, **A1 (Accounting)**

★ a business organization that makes or sells goods/services: *It is the world's largest software **company**.*

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compare /kəm'per/ verb, **A1 (Accounting)**★ to examine things to see how they are different: *Consumers often **compare** prices online before making a final choice.*

D

comparison /kəm'pæɪsn/ noun, **B1 (Marketing)**★ the act of comparing two or more things: *The ad features a direct **comparison** between our speed and a rival's speed.*

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complex /kəm'pleks/ adjective, **B1 (Marketing)**★ made of many different related parts: *Keep the ad simple, as a **complex** message will confuse the audience.*

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computer /kəm'pjʊ:tər/ noun, **A1 (ICT)**★ a machine used for processing and storing data: *Every new employee receives a laptop **computer** on their first day of work.*

K

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confirm /kən'fɜ:rm/ verb, **B1 (Marketing)**★ to state that something is definitely true: *Please send an email to **confirm** the details of the ad placement.*

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connection /kə'nekʃn/ noun, **B1 (ICT)**★ a state of being linked or associated: *A bad internet **connection** caused the video call to drop.*

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consider /kən'sɪdər/ verb, **A2 (Marketing)**★ to think carefully about something: *Buyers usually **consider** budget and quality before picking a brand.*

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container /kən'teɪnər/ noun, **B1 (Trade)**★ a very large metal box which holds goods for transport: *The workers loaded the shipping **container** onto the cargo ship.*

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content /'kɑːntent/ *noun*, **B1** (Trade, ICT)

★ the things that are held or included in something: *She hadn't read the letter and so was unaware of its **contents**.*

★ the information or parts within something: *The marketing team writes useful blog **content** to attract new customers.*

context /'ɑːntekst/ *noun*, **A2** (Marketing)

★ the situation in which something happens: *The ad performed well because it was shown in the right **context**.*

continue /kən'tɪnjuː/ *verb*, **A2** (Marketing)

★ to keep happening or doing something: *We will **continue** to test different ad designs throughout the month.*

control /kən'trəʊl/ *noun*, **A2** (Trade)

★ the power to influence or direct people or things: *Quality **control** inspects every item before it leaves the factory.*

conversion rate /kən'vɜːrʒn reɪt/ *noun*, (Marketing)

★ percentage of visitors who take a desired action: *We optimized the checkout page to improve our sales **conversion rate**.*

convince /kən'vɪns/ *verb*, **B1** (Marketing)

★ to make someone believe that something is true: *A strong video testimonial can **convince** hesitant buyers to order.*

copy /'kɑːpi/ *verb*, **A2** (ICT)

★ to make a second version of a file or text: *Could you **copy** this letter and send it out, please?*

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cost /kɔːst/ *noun*, **A1 (Accounting)**

★ the amount of money needed to buy or do something:
*We did not even make enough money to cover the **cost** of the food.*

country /'kʌntri/ *noun*, **A1 (Trade)**

★ an area of land that has its own government: *Our brand is now the leading provider of software in the **country**.*

CPU /ˌsiː piː 'juː/ *noun*, **(ICT)**

★ the main processor that performs calculations: *We bought new computers with a faster **CPU** to handle heavy data processing.*

credit /'kredit/ *noun*, **A2 (Accounting)**

★ an arrangement to pay for something later: *We bought the dishwasher on **credit**.*

CSS /ˌsiː es 'es/ *noun*, **(ICT)**

★ language used to describe web page presentation: *The designer used **CSS** to change the font colors on our website.*

CTR /ˌsiː tiː 'ɑːr/ *noun*, **(Marketing)**

★ *Click-Through Rate*; percentage of people who click an ad: *The email had a high **CTR**, meaning many people clicked the link inside.*

cultural /'kʌltʃərəl/ *adjective*, **B1 (Marketing)**

★ connected with the culture of a society: *Advertisements must respect local **cultural** trends when expanding abroad.*

culture /'kʌltʃər/ *noun*, **A1 (Marketing)**

★ the customs and beliefs of a particular group: *The company **culture** focuses on innovation and customer care.*

currency /'kɜːrənsi/ *noun*, **B1 (Accounting)**

★ the system of money used in a particular country: *You'll need some cash in local **currency**, but you can also use your credit card.*

current /'kɜːrənt/ *adjective*, **B1 (Marketing)**

★ happening or existing now: *Our **current** goal is to get ten thousand new email signups.*

currently /'kɜːrəntli/ *adverb*, **B1 (Marketing)**

★ at the present time: *We are **currently** running a fifteen percent discount for new members.*

custom /'kʌstəm/ *noun*, **B1 (Trade)**

★ a traditional way of behaving (or related to tax on imports): *She grew up with Chinese **customs** and traditions.*

customer /'kʌstəmə/ *noun*, **A1 (Accounting)**

★ a person who buys goods or services from a shop or business: *They know me—I'm a regular **customer**.*

customer journey /'kʌstəmə 'dʒɜːrni/ *noun*, **(Marketing)**

★ the complete experience of a customer with a brand: *Mapping the **customer journey** helps us see how buyers find our shop.*

customer persona /'kʌstəmə pər'soʊnə/ *noun*, **(Marketing)**

★ fictional representation of an ideal customer: *Our primary **customer persona** is a tech-savvy manager who shops online.*

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customer satisfaction /'kʌstəməɹ ,sætɪs'fækʃn/
noun, (Marketing)

★ measure of how happy customers are with a product: *High **customer satisfaction** leads to repeat business and good reviews.*

cut /kʌt/ *noun/verb, B1 (Accounting)*

★ a reduction in the amount or size of something: *Buyers will bargain hard to **cut** the cost of the house they want.*

D

daily /'deɪli/ *adjective, A2 (Marketing)*

★ happening or done every day: *The team monitors **daily** ad spend to avoid going over budget.*

data /'deɪtə/ *noun, A2 (Accounting, (ICT))*

★ information or facts: *We collected publicly available **data** over a 10-day period.*

★ facts or information used to analyze or plan: *We analyze customer **data** to find out which products are the most popular.*

data type /'deɪtə taɪp/ *noun, B1 (ICT)*

★ specifies the kind of data a field can hold: *When setting up the form, ensure the zip code field uses a number **data type**.*

database /'deɪtəbeɪs/ *noun, B1 (ICT)*

★ an organized collection of data: *Our sales **database** contains contact information for thousands of leads.*

date /deɪt/ *noun*, **B1 (Accounting)**

★ a particular day of the month or year: Write today's **date** at the top of the page.

debt /det/ *noun*, **B2 (Accounting)**

★ an amount of money that a person or company owes: After settling his **debts** he was left with just £2000.

decrease /dɪ'kriːs/ *noun/verb*, **A2 (Accounting)**

★ to become smaller in size, number, or amount: The price of wheat has **decreased** by 5 per cent.

deliver /dɪ'lvər/ *verb*, **B1 (Accounting)**

★ to take goods to a person or place: We **deliver** to our stores seven days a week.

delivery /dɪ'lvəri/ *noun*, **B1 (Trade)**

★ the act of taking goods to a person or place: The online store guarantees free **delivery** on orders over fifty dollars.

demographics /ˌdemə'græfɪks/ *noun*, **(Marketing)**

★ statistical data about a population like age and gender: The agency analyzed customer **demographics** like age, location, and income.

departure /dɪ'pɑːrtʃər/ *noun*, **B1 (Trade)**

★ the act of leaving a place: Check the flight monitor for the exact **departure** time of your business trip.

deposit /dɪ'pɑːzɪt/ *noun/verb*, **B1 (Accounting)**

★ to put money into a bank account: **Deposits** can be made at any branch.

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describe /dɪ'skraɪb/ verb, **A1 (Marketing)**

★ to say what someone or something is like: *Use clear words to **describe** how the product works.*

description /dɪ'skrepʃn/ noun, **A1 (Marketing)**

★ a statement that says what someone is like: *The online store features a detailed **description** for every item.*

design /dɪ'zaɪn/ noun/verb, **A1 (ICT)**

★ plan for how something will look or work: *The new product **design** looks very modern and professional.*

destination /,destɪ'neɪʃn/ noun, **B1 (Trade)**

★ the place to which someone or something is going: *The inventory reached its final **destination** ahead of schedule.*

detail /'di:teɪl/ noun, **A1 (Accounting)**

★ a small individual fact or item: *Tell me the main points now; leave the **details** till later.*

device /dɪ'vaɪs/ noun, **A2 (ICT)**

★ a tool or machine for a specific task: *You can connect any mobile **device** to the office smart TV for presentations.*

difference /'dɪfrəns/ noun, **A1 (Accounting)**

★ the amount by which one thing is unlike another: *Americans and Brits speak the same language, but there are big cultural **differences**.*

digital /'dɪdʒɪtl/ adjective, **A2 (ICT)**

★ using a system of numbers, especially 0 and 1: *The company shifted its budget from print ads to **digital** marketing.*

direct /də'rekt/ *adjective*, **A2 (Accounting)**

★ going straight to a place or person without stopping:
*Many farmers are developing **direct** access to consumers.*

direct advertising /də'rekt 'ædvətaɪzɪŋ/
noun, **A2 (Marketing)**

★ content that explicitly encourages users to buy: *A flyer with a coupon is a classic example of a **direct advertisement**.*

directly /də'rektli/ *adverb*, **B1 (Marketing)**

★ without anyone or anything else involved: *The link takes the user **directly** to the product checkout page.*

discount /'dɪskaʊnt/ *noun*, **B1 (Accounting)**

★ a reduction in the usual price of something: *They're offering a 10% **discount** on all sofas this month.*

discover /dɪ'skʌvər/ *verb*, **A2 ((Marketing)**

★ to find information or a place for the first time: *Market research helps us **discover** what our competitors are doing.*

discovery /dɪ'skʌvəri/ *noun*, **A2 (Marketing)**

★ the act of finding something: *The **discovery** of a new target market helped save our business.*

discuss /dɪ'skʌs/ *verb*, **A1 (Marketing)**

★ to talk about something with somebody: *The creative team will meet to **discuss** ideas for the next ad.*

discussion /dɪ'skʌʃn/ *noun*, **A2 (Marketing)**

★ a conversation about something: *After a long **discussion**, we decided to change our brand logo.*

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distance /'dɪstəns/ *noun*, **A2 (Trade)**★ the amount of space between two places: *Working from home is easy because technology eliminates the **distance**.***divide** /dɪ'vaɪd/ *verb*, **B1 (Accounting)**★ to separate into parts or find how many times a number is in another: *The money was **divided** equally among his sons.***document** /'dɒːkjumənt/ *noun*, **A2 (Accounting, ICT)**★ an official paper that gives information or proof: *This is an important legal **document**.*★ a piece of paper or computer file with information: *The legal team is drafting a confidential **document** for the partnership.***dollar** /'dɒːləɹ/ *noun*, **A1 (Accounting)**★ the unit of money used in the U.S. and other countries: *You will be paid in American **dollars**.***domain name** /dɒm'eɪn neɪm/ *noun*, **B1 (ICT)**★ the address used to access a website: *The company purchased a short **domain name** that is easy for customers to remember.***double** /'dʌbl/ *adjective*, **A2 (Accounting)**★ twice as much or as many as usual: *They have created a **double**-page advertisement.***download** /ˌdaʊn'loʊd/ *verb*, **A2 (ICT)**★ to copy data from the internet to a computer: *Click here to **download** the latest version of the user manual.***driver** /'draɪvə/ *noun*, **A2 (Trade)**★ a person who drives a vehicle: *The delivery **driver** dropped off the office supplies this morning.*

drop /dra:p/ verb, **A2 (Trade)**

★ to let something fall or to deliver something: *Medical supplies are being **dropped** into the stricken area.*

E

earn /ɜ:rn/ verb, **A2 (Accounting)**

★ to get money by working: *He **earns** about \$40000 a year.*

east /i:st/ noun/verb, **A1 (Trade)**

★ the direction where the sun rises: *The company plans to open three new retail stores in the **east** region.*

economic /,ekə'na:mɪk/ adjective, **B1 (Accounting)**

★ relating to trade, industry, and money: *There will be no quick **economic** recovery.*

economy /'i:kə'nəmi/ noun, **B1 (Accounting)**

★ the system of trade and industry by which wealth is produced: *Tourism clearly dominates the local **economy**.*

effect /ɪ'fekt/ noun, **A2 (Marketing)**

★ a change that is caused by something: *The discount had an immediate positive **effect** on our total sales.*

effective /ɪ'fektɪv/ adjective, **B1 (Marketing)**

★ producing the result that is wanted: *Social media video ads are very **effective** for catching attention.*

effectively /ɪ'fektɪvli/ adverb, **B1 (Marketing)**

★ in a way that produces the desired result: *The new slogan **effectively** explains what our company does.*

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effort /'efərt/ *noun*, **B1 (Marketing)**

★ the physical or mental energy needed to do something: *Designing a great website takes a lot of time and **effort**.*

electronic /ɪˌlek'trɔ:nɪk/ *adjective*, **A2 (Accounting)**

★ using electricity and small parts like microchips: *Airline passengers no longer have to turn off all **electronic** devices while on the plane.*

element /'elɪmənt/ *noun*, **B1 (Marketing)**

★ a necessary or typical part of something: *A strong headline is a crucial **element** of any print advertisement.*

email /'i:meɪl/ *noun*, **A1 (ICT)**

★ an electronic message sent over a network: *Send me an **email** once you finish reviewing the contract.*

email blast /'i:meɪl blæst/ *noun*, **(Marketing)**

★ mass email sent to a large audience at once: *We sent an **email blast** to all subscribers announcing the weekend discount.*

employ /ɪm'plɔɪ/ *verb*, **A2 (Accounting)**

★ to pay someone to work for you: *How many people does the company **employ**?*

employee /ɪm'plɔɪi:/ *noun*, **A2 (Accounting)**

★ a person who is paid to work for someone else: *The firm has over 500 **employees**.*

employer /ɪm'plɔɪər/ *noun*, **A2 (Accounting)**

★ a person or company that pays people to work for them: *They're one of the largest **employers** in the area.*

encryption /ɪnˈkrɪpʃn/ noun, **B1 (ICT)**

★ converting data into a code to prevent access: *The payroll department uses strong **encryption** to protect employee bank details.*

engagement /ɪnˈɡeɪdʒmənt/ noun, **B1 (ICT)**

★ interaction between users and content: *The latest post got high **engagement** with hundreds of likes and comments.*

enormous /ɪˈnɔːrməs/ adjective, **A2 (Marketing)**

★ extremely large: *The viral video generated an **enormous** amount of website traffic.*

entry /ˈentri/ noun, **B1 (Trade)**

★ the act of going into a place: *The security guard asked to see her identification badge before granting her **entry** into the secure research facility.*

error /ˈerər/ adjective, **A2 (Accounting, Trade)**

★ a mistake: *The report contains some factual **errors** that must be corrected.*

★ the act of going into a place: *The report contains some factual **errors** that must be corrected.*

essential /ɪˈsenʃl/ adjective, **B1 (Marketing)**

★ completely necessary: *Good imagery is **essential** for creating an attractive luxury brand.*

euro /ˈjʊroʊ/ noun, **A1 (Marketing)**

★ the unit of money used in most countries of the EU: *I paid five **euros** for it.*

evidence /ˈeɪdəns/ noun, **A2 (Marketing)**

★ facts or information that show something is true: *Case studies provide clear **evidence** that our software works.*

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exact /ɪg'zækt/ adjective, **A2 (Marketing)**

★ correct in every detail: *We need to find the **exact** words that resonate with our audience.*

exactly /ɪg'zæktli/ adverb, **A2 (Marketing)**

★ used to emphasize that something is correct: *The data shows **exactly** how many people clicked the banner.*

excellent /'eksələnt/ adjective, **A2 (Marketing)**

★ extremely good: *Word-of-mouth marketing is an **excellent** way to build trust.*

exchange /ɪks'tʃeɪndʒ/ noun/verb, **B1 (Accounting)**

★ the act of giving something and receiving something else: *We need to promote an open **exchange** of ideas and information.*

exit /'egzɪt/ noun, **B1 (Trade)**

★ a way out of a building or place: *There is a fire **exit** on each floor of the building.*

expect /ɪk'spekt/ verb, **A2 (Marketing)**

★ to think that something will happen: *We **expect** a massive spike in orders during Black Friday.*

expected /ɪk'spektɪd/ adjective, **B1 (Marketing)**

★ that you think will happen: *The campaign brought in more leads than our **expected** target.*

expense /ɪk'spens/ noun, **B2 (Accounting)**

★ money that you spend when you are doing your job: *The garden was transformed at great **expense**.*

expensive /ɪk'spensɪv/ *adjective*, **A1 (Accounting)**

★ costing a lot of money: *I can't afford it—it's too **expensive**.*

experience /ɪk'spɪriəns/ *noun*, **A2 (Marketing)**

★ knowledge or skill from doing something: *We focus on making the online shopping **experience** fast and easy.*

experienced /ɪk'spɪriənst/ *adjective*, **B1 (Marketing)**

★ having knowledge or skill in a particular job: *We hired an **experienced** copywriter to craft our sales letters.*

expert /'ekspɜːrt/ *noun*, **A2 (Marketing)**

★ a person with special knowledge or skill: *The marketing **expert** gave us advice on how to improve our SEO.*

explain /ɪk'spleɪn/ *verb*, **A1 (Accounting)**

★ to make something clear or easy to understand: *First, I'll **explain** the rules of the game.*

explanation /ˌeksplə'neɪʃn/ *noun*, **A2 (Marketing)**

★ a statement that makes something clear: *The homepage includes a short video **explanation** of our service.*

export /ɪ'senʃl/ *noun/verb*, **B1 (Accounting)**

★ to send goods to another country for sale: *There is a ban on the **export** of live cattle.*

extreme /ɪk'striːm/ *adjective*, **A2 (Marketing)**

★ very great in degree: *The project was an **extreme** success, beating all previous records.*

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extremely /ɪk'striːmli/ *adverb*, **A2 (Marketing)**

★ to a very high degree: *Influencer posts can be **extremely** useful for beauty brands.*

F

Facebook insights /'feɪsbʊk 'ɪnsaɪts/ *noun*, **(Marketing)**

★ tool providing data on Facebook page interactions: *The team checked **Facebook insights** to see which posts got the most likes.*

factor /'fæktər/ *noun*, **A2 (Marketing)**

★ one of several things that cause a situation: *Price is the biggest **factor** for customers choosing our brand.*

factory /'fæktəri/ *noun*, **A2 (Trade)**

★ a building where goods are manufactured in large quantities: *The **factory** produces over ten thousand units of the product each day.*

fall /fɔːl/ *noun/verb*, **A2 (Accounting)**

★ to become lower in amount or value: *Prices continued to **fall** on the stock market today.*

famous /'feɪməs/ *adjective*, **A1 (Marketing)**

★ known about by many people: *The company hired a **famous** actor to star in their new commercial.*

fantastic /fæn'tæstɪk/ *adjective*, **A1 (Marketing)**

★ extremely good: *The creative agency did a **fantastic** job with our new billboard.*

fare /fer/ *noun*, **B1 (Trade)**

★ the money paid for a journey on public transport: *The company reimburses employees for train **fare** during business travel.*

fascinating /'fæsɪneɪtɪŋ/ *adjective*, **B1 (Marketing)**

★ extremely interesting: *The analytics report revealed some **fascinating** trends about user habits.*

fast /fæst/ *adjective/adverb*, **A1 (Trade)**

★ moving or happening at high speed: *We offer a **fast** checkout process to improve the online shopping experience.*

feature /'fi:tʃər/ *noun*, **A2 (Marketing)**

★ an important part or characteristic of something: *The ad highlights the most popular **feature** of our software.*

fee /fi:/ *noun*, **B2 (Accounting)**

★ an amount of money paid for a particular piece of work: *The school **fees** are expected to rise again next year.*

feel /fi:l/ *verb*, **A1 (Marketing)**

★ to experience a particular emotion: *We want our customers to **feel** valued and appreciated.*

feeling /'fi:lɪŋ/ *noun*, **A1 (Marketing)**

★ an emotion that you feel: *The holiday commercial gave viewers a warm, nostalgic **feeling**.*

field /fi:ld/ *noun*, **A2 (ICT, Trade)**

★ a single piece of data or attribute in a table: *You must fill out the email **field** before you can submit the form.*

★ an area of open land or a subject of study: *He is an expert in the **field** of data analytics.*

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file /faɪl/ *noun/verb*, **B1 (Accounting, ICT)**

★ a collection of information about a particular subject: *You can transfer and edit **files** on your smartphone.*

★ a collection of information stored on a computer: *Please save the financial **file** as a PDF before emailing it to the client.*

fill /fɪl/ *verb*, **A1 (Accounting)**

★ to put something into a space until it is full: *Smoke **filled** the room.*

final /'faɪnəl/ *adjective*, **A1 (Accounting)**

★ being the last in a series: *The project is in its **final** stages.*

financial /faɪ'nænsjəl/ *adjective*, **B1 (Accounting)**

★ relating to money or how money is managed: *The current **financial** crisis is global.*

firewall /'faɪərwɔːl/ *noun*, **B1 (ICT)**

★ a security system that controls network traffic: *The company's **firewall** blocks unauthorized users from accessing internal files.*

fixed /fɪkst/ *adjective*, **B1 (Accounting)**

★ staying the same; not changing: *These **fixed** prices give farmers a degree of financial security.*

flight /flaɪt/ *noun*, **A2 (Trade)**

★ a journey made by air: *She booked a morning **flight** to attend the corporate conference.*

flow /floʊ/ *noun*, **B1 (Trade)**

★ the steady movement of something in one direction: *Good cash **flow** is essential for keeping a small business running.*

fly /flaɪ/ verb, **A1 (Trade)**

★ to move through the air using wings or an aircraft: *Our executives often **fly** to London to meet with international investors.*

focus /'fəʊkəs/ verb, **A2 (Marketing)**

★ to give all your attention to something: *Our current marketing campaigns **focus** heavily on sustainability.*

following /'fɑːləʊɪŋ/ adjective, **A2 (Trade)**

★ coming after something else in time or order: *The **following** report outlines our budget goals for next year.*

foreign /'fɔːrən/ adjective, **A2 (Trade)**

★ of or from a country other than one's own: *The government placed a new tax on **foreign** goods.*

form /fɔːrm/ noun, **A2 (Accounting, ICT)**

★ a document with spaces for you to write information: *I filled out a **form** on their website.*

★ an interface for entering and viewing data: *The client filled out the contact **form** to request a price quote.*

free /friː/ adjective, **A2 (Accounting)**

★ costing no money: *Admission is **free**.*

freight /freɪt/ noun, **B1 (Trade)**

★ goods transported by truck, train, ship, or aircraft: *We use a **freight** forwarder to manage our international shipping.*

fresh /freʃ/ adverb, **A2 (Marketing)**

★ new or different: *We need **fresh** content for our Instagram page every single week.*

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friendly /'frendli/ *adjective*, **A1 (Marketing)**

★ behaving in a kind and pleasant way: *The brand uses a warm, **friendly** tone in all its customer emails.*

FTP /,ef ti: 'pi:/ *noun*, **(ICT)**

★ a method for transferring files to a web server: *Use the **FTP** server to upload large video files to our corporate website.*

fuel /'fju:əl/ *noun*, **B1 (Trade)**

★ material burned to produce heat or power: *Rising **fuel** costs are making product delivery more expensive.*

fun /fʌn/ *noun*, **A1 (Marketing)**

★ enjoyment or pleasure: *The marketing team planned a **fun** interactive contest for our followers.*

function /'fʌŋkʃn/ *noun*, **B1 (ICT)**

★ a specific job that a part of a system does: *The search **function** on our website makes it easy to find products.*

G

gain /geɪn/ *noun/verb*, **B2 (Accounting)**

★ an increase in amount, value, or profit: *The party made considerable **gains** at local elections.*

gate /geɪt/ *noun*, **A2 (Trade)**

★ an exit from an airport to an aircraft: *Please wait at the boarding **gate** for your flight to be called.*

general /'dʒenrəl/ adjective, **A2 (Marketing)**

★ affecting or including most people or things: *The **general** trend has been a slow decline in output.*

give /gɪv/ verb, **A1 (Accounting)**

★ to hand something to someone: *She **gave** her ticket to the woman at the check-in desk.*

global /'gloʊbl/ adjective, **B1 (Accounting, Trade)**

★ relating to the whole world: *This year the **global** economy will grow by about 4 per cent; The tech giant has a **global** workforce spread across thirty countries.*

goods /gʊdz/ noun, **B1 (Accounting, Trade)**

★ things that are produced to be sold: *There will be tax increases on a range of **goods** and services; The warehouse is used to store finished **goods** before distribution.*

great /greɪt/ adjective, **A1 (Marketing)**

★ very good or large: *A **great** product description answers all the buyer's questions.*

gross /ɡroʊs/ adjective, **C1 (Accounting)**

★ total amount before tax or other costs are taken away: *Investments showed a **gross** profit of 26 per cent.*

group /ɡru:p/ noun, **A1 (Trade)**

★ a number of people or things that are located together: *The consulting **group** offered advice on how to improve efficiency.*

grow /ɡroʊ/ verb, **A1 (Accounting)**

★ to increase in size, number, or amount: *Sales are **growing** fast.*

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growth /groʊθ/ *noun*, **B1** (Accounting)

★ an increase in the size or importance of something: *The report links population **growth** with rural poverty.*

GUI /ˌdʒiː juː ˈaɪ/ *noun*, (ICT)

★ interacting with a computer using icons and menus: *The new software has a simple **GUI** that makes it easy for beginners to navigate.*



handle /ˈhændl/ *verb*, **B1** (Trade)

★ to manage, deal with, or be responsible for: *The HR department will **handle** all employee complaints.*

hardware /ˈhɑːrdwer/ *noun*, **B1** (ICT)

★ the physical components of a computer system: *The company provides all the necessary **hardware**, including laptops, monitors, and keyboards.*

hashtag /ˈhæftæg/ *noun*, **A2** (ICT)

★ a word used to categorize content and increase discovery: *The brand created a unique **hashtag** for the product launch event.*

help /help/ *verb*, **A1** (Accounting)

★ to make it easier for someone to do something: *What can I do to **help**?*

high /haɪ/ *adjective*, **A2 (Accounting)**

★ large in amount, size, or level: *Demand is **high** at this time of year.*

highly /'haɪli/ *adverb*, **B1 (Marketing)**

★ at or to a high degree: *This tool is **highly** recommended for tracking keyword rankings.*

hire /'haɪər/ *verb*, **B1 (Accounting)**

★ to pay to use something for a short time: *We **hired** a car from a local firm.*

HTML /ˌeɪtʃ tiː em 'el/ *noun*, **(ICT)**

★ the standard language used to create web pages: *The developer edited the **HTML** to add a new text paragraph to the homepage.*

hyperlink /'haɪpərɪŋk/ *noun*, **A2 (ICT)**

★ a clickable element that directs users to a resource: *Click the **hyperlink** in the text to download the full report.*

I

image /'ɪmɪdʒ/ *noun*, **A2 (ICT)**

★ a picture or representation of something: *Use a clear **image** of the product for the front page of the brochure.*

imagine /ɪ'mædʒɪn/ *verb*, **A1 (Marketing)**

★ to form a picture in your mind: *Can you **imagine** managing your business without our automated tool?*

A

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important /ɪm'pɔ:rtnt/ adjective, **A1 (Accounting)**★ having a great effect or value: *We have an **important** decision to make.*

C

D

impression /ɪm'preʃn/ noun, **B1 (Marketing)**★ when an ad or post is displayed on a user's screen: *The banner ad gained over one million **impressions** but very few clicks.*

E

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impressive /ɪm'presɪv/ adjective, **B1 (Marketing)**★ causing feeling of admiration and respect: *The startup achieved **impressive** growth in its very first year.*

H

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improve /ɪm'pru:v/ verb, **A1 (Accounting)**★ to make something better: *Working conditions have greatly **improved**.*

K

L

improvement /ɪm'pru:vmənt/ noun, **B1 (Marketing)**★ the act of making something better: *We saw a major **improvement** in sales after changing the ad layout.*

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include /ɪn'klu:d/ verb, **A1 (Accounting)**★ to contain something as a part of a whole: *Does the price **include** tax?*

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income /'ɪnkʌm/ noun, **B2 (Accounting)**★ the money that a person or company earns: *His parents have a combined annual **income** of less than \$85,000.*

S

T

increase /ɪn'kri:s/ noun/verb, **A2 (Accounting)**★ to become larger in amount or number: *Costs have **increased** significantly.*

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incredible /ɪnˈkredəbl/ *adjective*, **A2 (Marketing)**

★ extremely good or hard to believe: *The brand received an **incredible** response to its charity campaign.*

indicate /ˈɪndɪkeɪt/ *verb*, **B1 (Marketing)**

★ to show that something exists or is true: *Low click rates usually **indicate** that the ad headline is boring.*

indirect advertising /ˌɪndəˈrekt ˈædvɜːtaɪzɪŋ/ *noun*,
B1 (Marketing)

★ subtle promotion through blogs or sponsorships: *Product placement in a popular movie works as an **indirect advertisement**.*

individual /ˌɪndɪˈvɪdʒuəl/ *noun/adjective*, **A2 (Marketing)**

★ considered separately rather than as a group: *We personalize emails to target the needs of each **individual** customer.*

influence /ˈɪnfluəns/ *noun/verb*, **B1 (Marketing)**

★ the power to affect how someone thinks or behaves: *Customer reviews have a huge **influence** on buying decisions.*

influencer /ˈɪnfluənsər/ *noun*, **B1 (ICT)**

★ a person with many followers who can influence others: *We hired a popular **influencer** to promote our new skincare line on Instagram.*

influencer marketing /ˈɪnfluənsər ˈmɑːrkɪtɪŋ/ *noun*,
Marketing)

★ collaborating with influencers to promote products: *We use **influencer marketing** to show our products in everyday life.*

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information /ˌɪnfərˈmeɪʃn/ noun, **A1**

(Accounting, ICT, Trade)

★ facts about a situation, person, or event: *The documents contain confidential personal **information**.*

★ facts provided or learned about something: *Contact HR if you need more **information** about employee benefits; Please send me more **information** about your services.*

instruction /ɪnˈstrʌkʃn/ noun, **A2 (ICT)**

★ information telling how to do something: *Read the step-by-step **instruction** guide before using the new software.*

interest /ˈɪntrəst/ noun, **B1 (Accounting)**

★ money that you pay for borrowing or receive for saving: *The money was repaid with **interest**.*

international /ˌɪntərˈnæʃnəl/ adjective, **A2 (Accounting)**

★ involving more than one country: *There has been a drop in prices on the **international** markets.*

internet /ˈɪntənet/ noun, **A1 (ICT)**

★ a global network connecting private and public networks: *Employees use the **internet** to research competitors and connect with clients.*

invest /ɪnˈvest/ verb, **B1 (Accounting)**

★ to put money into a business to get a profit: *She advised us to **invest** in the property market.*

investment /ɪnˈvestmənt/ noun, **B2 (Accounting)**

★ the act of investing money: *The area is trying to attract £11 million of private **investment** to stimulate the local economy.*

ISP /ˌaɪ es 'piː/ *noun*, (ICT)

★ a company that provides access to the internet: *We contacted our **ISP** to report a temporary internet outage in the building.*

item /'aɪtəm/ *noun*, A2 (Accounting, Trade)

★ one thing which is part of a list: *Students had to select three topics from the list of **items**.*

★ an individual article or unit: *Each **item** in our catalog comes with a one-year warranty.*

J

JavaScript /'dʒɑːvəskɹɪpt/ *noun*, (ICT)

★ language used to create interactive web effects: *We added **JavaScript** to the website to create an interactive popup form.*

job /dʒɑːb/ *noun*, A1 (Accounting)

★ the regular work that a person does for money: *He's trying to get a **job**.*

join /dʒɔɪn/ *verb*, A1 (Accounting)

★ to become a member of an organization: *She **joined** the company three months ago.*

journey /'dʒɜːrni/ *noun*, A2 (Trade)

★ the act of travelling from one place to another: *Launching a new business is a long and challenging **journey**.*

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K

keep /ki:p/ verb, **A1 (Accounting)**

★ to continue to have or own something: *She handed the waiter a hundred-dollar bill and told him to **keep** the change.*

keyboard /'ki:bɔ:rd/ noun, **B1 (Accounting)**

★ a set of keys for typing on a computer: *The accountant requested an ergonomic **keyboard** to reduce wrist strain.*

know /noʊ/ verb, **A1 (Accounting)**

★ to have information in your mind: *All I **know** is that she used to work in a bank.*

KOL /ˌkeɪ ɒs 'el/ noun, **(Marketing)**

★ Key Opinion Leader; an expert with authority in a field: *The tech company hired a well-known **KOL** to review their new laptop.*

L

LAN /læn/ noun, **(ICT)**

★ a network that connects computers within a limited area: *All printers and computers in the office are connected to the same local **LAN**.*

land /lænd/ noun, **A1 (Accounting, Trade)**

★ an area of ground that is used for building or farming: *Some of the country's richest grazing **lands** are in these valleys.*

★ the part of the earth's surface not covered by water: *The development company bought a piece of **land** to build a new office.*

landing page /'lændɪŋ peɪdʒ/ *noun*, (Marketing)

★ standalone web page designed for a specific campaign: *The ad directs users to a specific **landing page** where they can sign up.*

laptop /'ki:bɔːrd/ *noun*, A2 (ICT)

★ a small, portable computer: *Remote workers can bring their company **laptop** home to work from there.*

large /lɑːrdʒ/ *adjective*, A1 (Accounting)

★ big in size or amount: *There were some very **large** amounts of money involved.*

law /lɔː/ *noun*, A2 (Accounting)

★ the system of official rules in a country: *The reforms have recently become **law**.*

lead /li:d/ *verb*, A2 (Accounting)

★ to be in control of a group of people or organization: *A good manager **leads** by example.*

lead generation /'li:d ˌdʒenə'reɪʃn/ *noun*, (Marketing)

★ process of attracting and converting potential customers: *The free eBook is a great tool for digital **lead generation**.*

lend /lend/ *verb*, A2 (Accounting)

★ to give someone money that they must pay back later: *If you are short on cash for lunch today, I can **lend** you twenty dollars, and you can just pay me back this weekend.*

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less /les/ *determiner/pronoun/adverb*, **A2 (Accounting)**

★ a smaller amount of something: *We spent **less** money on advertising this month.*

level /'levl/ *noun*, **A2 (Accounting)**

★ the amount or number of something: *She applied for an entry-**level** job at the bank.*

liability /ˌlaɪə'bɪləti/ *noun*, **C1 (Accounting)**

★ the total legal obligations of a company to pay others: *The company faces legal **liability** if the product is unsafe.*

limit /'lɪmɪt/ *noun*, **B1 (Accounting)**

★ the greatest amount of something that is allowed: *The manager set a strict spending **limit** for the team event.*

line /laɪn/ *noun*, **A1 (Trade)**

★ a long, narrow mark or a route (e.g., shipping line): *The brand is launching a new **line** of eco-friendly clothing.*

link /lɪŋk/ *noun*, **A2 (ICT)**

★ a connection between two web pages: *I am sending you a **link** to the shared Google Drive folder.*

list /lɪst/ *noun*, **A1 (Accounting)**

★ a series of names or items written down: *Please email me the **list** of our new clients.*

loan /loʊn/ *noun*, **B2 (Accounting)**

★ an amount of money that is borrowed: *The business took out a bank **loan** to buy new office desks.*

local /'ləʊkl/ *noun*, **A1 (Accounting, Trade)**

★ relating to a particular nearby area or city: *We support **local** businesses by buying our office coffee from a nearby shop.*

locate /'ləʊkeɪt/ *verb*, **B1 (Trade)**

★ to find the exact position of something: *It is difficult to **locate** reliable suppliers in a new market.*

location /ləʊ'keɪʃn/ *noun*, **B1 (Trade)**

★ a particular place or position: *The retail store is successful because it is in a prime **location**.*

logic /'lɑːdʒɪk/ *noun*, **B2 (ICT)**

★ a set of rules for computer reasoning: *The software's internal **logic** automatically calculates the tax for each sale.*

lorry /'lɔːri/ *noun*, **A2 (Trade)**

★ a large vehicle for transporting goods by road: *The driver loaded the **lorry** with pallets of stock for delivery.*

lose /luːz/ *verb*, **A1 (Accounting)**

★ to have less of something than you had before: *If we raise our prices too much, we might **lose** customers.*

loss /lɔːs/ *noun*, **B2 (Accounting)**

★ the money that a person or company loses: *The company reported a financial **loss** for the first time this year.*

low /ləʊ/ *adjective*, **A2 (Accounting)**

★ small in amount or level: *Sales are usually **low** during the summer months.*

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luggage /'lʌɡɪdʒ/ *noun*, **A2 (Trade)**

★ suitcases or bags for a traveler's belongings: *The airline lost the businessman's **luggage** containing his presentation notes.*

M

machine /mə'ʃiːn/ *noun*, **A1 (Accounting, Trade)**

★ a piece of equipment with moving parts that does a job: *The coffee **machine** in the breakroom is broken; The new printing **machine** can produce copies twice as fast.*

main /meɪn/ *adjective*, **A1 (Accounting)**

★ larger or more important than others: *Our **main** goal this quarter is to increase sales.*

make /meɪk/ *verb*, **A1 (Accounting)**

★ to produce or create something: *We need to **make** a decision about the new project today.*

malware /'mælwɜː/ *noun*, **B1 (ICT)**

★ software designed to harm or compromise a system: *Security software blocked a piece of **malware** that tried to infect our network.*

management /'mænɪdʒmənt/ *noun*, **B1 (Accounting)**

★ the process of dealing with or controlling things: *Top **management** approved the new dress code policy.*

manager /'mænɪdʒər/ *noun*, **A2 (Accounting)**

★ a person who is in charge of a department or business: *Talk to your **manager** if you need to take a day off.*

map /mæp/ *noun*, **A1 (Trade)**

★ a diagrammatic representation of an area: *We need to **map** out our sales strategy for the next fiscal year.*

market /'mɑ:rkɪt/ *noun*, **B1 (Accounting)**

★ the business of buying and selling a particular product: *We need to study the **market** before launching a new product.*

market research /'mɑ:rkɪt rɪ'sɜ:rtʃ/ *noun/verb*, **B1 (Marketing)**

★ gathering data to understand customer needs and trends: *We did **market research** to find out what products customers want.*

marketing /'mɑ:rkɪtɪŋ/ *noun*, **B1 (Marketing)**

★ the activity of showing and selling products: *Digital **marketing** is essential for reaching younger consumers today.*

material /mə'tɪəriəl/ *noun*, **A2 (Trade)**

★ the matter from which a thing is or can be made: *The factory ran out of the raw **material** needed to make the plastic parts.*

matter /'mætər/ *noun*, **A2 (Accounting)**

★ a subject or situation that you must consider: *We will discuss this important **matter** at tomorrow's meeting.*

measure /'meʒər/ *noun/verb*, **B1 (Accounting)**

★ to find the size, amount, or degree of something: *We use monthly sales figures to **measure** our success.*

media /'mi:diə/ *noun*, **A2 (ICT)**

★ ways of communicating information: *The PR team sent a **media** kit to journalists ahead of the product announcement.*

★ communication channels like the internet: *The **media** was accused of influencing the final decision.*

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meeting /'mi:tɪŋ/ *noun*, **A1 (Accounting)**

★ an occasion when people come together to discuss something: *The team **meeting** will start at ten o'clock.*

member /'membər/ *noun*, **A1 (Accounting)**

★ a person who belongs to a group or organization: *She is the newest **member** of our marketing team.*

mention /'menʃn/ *verb*, **A2 (Accounting)**

★ to speak or write about something briefly: *Don't forget to **mention** the discount to the client.*

message /'mesɪdʒ/ *noun*, **A1 (Accounting, ICT)**

★ a short piece of information sent to someone: *I left a phone **message** for the hiring manager; The manager sent a quick **message** on Slack to remind everyone about the meeting.*

method /'meθəd/ *noun*, **A2 (Accounting, Trade)**

★ a particular way of doing something: *This new training **method** is very easy to follow; Our team needs to find a better **method** for tracking daily expenses.*

mile /maɪl/ *noun*, **A1 (Trade)**

★ a unit of linear measure equal to 1,760 yards: *The new distribution center is located just one **mile** from the highway.*

million /'mɪljən/ *number*, **A1 (Accounting)**

★ the number 1,000,000: *The tech startup raised one **million** dollars from investors.*

mistake /mɪ'steɪk/ *noun*, **A1 (Accounting)**

★ something that is not correct: *He made a small **mistake** on the invoice, but he fixed it.*

mobile /'məʊbl/ *adjective*, **A2 (ICT)**

★ able to be moved or carried easily: *Our online store must be easy to use on **mobile** phones.*

money /'mʌni/ *noun*, **A1 (Accounting)**

★ the coins and notes used to buy things: *The firm needs to save **money** on office supplies.*

month /mʌnθ/ *noun*, **A1 (Accounting)**

★ one of the twelve periods of time in a year: *Our team review takes place at the end of every **month**.*

mouse /maʊs/ *noun*, **A1 (Trade)**

★ a device used to move a cursor on a screen: *Click the left **mouse** button to open the financial spreadsheet.*

move /mu:v/ *verb*, **A1 (Trade)**

★ to go in a specified direction or change position: *The company decided to **move** its headquarters to a bigger city.*

movement /'mu:vmənt/ *noun*, **A2 (Trade)**

★ an act of changing physical location or position: *We use software to track the **movement** of goods through our supply chain.*

multimedia /ˌmʌlti'mi:diə/ *noun*, **B1 (ICT)**

★ use of images, audio, and video to enhance web: *The presentation uses **multimedia**, including audio clips and short animations.*

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N

national /'næʃnəl/ *adjective*, **A2 (Trade)**

★ relating to a whole nation rather than a local area: *The brand launched a **national** advertising campaign on television.*

navigation /ˌnævɪ'geɪʃn/ *noun*, **B1 (ICT)**

★ system that allows users to move through a website: *Improving the website's **navigation** helped users find products much faster.*

near /nɪər/ *preposition/adjective*, **A1 (Trade)**

★ at or to a short distance away: *Our retail shop is located **near** a very busy shopping mall.*

network /'netwɜːrk/ *noun*, **A2 (ICT)**

★ a system of connected computers or devices: *A secure computer **network** allows different branches to share files easily.*

north /nɔːrθ/ *adjective/noun*, **A1 (Trade)**

★ the direction to the left of a person facing east: *Sales in the **north** region increased by ten percent last month.*

O

ocean /'oʊʃn/ *noun*, **A2 (Trade)**

★ a very large expanse of sea: *Shipping products across the **ocean** usually takes several weeks.*

office /'ɑːfɪs/ *noun*, **A1 (Trade)**

★ a room or building used for business or professional work: *Please bring the signed contract to the manager's **office**.*

oil /ɔɪl/ *noun*, **A2 (Trade)**

★ a thick liquid used as fuel or lubricant: *Rising **oil** prices have increased our company's shipping costs.*

online /,ɑːn'laɪn/ *adjective/adverb*, **A1 (ICT)**

★ connected to the internet or a network: *Customers can browse our product catalog and place orders **online**.*

operation /,ɑːpə'reɪʃn/ *noun*, **B1 (Trade)**

★ an organized activity involving several people or parts: *The manager oversees the daily **operation** of the entire warehouse.*

optimization /,ɑːptɪmə'zeɪʃn/ *noun*, **B1 (ICT)**

★ improving performance like loading speed: *Search engine **optimization** helped our website rank higher on Google.*

OS /,oʊ 'es/ *noun*, **(ICT)**

★ software that manages computer hardware and resources: *Our office computers run on the latest version of the Windows **OS**.*

P

pack /pæk/ *verb*, **A2 (Trade)**

★ to put things into a bag or box for travel or storage: *Workers must carefully **pack** the fragile items before delivery.*

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package /'pækɪdʒ/ noun, **B1 (Trade)**

★ an object or group of objects wrapped in paper: *The courier delivered the **package** to the client this morning.*

part /pɑ:rt/ noun, **A1 (Trade)**

★ an amount or section of something: *High customer service is a key **part** of our business model.*

passenger /'pæsɪndʒər/ noun, **A2 (Trade)**

★ a person travelling in a vehicle but not driving it: *The airline is trying to attract more business-class **passengers**.*

paste /peɪst/ verb, **B1 (ICT)**

★ to put copied text/file into a new place: *You can **paste** the copied data directly into the excel sheet.*

path /pæθ/ noun, **B1 (Trade)**

★ a way or track laid down for walking or moving: *Clear communication is the best **path** to success for a team project.*

phone /fəʊn/ noun, **A1 (ICT)**

★ a device used for communicating far away: *Please answer the office **phone** if the receptionist is away from the desk.*

photo /'fəʊtəʊ/ noun, **A1 (ICT)**

★ a picture made using a camera or device: *The team took a group **photo** at the annual corporate retreat.*

pilot /'paɪlət/ noun, **A2 (Trade)**

★ a person who operates the flying controls of an aircraft: *He has his own plane and a **pilot's** license.*

plane /pleɪn/ *noun*, **A1 (Trade)**

★ a powered flying vehicle with fixed wings: *The executive caught an early **plane** to attend the board meeting.*

platform /'plætfɔ:rm/ *noun*, **A2 (Trade)**, **B1 (ICT)**

★ a structure for loading/unloading or a flat surface: *The train drew into the **platform**.*

★ a specific social media service or system: *LinkedIn is an excellent **platform** for B2B networking and recruiting.*

port /pɔ:rt/ *noun*, **B1 (Trade)**

★ a town or city with a harbor where ships load/unload: *The cargo ships arrived at the **port** to unload the imported goods.*

position /pə'zɪʃn/ *noun*, **A2 (Trade)**

★ a place where someone or something is located: *From his **position** on the cliff top, he had a good view of the harbor.*

post /pəʊst/ *noun*, **A2 (ICT, Trade)**

★ info sent to a social media platform: *We will **post** the new job opening on our website tomorrow morning.*

★ the official system for sending letters and parcels: *I'll put the documents in the **post** to you tomorrow.*

PPC /ˌpi: pi: 'si:/ *noun*, **(Marketing)**

★ Pay-Per-Click; digital advertising model where you pay for clicks: *Our **PPC** campaign brings immediate traffic to the website through Google ads.*

print /prɪnt/ *verb*, **A2 (ICT)**

★ to produce text or images on paper: *We need to **print** fifty copies of the agenda for the annual conference.*

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printer /'prɪntər/ *noun*, **A2 (ICT)**★ machine that prints documents: *The office **printer** is out of paper and black ink.*

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D

problem /'prɔːbləm/ *noun*, **A1 (ICT)**★ a situation that needs to be solved: *We need to find a fast solution to this shipping **problem**.*

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produce /prə'duːs/ *verb*, **A2 (Trade)**★ to make or manufacture from components: *This factory can **produce** over one thousand units every day.*

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product /'prɔːdʌkt/ *noun*, **A1 (Trade)**★ an article or substance manufactured for sale: *Our newest **product** will launch in stores next month.*

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production /prə'dʌkʃn/ *noun*, **B1 (Trade)**★ the action of making or manufacturing goods: *The factory increased **production** to meet the high holiday demand.*

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P**profile** /'prəʊfaɪl/ *noun*, **A2 (ICT)**★ information about a person on a website: *Make sure your LinkedIn **profile** is updated with your current job title.*

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program /'prəʊgræm/ *noun*, **A2 (ICT)**★ a set of instructions for a computer to follow: *The HR team uses a spreadsheet **program** to organize employee schedules.*

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promote /prə'moʊt/ *verb*, **B1 (Marketing)**★ to encourage people to buy or use something: *We hired a PR agency to help **promote** our new book launch.*

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public /'pʌblɪk/ *adjective*, **A2 (Trade)**

★ concerning the people as a whole: *Levels of waste from the factory may be a danger to **public** health.*

Q

query /'kwɪəri/ *noun*, **B1 (ICT)**

★ a request for data or information from a database: *I ran a **query** to find out how many clients signed up this month.*

R

railway /'reɪlweɪ/ *noun*, **A2 (Trade)**

★ a track made of steel rails for trains: *We use the **railway** network to transport heavy goods across the country.*

RAM /ræm/ *noun*, **(ICT)**

★ temporary memory that stores data in use: *Upgrading the computer's **RAM** will stop the design software from freezing.*

reach /ri:tʃ/ *verb*, **A2 (Trade)**

★ to arrive at a destination: *Social media helps our business **reach** a much larger audience.*

record /'rekərd/ *noun*, **A2 (ICT)**

★ a complete set of fields representing one item: *The system creates a new **record** every time a customer makes a purchase.*

region /'ri:dʒən/ *noun*, **A2 (Trade)**

★ an area, especially part of a country or the world: *He is the regional manager in charge of the European **region**.*

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report /rɪ'pɔːrt/ *noun*, **A1 (ICT)**

★ organized presentation of data from a database: *The manager read the sales **report** to see if we met our monthly goals.*

result /rɪ'zʌlt/ *noun*, **A1 (Trade)**

★ a thing that is caused or produced by something: *The positive financial **result** was due to our successful marketing campaign.*

return /rɪ'tɜːrn/ *verb*, **A1 (Trade)**

★ to come or go back to a place: *I had to **return** to the store to look for my purse.*

river /'rɪvər/ *noun*, **A1 (Trade)**

★ a large natural stream of water: *The factory uses water from the nearby **river** for its cooling system.*

road /rəʊd/ *noun*, **A1 (Trade)**

★ a wide way leading from one place to another: *The sales team is on the **road** this week visiting new clients.*

ROM /rə:m/ *noun*, **(ICT)**

★ permanent memory that stores essential programs: *The computer's basic startup instructions are permanently stored in the **ROM**.*

route /ru:t/ *noun*, **A2 (Trade)**

★ a course taken to get from a start to a destination: *The delivery truck takes the fastest **route** to avoid traffic delays.*

rule /ru:l/ *noun*, **A1 (Trade)**

★ one of a set of explicit regulations or principles: *The company has a strict **rule** against using personal phones during work hours.*

S

save /seɪv/ verb, **A2 (ICT)**

★ to store information in a computer file: *Remember to **save** your work before closing the document.*

scan /skæn/ verb, **B1 (ICT)**

★ to convert a physical image to digital: *Please **scan** these paper receipts and email them to the accounting team.*

screen /skriːn/ noun, **A2 (ICT)**

★ the flat surface where images are shown: *The manager shared her **screen** during the Zoom meeting to show us the sales charts.*

sea /siː/ noun, **A1 (Trade)**

★ the expanse of saltwater covering most of the earth: *Sending freight by **sea** is cheaper but much slower than using air freight.*

search /sɜːrtʃ/ verb, **A2 (ICT)**

★ to look for information on the internet: *A simple Google **search** will show you our local competitors' prices.*

section /'sekʃn/ noun, **B1 (Trade)**

★ one of the parts into which something is divided: *Please fill out the customer feedback **section** of the form.*

security /sɪ'kjʊərəti/ noun, **B1 (ICT)**

★ protection against danger, loss, or threats: *The IT department updated our data **security** to prevent hacker attacks.*

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SEO /ˌes iː 'oʊ/ *noun*, (ICT)

★ techniques to improve website visibility in search: *Our marketing team focuses on **SEO** to get more organic traffic to our site.*

service /'sɜːrvɪs/ *noun*, A2 (Trade)

★ the action of helping or doing work for someone: *Our IT department provides technical **service** to all employees.*

share /ʃer/ *verb*, B1 (ICT)

★ to give access to a file or post to others: *Please **share** the meeting notes with the rest of the department.*

ship /ʃɪp/ *verb*, A2 (Trade)

★ to send or transport by land, sea or air: *We need to **ship** this order to the customer by Friday afternoon.*

shipping /'ʃɪpɪŋ/ *noun*, B1 (Trade)

★ the transport of goods by sea or other means: *Online shoppers prefer stores that offer free **shipping**.*

side /saɪd/ *noun*, A1 (Trade)

★ a position to the left or right of an object: *Both **sides** must agree to the terms before signing the contract.*

site /saɪt/ *noun*, A2 (ICT, Trade)

★ a place on the internet; a location: *We hired a web developer to update our company **site** with our new services.*

★ an area of ground where something is located: *The construction company selected a **site** for the new office building.*

smartphone /'smɑːrtfəʊn/ *noun*, A2 (ICT)

★ a mobile phone that performs many functions: *He uses his **smartphone** to check work emails while traveling for business.*

social media /ˌsoʊʃl 'miːdiə/ *noun*, **A2 (ICT)**

★ online platforms for creating and sharing content: *We use **social media** to announce new products and connect with followers.*

social media profile /ˌsoʊʃl 'miːdiə 'prəʊfaɪl/ *noun*,
A2 (Marketing)

★ public-facing page of a business on social media: *We update our company **social media profile** daily with fresh content.*

software /'sɔːftwɛr/ *noun*, **B1 (ICT)**

★ programs and operating systems used by a computer: *The accounting team uses specialized **software** to manage the budget.*

south /saʊθ/ *noun*, **A1 (Trade)**

★ the direction toward the South Pole: *We are opening a new distribution hub in the **south** part of the country.*

space /speɪs/ *noun*, **A1 (Trade)**

★ an area which is free, available, or unoccupied: *We need to rent more warehouse **space** to store our extra inventory.*

SQL /ˌes kjuː 'el/ *verb*, **(ICT)**

★ a language used to manage relational databases: *The data analyst used **SQL** to extract the yearly sales numbers from the database.*

station /'steɪʃn/ *noun*, **A1 (Trade)**

★ a place where trains or buses regularly stop: *The office is conveniently located right next to the train **station**.*

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store /stɔːr/ *noun*, **A2 (Trade)**

★ a place where things are kept for future use: *The grocery **store** opens at eight o'clock every morning.*

streaming /ˈstriːmɪŋ/ *noun*, **B1 (ICT)**

★ transmitting data over a network in real time: *The training department uses video **streaming** for live company webinars.*

style /stɑɪl/ *noun*, **A1 (ICT)**

★ a particular way that something is done: *The company website uses a simple **style** with clean fonts and colors.*

supply /səˈplaɪ/ *verb*, **B1 (Trade)**

★ to provide with something needed or wanted: *Paint for the project was **supplied** by the city.*

system /ˈsɪstəm/ *noun*, **A2 (ICT, Trade)**

★ a set of things working together as a whole: *The company installed a new inventory **system** to track warehouse stock.*

★ a set of things working together as parts of a whole: *The company installed a new security **system** in the building.*

T

table /ˈteɪbl/ *noun*, **A1 (ICT)**

★ a database structure that stores data in rows and columns: *The customer **table** organizes names, phone numbers, and addresses neatly into rows.*

tablet /ˈtæblət/ *noun*, **A2 (ICT)**

★ a portable computer with a touchscreen: *The sales team uses a **tablet** to display product catalogs to clients.*

target audience /'tɑːrgɪt 'ɔːdiəns/ *noun*, (Marketing)

★ specific group of people marketing efforts are aimed at: *Young professionals are the main **target audience** for this new banking app.*

technology /tek'nɒ:lədʒi/ *noun*, A2 (ICT)

★ scientific knowledge used for practical purposes: *Our company uses modern **technology** to automate customer service.*

template /'templət/ *noun* B1 (ICT)

★ a pre-designed layout for consistent web pages: *I used an email **template** to send a quick, standardized reply to the customer.*

test plan /test plæn/ *noun*, B1 (ICT)

★ document outlining how a system will be tested: *The QA team wrote a **test plan** to check the software for bugs before launch.*

text /tekst/ *noun*, A1 (ICT)

★ written words in a document or message: *Please send a quick **text** to the client if you are running late for the meeting.*

ticket /'tɪkɪt/ *noun*, A1 (Trade)

★ a piece of paper giving the right to travel: *Please keep the train **ticket stub** to get reimbursed by accounting.*

tool /tuːl/ *noun*, A2 (ICT)

★ an instrument used to do a particular job: *A project management **tool** helps the team track daily tasks and deadlines.*

tour /tʊər/ *noun*, A2 (Trade)

★ a journey in which several different places are visited: *The manager gave the potential investors a **tour** of the facility.*

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trade /treɪd/ *noun*, **B1** (**Trade**)

★ the action of buying and selling goods and services:
*Global **trade** tariffs can affect the price of imported goods.*

traffic /'træfɪk/ *noun*, **A2** (**Trade**)

★ vehicles moving on a public highway: *There's always a lot of **traffic** at this time of day.*

traffic volume /'træfɪk 'vɔːljʊm/ *noun*, (**Marketing**)

★ measure of how much traffic a website receives: *Our website saw a huge **traffic volume** after the holiday sale began.*

transport /'trænsˌpɔːrt/ *verb*, **A2** (**Trade**)

★ to carry people or goods from one place to another: *The logistics company will **transport** the goods from the port to the warehouse.*

U

update /ˌʌp'deɪt/ *noun/verb*, **B1** (**ICT**)

★ making something more modern or accurate: *We need to **update** our customer database with the new phone numbers.*

upload /ˌʌp'ləʊd/ *verb*, **B1** (**ICT**)

★ to send data from a computer to the internet: *Please **upload** your receipts to the expense portal for reimbursement.*

URL /ˌjuː ɑːr 'el/ *noun*, (**ICT**)

★ the address used to access web pages on the internet:
*Send the client the exact **URL** so they can find our pricing page directly.*

usability /ˌjuːzəˈbɪləti/ *noun*, **B1 (ICT)**

★ how easy and efficient a website is for users: *We did a **usability** test to see if customers found the checkout process easy.*

user /ˈjuːzər/ *noun*, **A2 (ICT)**

★ a person who uses a computer or a service: *The system administrator created a new **user** account for the intern.*

USP /ˌjuː es ˈpiː/ *noun*, **(Marketing)**

★ unique Selling Proposition; what makes a product different: *Our **USP** is that we offer twenty-four-hour delivery while our competitors do not.*

V

value proposition /ˈvæljuː ˌprɒpəˈzɪʃn/ *noun*, **(Marketing)**

★ statement explaining why a customer should choose a product: *The company's **value proposition** promises to save small businesses time and money.*

video /ˈvɪdɪoʊ/ *noun*, **A1 (ICT)**

★ a recording of moving visual images: *We created a short tutorial **video** to show customers how to use the app.*

VPN /ˌviː piː ˈen/ *noun*, **(ICT)**

★ a secure and encrypted connection over the internet: *Employees must turn on the **VPN** when working from home to keep data secure.*



W

web /web/ noun, **A2 (ICT)**

★ the system of connected pages on the internet: *The company uses a **web** portal so employees can view their pay stubs online.*

web browser /web 'braʊzər/ noun, **A2 (ICT)**

★ software used to access and view websites: *Please use a modern **web browser** like Chrome to open the company portal.*

web hosting /web 'həʊstɪŋ/ noun **B1 (ICT)**

★ service that stores website files for internet access: *We pay a monthly fee for **web hosting** to keep our site live on the internet.*

website /'websaɪt/ noun, **A1 (ICT)**

★ a set of pages on the internet with information: *Our corporate **website** lists all our services and office locations.*

Wi-Fi /'waɪ faɪ/ noun, **A2 (ICT)**

★ technology that allows devices to connect wirelessly: *Clients can connect to our guest **Wi-Fi** while waiting in the lobby.*

wireframe /'waɪərfreɪm/ noun, **(ICT)**

★ a guide used to suggest web page layout: *The design team created a **wireframe** to plan the layout of the new app.*



Engineering



A

ABS /ˌeɪ ˌbiː ˈɛs/ *noun*, **A1**, **Y.3** (*mechanical*)

★ anti-lock braking system (a safety system in vehicles that stops the wheels from locking during hard braking so the driver can still steer the vehicle): *The **ABS** prevents wheel lock during sudden braking on slippery roads.*

AC /ˌeɪ ˈsiː/ *noun*, **C2**, **Y.1** (*electrical*)

★ alternating current: ***AC** power is commonly used in homes for appliances and lighting.*

AC motor /ˌeɪ ˈsiː ˈmoʊtə/ *noun*, **Y.3** (*electrical*)

★ an electric motor that runs on alternating current: *The **AC motor** drives the conveyor belt in the factory.*

active /ˈæktɪv/ *adjective*, **B1**, **Y.3**

★ operating or functioning, especially in relation to systems or components in engineering: *The **active** circuit must be checked for faults regularly.*

actuator /ˈæktʃuˌeɪtə/ *noun*, **Y.3** (*mechanical*)

★ a device that moves or controls a mechanism when it receives a signal: *The robot arm uses an electric **actuator** to lift heavy parts.*

ADC /ˌeɪ dɪː ˈsiː/ *noun*, **A2**, **Y.1** (*mechanical*)

★ circuit, called an analog-to-digital converter (ADC), that changes a continuous voltage signal into digital numbers a controller can read: *The **ADC** converts the analog signals from the sensor into digital data.*

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adjust /ə'dʒʌst/ verb, B2, Y.2

★ to change something slightly to make it more suitable for a new set of conditions or to make it work better: *Engineers must **adjust** the machine settings to improve its performance.*

adjustment /ə'dʒʌstmənt/ noun, B2, Y.2 (mechanical)

★ a small change made to something in order to correct or improve it: *The technician made an **adjustment** to the machine to ensure it runs smoothly.*

aggregate /'ægrɪgət/ noun, C2, Y.2 (civil)

★ sand or broken stone that is used to make concrete or for building roads, etc.: *The engineer specified the type of **aggregate** needed for the concrete mix.*

AI /,eɪ 'aɪ/ noun, C2, Y.3 (mechatronics)

★ computer systems that can learn, decide, or solve problems in ways similar to people: *Engineers use **AI** to improve the efficiency of automated assembly lines.*

air compressor /'ɛr kəmˌpresə/ noun, Y.2 (mechatronics)

★ a machine that squeezes air into a smaller volume and raises its pressure: *The **air compressor** supplied power to the pneumatic tools on the construction site.*

align /ə'laɪn/ verb, B2, Y.2

★ to arrange something in the correct position, or to be in the correct position, in relation to something else, especially in a straight line: *The engineer must **align** the gears before starting the machine.*

alloy /'æləɪ/ *noun*, **C2, Y.2 (mechanical)**

★ a metal that is formed by mixing two types of metal together, or by mixing metal with another substance: *The engineer chose a strong **alloy** for the bridge to ensure it could handle heavy loads.*

aluminum /ə'lumənəm/ *noun*, **Y.2 (mechanical)**

★ a light silver-colored metal that is strong for its weight and used in many machine parts and structures: *The frame of the bicycle is made of **aluminum**.*

AM /,eɪ 'em/ *noun*, **A1, Y.3 (electrical)**

★ amplitude modulation (a way of sending sound or data by changing the strength of a carrier radio signal while keeping its frequency the same): ***AM** radio stations broadcast music by modulating the amplitude of signals.*

ammeter /'æmi:tər/ *noun*, **C2, Y.2 (electrical)**

★ an instrument for measuring the strength of an electric current: *The engineer used an **ammeter** to check the current in the circuit.*

amplifier /'æmplɪfaɪər/ *noun*, **C1, Y.2 (electrical)**

★ an electrical device or piece of equipment that makes sounds or radio signals louder: *The engineer tested the **amplifier** to ensure it increased the volume of the audio signal.*

analog input /'ænə,lɔ:g 'ɪn,pʊt/ *noun*, **Y.3 (mechatronics)**

★ a signal going into a device that can vary smoothly in value: *The sensor sends an **analog input** to the microcontroller to measure temperature changes.*

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analog output /'ænə,lɔːg 'aʊt,pʊt/ *noun*, **Y.3 (mechatronics)**

★ a signal coming from a device that can vary smoothly in value: *The sensor provides an **analog output** to control the motor speed smoothly.*

analyze /'ænl,aɪz/ *verb*, **Y.3**

★ to examine the nature or structure of something, especially by separating it into its parts, in order to understand or explain it: *Engineers **analyze** the test data to improve the design of the bridge.*

antenna /æn'tenə/ *noun*, **C1, Y.3 (electrical)**

★ a piece of equipment made of wire or long straight pieces of metal for receiving or sending radio and television signals: *The engineer adjusted the **antenna** to improve the radio signal reception.*

armature /'ɑːrmətʃər/ *noun*, **B2, Y.3 (electrical)**

★ a component in an electric motor or generator that carries current and creates a magnetic field: *The **armature** in the motor generates a strong magnetic field.*

artificial intelligence /ɑːrtə'fɪʃəl ɪn'telədʒəns/ *noun*, **Y.3 (mechatronics)**

★ the field of computers that can learn, decide, or solve problems like humans: *The team used **artificial intelligence** to improve the robot's ability to detect obstacles.*

as-built drawing /,æz 'bɪlt ,drɔːɪŋ/ *noun*, **Y.3 (civil)**

★ a drawing that records how a building or system was constructed: *The engineer reviewed the **as-built drawing** to verify the placement of the new support beams.*

assemble /ə'sembl/ verb, C2, Y.1

★ to come together as a group; to bring people or things together as a group: *The team will **assemble** the parts to complete the engine.*

automate /'ɔ:təmeɪt/ verb, B2, Y.3

★ to use machines and computers instead of people to do a job or task: *We will **automate** the assembly line to increase production speed.*

automatic control /,ɔ:tə'mætɪk kən'troʊl/ noun, Y.2 (mechatronics)

★ control of a process or machine by equipment without direct human action: *The **automatic control** system adjusts the temperature without human intervention.*

automation /,ɔ:tə'meɪʃn/ noun, C1, Y.3 (electrical)

★ the use of machines to do work that was previously done by people: ***Automation** improved the assembly line speed and reduced the need for manual labor.*

B

balance /'bæləns/ verb, B1, Y.3 (mechanical)

★ to adjust a rotating part or system so that its weight is evenly spread and it runs smoothly without vibration: *We need to **balance** the rotor for smooth operation.*

ball bearing /'bɔ:l bɛrɪŋ/ noun, Y.2 (mechanical)

★ a bearing that uses small metal balls to reduce friction between moving parts: *The engineer replaced the worn-out **ball bearing** in the machine to improve its performance*

A

B

battery /'bætəri/ *noun*, A2, Y.2 (electrical)

★ a device that stores chemical energy and converts it into electrical energy for powering electrical circuits: *The **battery** provides power to the electric motor.*

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beam /bi:m/ *noun*, B2, Y.2 (civil)

★ a structural element that supports loads, typically horizontal, and can also refer to a directed stream of energy: *The **beam** supports the roof of the building.*

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bearing /'berɪŋ/ *noun*, C2, Y.2 (mechanical)

★ a machine element that supports and reduces friction between moving parts: *The **bearing** reduces friction in the rotating shaft.*

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belt /belt/ *noun*, A2, Y.2 (mechanical)

★ a continuous band of material that moves around and is used to carry things along, or to drive machinery: *The conveyor **belt** carries the boxes from the assembly line to the packing area.*

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benchmark /'bentʃmɑ:rk/ *noun*, B2, Y.3 (civil)

★ something which can be measured and used as a standard that other things can be compared with: *The new engine's efficiency will serve as a **benchmark** for future design improvements.*

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bend /bend/ *verb*, B1, Y.2

★ to force something that was straight into an angle or a curve: *The machine can **bend** metal pipes into specific angles for the construction project.*

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bending moment /'bendɪŋ ˌmoʊmənt/ *noun*, Y.3 (civil)

★ the internal force in a beam that causes it to bend under load: *The engineer calculated the **bending moment** to ensure the bridge could safely handle heavy trucks.*

bevel gear /'bevəl ɡɪr/ *noun*, Y.2 (mechanical)

★ a gear with angled teeth used to transmit motion between crossing shafts: *The machine uses a **bevel gear** to connect the motor to the rotating shaft.*

bill of quantities /ˌbɪl əv 'kwɑːntətɪz/ *noun*, Y.3 (civil)

★ a detailed list of materials, parts, and work needed for a construction project: *The engineer reviewed the **bill of quantities** before starting the new building project.*

binary /'baɪnəri/ *noun*, C2, Y.2 (electrical)

★ using only 0 and 1 as a system of numbers: *The computer processes data in **binary** for faster calculations.*

blunt /blʌnt/ *adjective*, C2, Y.1

★ without a sharp edge or point: *The engineer used a **blunt** tool to safely test the machine's pressure system.*

bolt /bɒlt/ *noun*, C2, Y.1

★ a piece of metal like a thick nail without a point, used with a nut to fasten things together: *We used a **bolt** to secure the metal plates together.*

BOM /ˌbiː ɒʊ 'ɛm/ *noun*, Y.2 (mechanical)

★ a detailed list of all parts and materials needed to build a product or assembly: *The engineer prepared a detailed **BOM** for the new product design.*

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brake /breɪk/ *noun*, **B1**, **Y.2 (mechanical)**

★ a mechanical device that slows or stops a moving part or vehicle by creating friction: *The car's **brake** system needs maintenance to ensure safety.*

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brake pad /'breɪk pæd/ *noun*, **Y.3**

★ a flat part that presses against a disc or drum to slow a vehicle: *The engineer inspected the **brake pad** for wear before approving the vehicle for the test drive.*

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brake shoe /'breɪk ʃuː/ *noun*, **Y.3**

★ a curved part that presses outward on a brake drum to slow a wheel: *The mechanic inspected the **brake shoe** for wear before replacing it with a new one.*

J

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brass /bræs/ *noun*, **C1**, **Y.2 (mechanical)**

★ a bright yellow metal made by mixing copper and zinc; objects made of brass: *The valves in the system are made of **brass** for better corrosion resistance.*

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breadboard /'bredbɔːrd/ *noun*, **C1**, **Y.2 (electrical)**

★ a flat board used for prototyping electronic circuits without soldering: *We used a **breadboard** to build the circuit for our project.*

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breakdown /'breɪkdaʊn/ *noun*, **B2**, **Y.3 (mechanical)**

★ an occasion when a vehicle or machine stops working: *The engineer inspected the engine to find the cause of the unexpected **breakdown**.*

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brick /brɪk/ *noun*, **B2**, **Y.2 (civil)**

★ a block of baked clay used for building walls, houses, and other buildings: *The wall was built using strong, red **brick** for durability.*

brittle /'brɪtl/ *adjective*, **B1**, **Y.1**

★ hard but easily broken: *The glass tube is **brittle** and needs careful handling during installation.*

brittleness /'brɪtlɪnəs/ *noun*, **C1**, **Y.2 (mechanical)**

★ the material property of breaking suddenly without much bending or stretching: *The **brittleness** of the ceramic tile made it crack easily during the pressure test.*

broken /'brəʊkən/ *adjective*, **A2**, **Y.1**

★ that has been damaged or injured; no longer whole or working correctly: *The machine stopped because a **broken** gear needs to be replaced.*

brush /brʌʃ/ *noun*, **A2**, **Y.3 (electrical)**

★ a block of conductive material, often carbon, that makes sliding electrical contact between the fixed and rotating parts of a machine: *The motor has a carbon **brush** that makes electrical contact.*

building code /'bɪldɪŋ kəʊd/ *noun*, **Y.2 (civil)**

★ a set of laws that state how buildings must be designed and constructed for safety: *The engineer ensured the design met the local **building code** for earthquake safety.*

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building permit /'bɪldɪŋ ˌpɜːrmit/ *noun*, **Y.3 (civil)**

★ official permission from authorities to start building or changing a structure: *The construction of the new bridge was delayed because the team needed a **building permit**.*

bushing /'bʊʃɪŋ/ *noun*, **Y.2 (mechanical)**

★ a cylindrical lining or sleeve that reduces wear or guides a rotating shaft: *The engineer replaced the worn **bushing** to ensure the machine operated smoothly.*



cable /'keɪbl/ *noun*, **B2, Y.2 (electrical)**

★ a set of wires, covered in plastic or rubber, that carries electricity, telephone signals, etc.: *The engineer connected the motor to the power supply using a thick electrical **cable**.*

CAD /kæd/ *noun*, **A1, Y.2 (civil)**

★ computer-aided design (the use of computer software to create and edit precise 2D drawings and 3D models of products, parts, or buildings before they are made): *We use **CAD** software to design complex parts for our new machine.*

CAE /ˌsiː eɪ 'iː/ *noun*, **C1, Y.3 (mechanical)**

★ the use of computer software to design, analyze, and improve engineering products: ***CAE** tools help engineers analyze the strength of materials under stress.*

calculate /'kælkjuleɪt/ *verb*, **B2, Y.3**

★ to use numbers to find out a total number, amount, distance, etc.: *The engineer will **calculate** the stress on the beam using the given load and material properties.*

calibrate /'kælibreɪt/ verb, B2, Y.2

★ to mark units of measurement on an instrument such as a thermometer so that it can be used for measuring something accurately: *We need to **calibrate** the pressure gauge before starting the experiment.*

calibration /,kæli'breɪʃn/ noun, C1, Y.2 (mechanical)

★ the process of adjusting an instrument to ensure its measurements are accurate: *The **calibration** of the sensors was completed to ensure accurate readings.*

caliper /'kælipər/ noun, B1, Y.1 (civil)

★ a tool with two arms used to measure the distance between two opposite sides of an object: *The engineer used a **caliper** to measure the width of the metal rod.*

cam /kæm/ noun, A1, Y.2 (mechanical)

★ a part on a wheel that sticks out and changes the circular movement of the wheel into up-and-down or backwards-and-forwards movement: *The **cam** on the engine converts rotary motion into linear motion.*

camber /'kæmbər/ noun, C2, Y.3 (mechanical)

★ a slight downward curve from the middle of a road to each side: *The design team adjusted the **camber** of the road to improve water drainage during heavy rains.*

capacitor /kə'pæsɪtər/ noun, C2, Y.1 (electrical)

★ a device used to store an electrical charge: *The engineer replaced the old **capacitor** to fix the power supply issue in the circuit board.*

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caster /'kæstər/ *noun*, **B1, Y.3 (mechanical)**

★ one of the small wheels attached to the bottom of a piece of furniture so that it can be moved easily: *The engineer checked the **caster** to ensure the table could move smoothly across the workshop floor.*

casting /'kæstɪŋ/ *noun*, **C1, Y.2 (mechanical)**

★ a metal part made by pouring liquid metal into a mold and letting it harden into shape: *The engine part is a **casting** made of iron.*

cement /sɪ'ment/ *noun*, **C1, Y.2 (civil)**

★ a gray powder made by burning clay and lime that sets hard when it is mixed with water. Cement is used in building to stick bricks together and to make very hard surfaces: *We mixed **cement** with sand to create a strong foundation for the structure.*

center of gravity /ˌsɛntə əv 'grævɪti/ *noun*, **Y.3 (civil)**

★ the point in a body where its weight is evenly balanced in all directions: *The engineer adjusted the design to lower the vehicle's **center of gravity** for better stability.*

centroid /'sɛntroɪd/ *noun*, **Y.3 (civil)**

★ the point that is at the average position of all the area or mass of an object: *The engineer calculated the **centroid** of the beam to ensure it balanced correctly on the support.*

chain /tʃeɪn/ *noun*, **B1, Y.2 (civil)**

★ a series of metal links joined together, used to transmit motion or pull loads in machines: *The bicycle **chain** connects the pedals to the wheels.*

charger /'tʃɑːrdʒər/ *noun*, **B2, Y.2 (electrical)**

★ a piece of equipment for loading a battery with electricity: *The engineer tested the new solar **charger** to ensure it worked with different battery types.*

check /tʃek/ *verb*, **A2, Y.2**

★ to examine something to see if it is correct, safe, or acceptable: *The engineer will **check** the machine for any faults before starting the process.*

circuit /'sɜːrkɪt/ *noun*, **C2, Y.1 (electrical)**

★ the complete path of wires and equipment along which an electric current flows: *The engineer tested the **circuit** to ensure the light bulb turned on.*

circuit breaker /'sɜːrkæt ˌbreɪkə/ *noun*, **Y.2 (electrical)**

★ a safety switch that stops current flow when there is too much current: *The **circuit breaker** tripped when the motor drew too much power during the test.*

circular /'sɜːrkjələ/ *adjective*, **B1, Y.2**

★ shaped like a circle; round: *The engineer designed a **circular** gear for the new machine.*

clamp /klæmp/ *verb*, **A2, Y.1**

★ to hold something tightly, or fasten two things together, with a clamp: *Please **clamp** the metal pieces together before welding them.*

clean /kliːn/ *adjective*, **A1, Y.2**

★ free from harmful or unpleasant substances: *The engineers tested the **clean** water before it was released into the city's supply system.*

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closed-loop control /ˌkloʊzd 'luːp kən'troʊl/ *noun*,
Y.2 (mechatronics)

★ a control method that uses feedback from the output to adjust the input: *The **closed-loop control** system improved the accuracy of the robotic arm's movements.*

clutch /klʌtʃ/ *noun*, **C2, Y.2 (mechanical)**

★ a device in a machine that connects and disconnects working parts, especially the engine and the gears: *The technician inspected the **clutch** to ensure smooth engagement between the engine and the transmission.*

CNC /ˌsiː ˌɛn 'siː/ *noun*, **Y.2 (mechanical)**

★ a system where computers control machine tools by sending coded instructions: *The **CNC** machine cut metal parts with high precision and speed.*

coarse /kɔːrs/ *adjective*, **C2, Y.1**

★ having a rough texture or large particles, often used to describe materials in engineering: *We used **coarse** sand for the concrete mix.*

code /kəʊd/ *verb*, **B2, Y.2**

★ to write or print words, letters, numbers, etc. on something so that you know what it is, what group it belongs to, etc.: *The engineer will **code** each component with a unique number for easy identification.*

coil /kɔɪl/ *noun*, **A2, Y.3 (electrical)**

★ a wound length of wire or tubing, used to create magnetic fields or store energy in electrical applications: *The **coil** in the motor generates a magnetic field.*

coil spring /'kɔɪl sprɪŋ/ *noun*, **Y.3 (mechanical)**

★ a spiral-shaped spring that stores energy and absorbs shock: *The car's suspension system uses a **coil spring** to improve ride comfort over rough roads.*

cold /kəʊld/ *adjective*, **A1, Y.2**

★ having a lower than usual temperature; having a temperature lower than the human body: ***Cold** storage keeps the metal samples at a low temperature, so their material properties do not change before testing.*

column /'kɔ:ləm/ *noun*, **A2, Y.2 (civil)**

★ a tall, solid post, usually round and made of stone, that supports or decorates a building or stands alone as a monument: *The **column** supports the roof of the building firmly.*

commissioning /kə'mɪʃənɪŋ/ *noun*, **Y.3 (mechatronics)**

★ the process of testing and setting up new equipment or systems so they work as specified: *The team completed the **commissioning** of the solar power system at the new housing development.*

communication protocol /kə,mju:nə'keɪʃən 'prəʊtə,kɔ:l/ *noun*, **Y.3 (mechatronics)**

★ a set of rules that devices follow to send and receive data: *The engineers selected a reliable **communication protocol** for the new industrial control system.*

commutator /'kɑ:mjuteɪtər/ *noun*, **C1, Y.2 (electrical)**

★ a device that connects a motor to the electricity supply: *The technician replaced the worn-out **commutator** to ensure the motor ran smoothly.*

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compact /kəm'pækt/ verb, B1, Y.2★ to press something together firmly: *Engineers **compact** the soil to prepare a solid base for the foundation.*

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compaction /kəm'pækʃən/ noun, Y.2 (civil)★ the process of pressing or vibrating material to remove air and make it denser: *Proper **compaction** of the concrete mix ensures a strong and durable foundation for the bridge.***comply** /kəm'plaɪ/ verb, C1, Y.3★ to obey a rule, an order, etc.: *The new design must **comply** with safety standards before production starts.***compressor** /kəm'presər/ noun, C1, Y.3 (mechanical)★ a machine that squeezes a gas into a smaller space to raise its pressure for use in a system: *The air **compressor** increased the pressure for the pneumatic tools.***concrete** /'kɑːnkri:t/ noun, B2, Y.1 (civil)★ building material that is made by mixing cement, sand, small stones, and water: *The workers poured **concrete** into the mold to form the building's foundation.***concrete mix** /'kɑːnkri:t mɪks/ noun, Y.2 (civil)★ the measured amounts of cement, water, sand, and stone used to make concrete: *The engineer adjusted the **concrete mix** to improve the strength of the building's foundation.***conductor** /kən'dʌktər/ noun, B2, Y.2 (electrical)★ a substance that allows electricity or heat to pass along it or through it: *Copper is a common **conductor** used in electrical wiring for buildings.*

conduit /'kɑ:nduɪt/ *noun*, **B1**, **Y.2 (electrical)**

★ a pipe, channel, or tube through which liquid, gas, or electrical wire can pass: *The electrical wires run through a **conduit** to protect them from damage.*

connect /kə'nekt/ *verb*, **B1**, **Y.1**

★ to join something to the main supply of electricity, gas, water, etc., or to another piece of equipment: *The engineer will **connect** the solar panels to the power grid tomorrow.*

construction contract /kən'strʌkʃən ,kɑ:ntrækt/ *noun*, **Y.3 (civil)**

★ a legal agreement that sets the work, cost, and time for a building project: *The new bridge's **construction contract** was signed after finalizing the project details and budget.*

construction materials /kən'strʌkʃən mə'tɪriəlz/ *noun*, **Y.2 (civil)**

★ substances such as concrete, steel, wood, and brick used to build structures: *The engineer selected **construction materials** that could withstand high temperatures for the new industrial plant.*

contactor /'kɑ:ntæktə/ *noun*, **Y.3 (electrical)**

★ a heavy-duty electrical switch that turns power circuits on and off by using an electromagnet: *The electrician replaced the old **contactor** to ensure the motor ran smoothly without interruptions.*

control /kən'trəʊl/ *verb*, **A2**, **Y.2**

★ to make something, such as a machine or system, work in the way that you want it to: *Engineers **control** the robot using a laptop to complete the assembly task.*

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control arm /kən'troʊl aɪrm/ *noun*, **Y.3 (mechanical)**

★ a suspension part that holds the wheel hub while allowing it to move up and down: *The mechanic replaced the damaged **control arm** to improve the car's handling and safety.*

control point /kən'troʊl pɔɪnt/ *noun*, **Y.3 (civil)**

★ a fixed point with known position used as a reference in surveying: *The engineer marked the location of the new bridge using a **control point** for accuracy.*

control system /kən'troʊl ˌsɪstəm/ *noun*, **Y.3 (electrical)**

★ a set of devices that direct or adjust how a machine or process works: *The engineers tested the **control system** to ensure the machine operated safely.*

cool /ku:l/ *verb/adjective*, **B1, Y.2**

★ to reduce the temperature of a material or system, often to prevent overheating in engineering processes: *The machine stopped working because the engine was not **cool** enough.*

★ (of a machine or material) at a safe or lower temperature after heat has been removed, especially by a cooling system or coolant: *The machine stopped working because the engine was not **cool** enough.*

coolant /'ku:lənt/ *noun*, **B1, Y.2 (mechanical)**

★ a liquid that is used for cooling an engine, a nuclear reactor, etc.: *The engine overheated because there was not enough **coolant** in the system.*

copper /'kɑːpər/ *noun*, **B2**, **Y.2** (*mechanical*)

★ a chemical element; copper is a soft reddish-brown metal used for making electric wires, pipes, and coins: *The wires are made of **copper** to ensure good electrical conductivity.*

counter /'kaʊntər/ *noun*, **B2**, **Y.2** (*electrical*)

★ a digital circuit or device that counts how many times an input event, such as a clock pulse, has happened and often stores or displays this number: *The **counter** tracks the number of pulses from the sensor.*

coupling /'kʌplɪŋ/ *noun*, **C2**, **Y.2** (*mechanical*)

★ a thing that joins together two parts of something, two vehicles, or two pieces of equipment: *The technician replaced the broken **coupling** to restore the conveyor belt's smooth operation.*

cure /kjʊr/ *verb*, **B2**, **Y.2**

★ to keep fresh concrete or similar material moist and at the right temperature so it can harden and gain its full strength: *We must **cure** the concrete for three days to gain full strength.*

curing /'kjʊrɪŋ/ *noun*, **B2**, **Y.2** (*civil*)

★ the process of keeping concrete or similar material in good conditions so it can become strong: ***Curing** ensures the new concrete bridge deck reaches its full strength and durability.*

cut /kʌt/ *verb*, **A2**, **Y.1**

★ to separate or divide an object into parts using a sharp tool: *You need to **cut** the metal to the required size.*

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cut and fill /ˌkʌt ən ˈfɪl/ *noun*, **Y.3 (civil)**

★ the process of cutting soil from high areas and placing it in low areas to level the ground: *The construction team planned the **cut and fill** for the new road to ensure a level surface.*

CV joint /ˌsiː ˈviː dʒɔɪnt/ *noun*, **Y.3 (mechanical)**

★ a joint that lets a drive shaft transmit power while changing angle: *The **CV joint** lets the drive shaft transmit power smoothly to the wheels even when the suspension moves and the wheel turns for steering.*

cylinder /ˈsɪlɪndər/ *noun*, **C1, Y.3 (mechanical)**

★ a solid geometric shape with circular bases, commonly used in engines and hydraulic systems: *The **cylinder** in the engine helps compress the fuel.*

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3D modeling /θriː ˈdiː ˈmɔːdəleɪŋ/ *noun*, **Y.2 (mechanical)**

★ creating a digital three-dimensional shape of an object on a computer: ***3D modeling** helps us visualize the design before building the prototype.*

DAC /diː ˌeɪ ˈsiː/ *noun*, **Y.3 (mechanical)**

★ a circuit that changes digital numbers into an analog signal: *The **DAC** converted the digital signal to an analog output.*

damp /dæmp/ *verb*, **B2, Y.3**

★ to lessen the movement or vibration of a system, making it more stable: *Engineers install rubber pads to **damp** the machine's vibrations.*

damper /'dæmpər/ *noun*, **C2, Y.3 (mechanical)**

★ a device that controls airflow in a system, affecting combustion strength: *The engineer adjusted the **damper** to control the airflow in the heating system.*

DC /ˌdiː 'siː/ *noun*, **C2, Y.1 (electrical)**

★ direct current, a type of electrical current that flows in one direction: *The solar panel produces **DC** to power the lights.*

DC generator /ˌdiː 'siː 'dʒɛnə'reɪtə/ *noun*, **Y.3 (electrical)**

★ a machine that produces direct current electricity: *A **DC generator** converts mechanical energy into electrical energy.*

DC motor /ˌdiː 'siː 'moʊtə/ *noun*, **Y.3 (electrical)**

★ an electric motor that runs on direct current: *The **DC motor** powers the small robotic arm.*

dead /ded/ *adjective*, **A2, Y.2**

★ not working because of a lack of power: *The battery is **dead** so the device will not turn on.*

dead load /'dɛd loʊd/ *noun*, **Y.3 (civil)**

★ the permanent weight of a structure, including its fixed parts and built-in equipment: *The engineer calculated the **dead load** before designing the building's foundation.*

debug /'diːbʌg/ *verb*, **C2, Y.3**

★ to look for and remove the faults in a computer program: *The software engineer worked late to **debug** the new control system for the automated machines.*

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debugging /di:'bʌɡɪŋ/ *noun*, **Y.3 (electrical)**

★ finding and fixing errors in computer programs or control systems: *The team spent hours **debugging** the new software for the automated control system.*

deburr /di:'bɜːr/ *verb*, **Y.3**

★ to remove sharp or rough edges from a part after cutting or machining: *The technician must **deburr** the metal parts before assembling the final product.*

decoder /di:'kəʊdər/ *noun*, **B1, Y.2 (electrical)**

★ a device that changes an electronic signal into a form that people can understand, such as sound and pictures: *The engineer used a **decoder** to convert the digital signals into audio for the speakers.*

deep /di:p/ *adjective*, **A2, Y.1**

★ having a large distance from the top to the bottom, especially for foundations, holes, or trenches in engineering work: *The engineers measured the **deep** foundation to ensure stability for the new building.*

degree of freedom /dɪ'ɡriː əv 'friːdəm/ *noun*, **Y.3 (mechatronics)**

★ an independent way in which a body or system can move: *The robotic arm has six **degrees of freedom** for versatile movement in assembly tasks.*

dense /dens/ *adjective*, **B2, Y.1**

★ having a high mass per unit volume, often used to describe materials or fluids in engineering contexts: *The concrete mix is **dense**, providing high strength for the building foundation.*

derivative control /də'rivətɪv kən'troʊl/ *noun*,

Y.3 (mechatronics)

★ a control action based on how fast the error is changing: *The engineer adjusted the system settings to include **derivative control** for smoother motor operation.*

design /dɪ'zaɪn/ *verb*, **A1, Y.3**

★ to decide how something will look, work, etc., especially by drawing plans or making models: *Engineers **design** the layout of the new bridge using computer software.*

diagnose /ˌdaɪəɡ'nəʊs/ *verb*, **C2, Y.3**

★ to identify the cause of a malfunction or failure in a system or component through analysis: *Engineers need to **diagnose** the problem in the circuit board quickly.*

dial gauge /'daɪəl geɪdʒ/ *noun*, **Y.1 (mechanical)**

★ a measuring instrument with a pointer and dial used to check small movements or errors: *The engineer used a **dial gauge** to check the alignment of the machine parts.*

differential /ˌdɪfə'renʃl/ *noun*, **C1, Y.3 (mechanical)**

★ a mechanical device that allows for varying wheel speeds in vehicles, improving handling and stability: *The car's **differential** allows the wheels to turn at different speeds during turns.*

digital input /'dɪdʒətəl 'ɪn.pʊt/ *noun*, **Y.3 (mechatronics)**

★ an input signal that has only two states, such as on or off: *The sensor sends a **digital input** to the control system to start the motor.*

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digital output /'dɪdʒətəl 'aʊt.pʊt/ *noun*, **Y.3 (mechatronics)**

★ an output signal that has only two states, such as on or off: *The sensor sends a **digital output** to the alarm system when it detects motion.*

dimension /daɪ'menʃn/ *noun/verb*, **B2, Y.1 (civil)**

★ a measurement in space, for example the height, width, or length of something: *The engineer measured each **dimension** of the metal beam for the construction project.*

★ to measure or specify the size and shape of an object: *We need to **dimension** the part before sending it to production.*

diode /'daɪəʊd/ *noun*, **C2, Y.2 (electrical)**

★ an electronic device in which the electric current passes in one direction only, for example a silicon chip: *A **diode** was used to control the flow of electricity in the circuit.*

directional control valve /də'rekʃənəl kən'troʊl vælv/ *noun*, **Y.2 (mechatronics)**

★ a valve that directs fluid to different paths in a hydraulic or pneumatic system: *The engineer adjusted the **directional control valve** to change the movement of the hydraulic cylinder.*

dirty /'dɜːrti/ *adjective*, **A2, Y.2**

★ not clean: *The **dirty** engine parts need cleaning before we can put them back in the car.*

disassemble /,dɪsə'sembl/ *verb*, **C2, Y.1**

★ to take apart a machine or structure so that it is in separate pieces: *The engineer needs to **disassemble** the engine to replace the damaged piston.*

disc brake /'dɪsk breɪk/ *noun*, **Y.3 (mechanical)**

★ a brake that uses pads pressing on a rotating disc to slow a wheel: *The engineer tested the new **disc brake** design for improved safety and performance on the vehicle.*

disconnect /ˌdɪskə'nekt/ *verb*, **C1, Y.1**

★ to remove a piece of equipment from a supply of gas, water, or electricity: *Before servicing the machine, always **disconnect** the power supply to ensure safety.*

display /dɪ'spleɪ/ *noun*, **B1, Y.2 (electrical)**

★ a visual output device or arrangement used to present data, images, or information in electronic systems: *The **display** shows real-time data from the sensors in the machine.*

divider /dɪ'vaɪdər/ *noun*, **B1, Y.1 (civil)**

★ an instrument made of two long, thin, metal parts joined together at the top, used for measuring lines and angles: *The engineer used a **divider** to mark equal distances on the metal sheet.*

document /'dɔːkjumənt/ *verb*, **A2, Y.3**

★ to record the details of something: *The engineer will **document** the test results for the new bridge design.*

draw /drɔː/ *verb*, **A1, Y.1**

★ to create a visual representation using a pencil, pen, or chalk: *Please **draw** the circuit diagram for this project.*

drill /drɪl/ *verb*, **C2, Y.1**

★ to make a hole in something, using a drill: *We will **drill** a hole in the metal plate for the screws.*

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drilling /'drɪlɪŋ/ *noun*, **Y.1 (civil)**

★ the process of making a round hole in a material using a rotating cutting tool: ***Drilling** is needed to create bolt holes in the metal plates for the bridge construction project.*

drilling machine /'drɪlɪŋ mə'ʃiːn/ *noun*, **Y.2 (mechanical)**

★ a machine that uses a rotating drill bit to make holes: *The engineer used the **drilling machine** to create precise holes in the metal sheet.*

drive /draɪv/ *verb*, **A1, Y.2**

★ to provide the power that makes a machine work: *The electric motor will **drive** the conveyor belt in the assembly line.*

drive system /draɪv 'sɪstəm/ *noun*, **Y.3 (mechatronics)**

★ the parts that provide and transmit power to move a machine: *The engineer tested the **drive system** to ensure the machine operated smoothly and efficiently.*

driveshaft /'draɪvʃæft/ *noun*, **C2, Y.3 (mechanical)**

★ a long, cylindrical shaft that transmits torque and rotation from the engine or gearbox to the wheels or other driven parts: *The mechanic replaced the damaged **driveshaft** to restore power from the engine to the wheels.*

drum brake /'drʌm breɪk/ *noun*, **Y.3 (mechanical)**

★ a brake that uses shoes pressing inside a rotating drum to slow a wheel: *The mechanic checked the wear on the **drum brake** of the old commercial vehicle.*

ductile /'dʌktaɪl/ *adjective*, **C2, Y.1**

★ that can be made into a thin wire: *Copper is **ductile** and is often used in electrical wiring.*

dull /dʌl/ *adjective*, **B1**, **Y.1**

★ not bright or shiny: *The **dull** blade cannot cut through the metal.*

durable /'dʊrəbl/ *adjective*, **C2**, **Y.1**

★ likely to last for a long time without breaking or getting weaker: *The engineers designed a **durable** bridge that can withstand heavy traffic and harsh weather conditions.*

dynamic /daɪ'næmɪk/ *adjective*, **B2**, **Y.2**

★ (of a force or power) producing movement: *The **dynamic** forces in the system create movement and change.*

dynamics /daɪ'næmɪks/ *noun*, **Y.3 (mechanical)**

★ the study of forces and motion on objects that are moving: *The engineer studied **dynamics** to design safer car suspension systems.*

E

earthwork /'ɜːrθwɜːrk/ *noun*, **B2**, **Y.3 (civil)**

★ the process of moving and shaping soil or rock for construction, often used in building foundations or roads: *The **earthwork** for the new road started last month, moving large amounts of soil.*

electric current /ɪ'lektrɪk 'kɜːrənt/ *noun*, **Y.1 (electrical)**

★ the flow of electric charge through a wire or other conductor: *The motor stopped working because the **electric current** was too low.*

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electricity /ɪˌlekˈtrɪsəti/ *noun*, **A2**, **Y.1 (electrical)**

★ a form of energy from charged elementary particles, usually supplied as electric current through cables, wires, etc. for lighting, heating, driving machines, etc.: **Electricity** powers all the machines in the manufacturing plant.

elevation /ˌelɪˈveɪʃn/ *noun*, **C2**, **Y.2 (civil)**

★ the vertical distance of a point above a reference level, commonly sea level, used in surveying and construction: *The **elevation** of the site is crucial for drainage planning.*

emergency stop /ɪˈmɜːrdʒənsi stɔːp/ *noun*, **Y.3 (mechatronics)**

★ a control that quickly shuts down a machine to prevent harm: *The operator quickly pressed the **emergency stop** when the machine started making loud noises.*

EMF /iː ˌɛm ˈɛf/ *noun*, **Y.3 (electrical)**

★ the voltage produced by a source such as a battery or generator that can drive current in a circuit: *The **EMF** of the battery must be checked before use.*

encoder /ɪnˈkəʊdə/ *noun*, **Y.2**

★ a device that converts movement or position into electrical signals or digital data: *The engineer installed the **encoder** to monitor the motor's rotation speed accurately.*

end effector /ˈɛnd ɪˈfektə/ *noun*, **Y.3 (mechatronics)**

★ the tool or device at the end of a robot arm that does the work: *The robot uses its **end effector** to pick up and place parts on the assembly line.*

equipment /ɪ'kwɪpmənt/ *noun*, **Y.1**

★ the tools, machines and other devices that are needed for a particular job or activity: *Students must wear safety **equipment** when working with electrical circuits in the lab.*

estimate /'estɪmeɪt/ *verb*, **B2, Y.3**

★ to form an idea of the cost, size, value, etc. of something, but without calculating it exactly: *The engineer must **estimate** the material costs for the new bridge project.*

evaluate /ɪ'væljuːeɪt/ *verb*, **C1, Y.3**

★ to form an opinion of the amount, value, or quality of something after thinking about it carefully: *Engineers must **evaluate** the safety of the bridge before it opens to the public.*

exact /ɪɡ'zækt/ *adjective*, **B1, Y.1**

★ correct in every detail: *We need the **exact** measurements for the design.*

excavate /'ɛkskəveɪt/ *verb*, **C2, Y.2**

★ to make a hole, etc. in the ground by digging: *The crew will **excavate** a trench for the new pipeline project.*

excavation /ˌɛkskə'veɪʃn/ *noun*, **C1, Y.3 (civil)**

★ the process of removing soil or rock to create a hole or cavity for construction purposes: ***Excavation** involves removing soil and rock to prepare the site for the building's foundation.*

extrude /ɪk'struːd/ *verb*, **B1, Y.2**

★ to force or push something out of something; to be forced or pushed in this way: *The machine will **extrude** the plastic into a long pipe shape.*

F

facing /'feɪsɪŋ/ *noun*, **C2**, **Y.2 (mechanical)**

★ a machining process that makes the end of a rotating workpiece flat and smooth: *The process of **facing** the metal part made its end flat and smooth for final assembly.*

fail-safe /'feɪl seɪf/ *noun*, **B2**, **Y.3 (mechatronics)**

★ a design feature that ensures a system defaults to a safe condition in case of a failure: *The **fail-safe** mechanism prevents the machine from operating dangerously.*

fasten /'fæsn/ *verb*, **B1**, **Y.1**

★ to close or join the two parts of something; to become closed or joined together: ***Fasten** the bolts securely to ensure the safety of the structure.*

fastener /'fæsnər/ *noun*, **C1**, **Y.2 (mechanical)**

★ a mechanical device used to securely join or hold two or more components together: *We used a strong **fastener** to hold the two metal plates together.*

FEA /ˌef ˌiː ˈeɪ/ *noun*, **Y.3 (mechatronics)**

★ a computer method that breaks a part into small elements to predict stress and deformation: *The engineer used **FEA** to check the bridge's strength under heavy truck loads.*

feedback /'fiːdbæk/ *noun*, **B2**, **Y.3 (electrical)**

★ the return of part of a system's output as a signal to its input so that the system can correct its error and improve control: *The **feedback** from the sensors helped correct the robot's movements.*

file /faɪl/ verb, **A2, Y.1**

★ to cut or shape something, or make something smooth, using a file: *The technician will **file** the rough edges of the metal part before assembly.*

filing /'faɪlɪŋ/ noun, **B1, Y.1 (civil)**

★ the process of removing material from a workpiece using a file to achieve a desired shape or finish: ***Filing** is essential for achieving a smooth, precise edge on the metal workpiece.*

filter /'fɪltər/ noun, **C2, Y.2 (electrical)**

★ a device that removes unwanted substances from a fluid or signal by allowing only certain frequencies or particles to pass: *The engineer installed a **filter** to remove contaminants from the hydraulic fluid in the system.*

fine /faɪn/ adjective, **A1, Y.1**

★ describing materials or components with a small particle size or high precision in engineering applications: *We used **fine** sand for the precision casting process.*

fit /fɪt/ verb, **A2, Y.2**

★ to be the right shape and size for someone or something: *The new bolt must **fit** the hole in the metal plate securely.*

fixture /'fɪkstʃər/ noun, **C1, Y.2 (mechanical)**

★ a device used to hold a workpiece in place during machining or assembly: *The **fixture** holds the metal piece steady during machining.*

flat /flæt/ adjective, **A2, Y.1**

★ having a level surface, not curved or sloping: *The engineer checked if the metal sheet was **flat** before starting the assembly.*

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flexible /'fleksəbl/ *adjective*, **B2**, **Y.1**

★ able to change to suit new conditions or situations: *The **flexible** material allows the bridge to withstand strong winds and minor earthquakes.*

flip-flop /'flɪp flɑːp/ *noun*, **C2**, **Y.3 (electrical)**

★ a digital circuit (flip-flop) with two stable states that can store one bit of data and change its output when control signals are applied: *The **flip-flop** stored the binary data needed for processing.*

floor /flɔːr/ *noun*, **A1**, **Y.2 (civil)**

★ the flat surface inside a building that people walk on: *The engineer inspected the **floor** for damage before starting the machine installation.*

floor plan /'flɔːr plæn/ *noun*, **Y.2 (civil)**

★ a drawing from above that shows the size and position of rooms in a building: *The architect presented the **floor plan** to the engineers for review before construction began.*

flow control valve /'floʊ kən'troʊl vælv/ *noun*, **Y.2 (mechatronics)**

★ a valve that adjusts the rate of fluid flow in a system: *The engineer adjusted the **flow control valve** to increase the water flow in the cooling system.*

FM /ˌef 'em/ *noun*, **C1**, **Y.3 (electrical)**

★ a method of encoding information in a carrier wave by varying its frequency, commonly used in radio broadcasting: *The **FM** signal provides clear sound for the radio transmission.*

footing /'fʊtɪŋ/ *adjective*, **B1, Y.2 (civil)**

★ the part of a foundation that transfers building loads to the ground, ensuring stability and support: *The **footing** supports the weight of the building above.*

force /fɔːrs/ *noun*, **A2, Y.3 (mechanical)**

★ a push or pull on an object that can change its motion or shape: *The **force** applied to the lever changed the direction of the load.*

forge /fɔːrdʒ/ *verb*, **C1, Y.2**

★ to shape metal by heating it in a fire and hitting it with a hammer; to make an object in this way: *The blacksmith will **forge** the steel rods into strong tools for the construction project.*

forging /'fɔːrdʒɪŋ/ *noun*, **Y.2 (mechanical)**

★ the process of shaping hot metal by hammering or pressing: *The blacksmith completed the **forging** of the steel beam for the new bridge.*

form /fɔːrm/ *verb*, **A1, Y.2**

★ to begin to exist and gradually develop into a particular shape; to make something begin to exist in a particular shape: *The engineers watched as the metal began to **form** into a sturdy bridge beam.*

forming /'fɔːrmɪŋ/ *noun*, **B2, Y.2 (mechanical)**

★ the process of changing the shape of material without removing any of it: *Metal **forming** is crucial in creating automobile parts like body panels and engine components.*

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formwork /'fɔːrmwɜːrk/ *noun*, **Y.2 (civil)**

★ temporary molds or panels that hold wet concrete in place until it becomes hard: *The construction team removed the **formwork** once the concrete had fully set and hardened.*

foundation /faʊn'deɪʃn/ *noun*, **C1, Y.2 (civil)**

★ a layer of bricks, concrete, etc. that forms the solid underground base of a building: *The engineers inspected the **foundation** to ensure it could support the new bridge design.*

fragile /'frædʒl/ *adjective*, **C2, Y.1**

★ easily broken or damaged: *The engineer carefully handled the **fragile** glass components during the assembly process.*

frequency /'friːkwənsi/ *noun*, **B2, Y.3 (electrical)**

★ the rate at which something happens or is repeated: *The engineer measured the **frequency** of the machine's vibrations to ensure it was running smoothly.*

frequency control /'friːkwənsi kən'troʊl/ *noun*, **Y.3 (mechatronics)**

★ the adjustment of how fast a repeating signal or motion occurs: *The engineer used **frequency control** to adjust the conveyor belt speed in the factory.*

fuse /fjuːz/ *noun*, **C2, Y.1 (electrical)**

★ a small wire or device inside a piece of electrical equipment that breaks and stops the current if the flow of electricity is too strong: *The circuit stopped working because the **fuse** blew during the power surge.*

G

G-CODE /'dʒiː ˌkoʊd/ *noun*, **Y.2 (mechanical)**

★ a set of standard commands that tell a CNC machine how to move and cut: *The programmer wrote **G-CODE** to control the CNC machine's movements.*

GD&T /ˌdʒiː ˌdiː ən ˈtiː/ *noun*, **Y.2 (mechanical)**

★ a symbolic system on drawings that shows allowed variation in size, shape, and position of features: *We use **GD&T** to ensure parts fit together correctly.*

gear /ɡɪr/ *noun*, **B2, Y.2 (mechanical)**

★ a wheel with teeth that meshes with another toothed wheel to change speed or torque: *The **gear** ratio determines how fast the machine operates.*

glue /ɡluː/ *noun*, **C2, Y.2 (civil)**

★ a sticky substance that is used for joining things together: *The engineer applied **glue** to secure the metal pieces in the prototype structure.*

grind /ɡraɪnd/ *verb*, **C1, Y.1**

★ to break or crush something into very small pieces between two hard surfaces or using a special machine: *Engineers must **grind** the metal to create a smooth surface for the new machine part.*

grinding /'ɡraɪndɪŋ/ *noun*, **B2, Y.1 (mechanical)**

★ the process of wearing down or removing material from a surface using a rotating wheel or abrasive: ***Grinding** is used to shape metal parts smoothly.*

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gripper /'grɪpə/ *noun*, **Y.3 (mechatronics)**

★ the part of a robot or machine that holds or grasps an object: *The robot **gripper** carefully picks up the fragile glass tube from the conveyor belt.*

ground /graʊnd/ *noun/verb*, **A2, Y.1 (electrical)**

★ a wire that connects an electric circuit with the ground and makes it safe: *Connect the **ground** wire to ensure safety in the circuit.*

★ to make electrical equipment safe by connecting it to the ground with a wire: *Ensure you **ground** the generator to prevent electrical shocks during operation.*

H

hard /hɑːrd/ *adjective*, **A1, Y.1**

★ solid or stiff and difficult to bend or break: *The **hard** material was chosen for its strength in construction.*

hardness /'hɑːrdnəs/ *noun*, **B2, Y.2 (mechanical)**

★ how well a material resists being scratched, dented, or worn: *The engineer tested the **hardness** of the metal to ensure it could withstand heavy use.*

heat /hi:t/ *verb*, **A2, Y.2**

★ to make something hot or warm; to become hot or warm: *The engineer will **heat** the metal until it is ready for shaping.*

heavy /'hevi/ *adjective*, **A2**, **Y.2**

★ weighing a lot; difficult to lift or move: *The **heavy** machinery requires a large truck to transport.*

HMI /ˌeɪtʃ ˌɛm 'aɪ/ *noun*, **Y.3 (mechatronics)**

★ the screen or panel where a person can see information from a machine and send commands to it: *The operator adjusted the machine settings using the **HMI** on the control panel.*

hollow /'hɑːləʊ/ *adjective*, **C2**, **Y.1**

★ having a hole or empty space inside: *The team designed a **hollow** beam to reduce weight without losing strength.*

hot wire /'hɑːt ˌwaɪə/ *noun*, **Y.2 (electrical)**

★ the live conductor in an electric circuit that carries voltage: *Always disconnect the **hot wire** before working on any electrical circuit to ensure safety.*

hydraulic circuit /haɪ'drɔːlɪk 'sɜːrkət/

noun, **Y.2 (mechatronics)**

★ a connected path of pipes and components carrying pressurized liquid: *The engineer reviewed the **hydraulic circuit** to ensure all components were correctly connected for the machine's operation.*

I

I/O DEVICE /ˌaɪ 'əʊ dɪ'vaɪs/ *noun*, **Y.3 (electrical)**

★ hardware that sends data to a computer or receives data from it: *The printer is an **I/O DEVICE** that receives data from the computer and produces a hard copy.*

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I2C /ˌaɪ skwɜrd 'siː/ *noun*, **Y.2 (mechatronics)**

★ a digital communication bus that lets chips on a circuit board talk using only two wires: *I2C connects multiple sensors to the microcontroller easily.*

IC /ˌaɪ 'siː/ *noun*, **A1, Y.1 (electrical)**

★ integrated circuit (a very small electronic circuit made on a single chip that contains many connected parts such as transistors and resistors): *The IC contains thousands of tiny transistors on a single chip.*

image processing /'ɪmɪdʒ 'prɑːsesɪŋ/ *noun*, **Y.3**

★ computer methods to improve or analyze pictures and video: *The engineers use **image processing** to detect cracks in the bridge structure from the drone photos.*

impedance /ɪm'piːdn̩s/ *noun*, **B2, Y.3 (electrical)**

★ a measurement of the total resistance of a piece of electrical equipment, etc. to the flow of an alternating current: *The **impedance** of the circuit must be measured to ensure proper function.*

improve /ɪm'pruːv/ *verb*, **A1, Y.3**

★ to become better than before; to make something or someone better than before: *The team worked to **improve** the efficiency of the solar panels.*

inactive /ɪn'æktɪv/ *adjective*, **B2, Y.3**

★ not doing anything; not active: *The machine stayed **inactive** during the power outage.*

inductor /ɪn'dʌktə/ *noun*, **Y.2 (electrical)**

★ an electrical component made of a coil of wire that resists change in current: *The circuit uses an **inductor** to limit the current flowing through the LED light.*

industrial automation /ɪn'dʌstriəl ˌɔ:tə'meɪʃən/ *noun*, **Y.3 (mechatronics)**

★ the use of control systems and machines to run industrial processes with little human help: ***Industrial automation** improves factory productivity by using robots to handle repetitive tasks.*

input device /'ɪn.pʊt dɪ'vaɪs/ *noun*, **Y.3 (mechatronics)**

★ hardware that lets a user send data or commands to a computer: *The engineer connected the **input device** to the control panel to start the machine.*

inspect /ɪn'spekt/ *verb*, **C1, Y.2**

★ to look closely at something or someone, especially to check that everything is as it should be: *The engineer will **inspect** the bridge for any signs of wear or damage.*

install /ɪn'stɔ:l/ *verb*, **B1, Y.2**

★ to fix equipment or furniture into position so that it can be used: *We will **install** the new CNC machine in the workshop next week.*

insulate /'ɪnsəleɪt/ *verb*, **B2, Y.1**

★ to protect something with a material that prevents heat, sound, electricity, etc. from passing through: *Engineers **insulate** the wires to prevent any electrical accidents.*

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insulator /'ɪnsəleɪtər/ *noun*, **C2, Y.2 (electrical)**

★ a material or device used to prevent heat, electricity, or sound from escaping from something: *The engineer selected rubber as an **insulator** to protect the wires from heat.*

integral control /'ɪntəgrəl kən'troʊl/

noun, **Y.3 (mechatronics)**

★ a control action based on the total size of the error over time: *The air conditioning system uses **integral control** to maintain the desired room temperature without fluctuation.*

I

integrate /'ɪntɪgreɪt/ *verb*, **C1, Y.3**

★ to combine two or more things so that they work together; to combine with something else in this way: *Engineers **integrate** solar panels with the power grid to increase renewable energy use.*

interface /'ɪntərfeɪs/ *noun*, **C1, Y.3 (mechatronics)**

★ a connection point where two systems or devices communicate with each other: *We designed an **interface** to connect the sensor and the main controller.*

interpret /ɪn'tɜːrprət/ *verb*, **C1, Y.1**

★ to explain the meaning of something: *Engineers must **interpret** the data to understand the machine's performance.*

inverter /ɪn'vɜːrtər/ *noun*, **Y.2 (electrical)**

★ a device that changes direct current into alternating current: *The solar panel system uses an **inverter** to power household appliances with alternating current.*

isolate /'aɪsəleɪt/ verb, **B2, Y.3**

★ to separate a single substance, cell, etc. from others so that you can study it: *Engineers **isolate** the faulty circuit to prevent further damage to the system.*

isometric drawing /,aɪsə'metɪk ,drɔːɪŋ/ noun, **Y.1 (civil)**

★ a type of 3D drawing where all three axes are drawn at equal angles: *The engineer created an **isometric drawing** to help the team understand the machine's layout.*

J

jig /dʒɪɡ/ noun, **C2, Y.2 (mechanical)**

★ a device that holds something in position and guides the tools that are working on it: *The machinist used a **jig** to ensure the holes were drilled in the correct position.*

junction box /'dʒʌŋkʃən ,bɔːks/ noun, **Y.2 (electrical)**

★ an enclosed box where electrical wires connect and are protected: *The electrician checked the **junction box** to ensure all wires were secure and properly connected.*

K

key /kiː/ noun, **A1, Y.2 (mechanical)**

★ a small metal piece that fits into matching slots on a shaft and hub to lock them, so they turn together: *The **key** locks the gear to the shaft for proper operation.*

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kinematics /ˌkɪnəˈmætɪks/ *noun*, **Y.3 (mechatronics)**

★ the study of motion of bodies without considering the forces that cause the motion: *The team used **kinematics** to design the robot arm's smooth movement path.*



labor cost /ˈleɪbər kɔːst/ *noun*, **Y.3 (civil)**

★ the money paid to workers for the time they spend on a project: *The project budget increased because the **labor cost** was higher than expected.*

ladder diagram /ˈlædə ˌdaɪəˌgræm/ *noun*, **Y.3 (electrical)**

★ a drawing that shows control circuits using lines that look like the steps of a ladder: *The technician used a **ladder diagram** to troubleshoot the wiring in the control panel.*

lathe /leɪð/ *noun*, **C2, Y.1 (mechanical)**

★ a machine that shapes pieces of wood or metal by holding and turning them against a fixed cutting tool: *The engineer used the **lathe** to create precise metal parts for the new motor design.*

layout /ˈleɪaʊt/ *noun*, **C1, Y.2 (civil)**

★ the way in which the parts of something such as the page of a book, a garden, or a building are arranged: *The engineer reviewed the **layout** of the new factory floor for efficiency improvements.*

LCD /ˌel siː 'diː/ *noun*, **A1, Y.2 (mechatronics)**

★ a display technology that shows images and text using liquid crystals: *The **LCD** shows the temperature and pressure readings on the control panel.*

LED /ˌel ɪː 'diː/ *noun*, **A1, Y.1**

★ *light-emitting diode*; a small electronic device that gives light when an electric current passes through it, used as an indicator or light source in many circuits: *The **LED** lights up when the circuit is powered on.*

level /'levl/ *verb*, **A2, Y.2**

★ to make something flat or smooth: *The engineer will **level** the concrete floor before installing the machinery.*

light /laɪt/ *adjective*, **A1, Y.1**

★ having low weight or intensity, often used to describe materials or structures that require minimal force: *The **light** materials reduced the overall weight of the drone.*

light sensor /'laɪt ˌsensə/ *noun*, **Y.2 (mechatronics)**

★ a device that detects the amount of light and turns it into a signal: *The robot uses a **light sensor** to follow the path marked by bright tape on the floor.*

linear encoder /'lɪniə ɛn 'kəʊdə/ *noun*, **Y.3 (mechatronics)**

★ a sensor that measures straight-line position and gives a coded signal: *The engineer installed a **linear encoder** to track the movement of the robotic arm.*

live load /'laɪv lɒd/ *noun*, **Y.3 (civil)**

★ the moving or changeable weight on a structure, such as people or furniture: *The engineer calculated the **live load** to ensure the bridge can handle heavy traffic safely.*

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live wire /'laɪv ,waɪə/ *noun*, **C2, Y.2 (electrical)**

★ a conductor that is at a dangerous voltage compared with the ground: *Always use insulated gloves when working near a **live wire** to avoid electric shock.*

load /ləʊd/ *noun*, **B2, Y.3 (civil)**

★ the weight or force applied to a structure or component, including live loads and dead loads: *The engineer calculated the **load** on the bridge to make sure the structure is safe.*

logic gate /'lɒ:dʒɪk geɪt/ *noun*, **Y.2 (electrical)**

★ a basic digital circuit that gives an output based on one or more inputs: *The engineer tested the circuit by adding a **logic gate** to control the flow of electricity.*

long /lɔːŋ/ *adjective*, **A1, Y.1**

★ measuring or covering a great length or distance, or a greater length or distance than usual: *The **long** bridge spans over the wide river to connect the two cities.*

loose /luːs/ *adjective*, **B2, Y.1**

★ not firmly fixed where it should be; able to become separated from something: *The **loose** bolt needs tightening to prevent the machine from malfunctioning.*

loosen /'luːsn/ *verb*, **C2, Y.2**

★ to make something less tight or firmly fixed; to become less tight or firmly fixed: ***Loosen** the bolt slightly before adjusting the machine's alignment.*

M

machine /mə'ʃi:n/ verb, **A2, Y.1**

★ to shape or cut material using a machine tool: *We will **machine** the aluminum block to the specified size.*

machine learning /mə'ʃi:n 'lɜ:rnɪŋ/

noun, **Y.3 (mechatronics)**

★ a type of AI where computers improve their performance by using data: *Engineers use **machine learning** to improve energy efficiency in smart building systems.*

machine vision /mə'ʃi:n 'vɪʒən/ noun, **Y.3 (mechatronics)**

★ the use of cameras and software so machines can see and understand images: *The factory uses **machine vision** to check the quality of each product on the assembly line.*

machining /mə'ʃi:nɪŋ/ noun, **Y.1 (civil)**

★ the process of cutting and shaping a solid material using machine tools: *The company improved production speed by automating the **machining** of metal parts.*

maintain /meɪn'teɪn/ verb, **B2, Y.3 (electrical)**

★ to keep a building, a machine, etc. in good condition by checking or repairing it regularly: *Engineers must **maintain** the factory machines to prevent unexpected breakdowns.*

maintenance /'meɪntənəns/ noun, **Y.2**

★ the work needed to keep machines, buildings, or systems in good condition: *Regular **maintenance** of the pump prevents breakdowns during operation.*

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map scale /'mæp skeɪl/ *noun*, **Y.3 (civil)**

★ the ratio between a distance on a map and the real distance on the ground: *The engineer checked the **map scale** to plan the new road's exact path and length.*

mark /mɑːrk/ *verb*, **A2, Y.1**

★ to write or draw a symbol, line, etc. on something in order to give information about it: *The engineer will **mark** the metal sheet to show where to cut.*

markup /'mɑːrkʌp/ *noun*, **C2, Y.3 (civil)**

★ symbols in computer documents that indicate the document's structure and how it should appear on screen or in print: *Engineers use HTML **markup** to design the layout of a web-based control panel.*

material /mə'tɪəriəl/ *noun*, **Y.1**

★ a substance that things can be made from, such as metal, concrete, or plastic: *The engineer chose a strong **material** to support the heavy load.*

mathematical modeling /ˌmæθə'mætɪkəl 'mɑːdəlɪŋ/ *noun*, **Y.3 (mechatronics)**

★ using equations to represent and study how real systems behave: ***Mathematical modeling** helps engineers predict the behavior of a new bridge design under different loads.*

measure /'meɪʒər/ *verb*, **A2, Y.1**

★ to find the size, quantity, etc. of something in standard units: *The engineer used a ruler to **measure** the length of the metal rod.*

measurement tape /'meɜəmənt teɪp/ *noun*, **Y.3**

★ a flexible strip marked with units used to measure length or distance: *The engineer used a **measurement tape** to check the length of the new bridge support beam.*

method /'meθəd/ *noun*, **Y.1**

★ a particular way of doing something, especially a planned or scientific way: *The lab uses a standard **method** to test the strength of concrete samples.*

micrometer /maɪ'krɑːmɪtər/ *noun*, **C1, Y.1 (civil)**

★ a precision measuring instrument that can measure small distances, typically to one millionth of a meter: *We used a **micrometer** to measure the thickness of the wire.*

mill /mɪl/ *verb*, **C1, Y.1**

★ to grind a material into very small pieces using a machine called a mill: *We will **mill** the metal to create small parts for the machine.*

milling /'mɪlɪŋ/ *noun*, **B1, Y.1 (mechanical)**

★ a machining process that removes material from a workpiece using rotating cutting tools: ***Milling** is used to create precise shapes and flat surfaces in metal parts.*

mix /mɪks/ *verb*, **A2, Y.1**

★ to prepare something by combining two or more different substances: *You need to **mix** the two chemicals to start the reaction.*

model /'mɑːdl/ *verb*, **A2, Y.3**

★ to create a simplified representation of a system or component for analysis and testing before actual

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implementation: We will **model** the new bridge design using computer software to test its strength.

modulation /ˌməːdʒəˈleɪʃn/ noun, C1, Y.3 (electrical)

★ the process of changing a signal so it can carry information over a distance: The engineer adjusted the **modulation** to improve the quality of the radio signal.

moment /ˈməʊmənt/ noun, A2, Y.3 (mechanical)

★ the turning effect of a force, equal to the force multiplied by its perpendicular distance from a pivot or point: The **moment** caused the lever to rotate around the pivot.

monitor /ˈməːnɪtər/ verb, B2, Y.2

★ to watch and check something over a period of time in order to see how it develops, so that you can make any necessary changes: Engineers **monitor** the temperature of the engine to prevent overheating.

mortar /ˈməːrtər/ noun, C2, Y.3 (civil)

★ a mixture used to bind building materials like bricks or stones together: The contractor mixed the **mortar** to lay the bricks.

motion sensor /ˈməʊʃən ˌsensə/ noun, Y.3 (mechatronics)

★ a device that detects movement of people or objects: The **motion sensor** triggers the alarm when it detects someone entering the restricted area.

motor /ˈməʊtər/ noun, B2, Y.2 (mechatronics)

★ a device that converts electrical energy into mechanical energy to produce motion in machines or vehicles: The **motor** powers the conveyor belt in the factory.

motor control /'moʊtə kən'troʊl/ *noun*, **Y.2 (mechatronics)**

★ the equipment and methods used to start, stop, and regulate an electric motor: *The technician tested the **motor control** to ensure the machine started and stopped correctly.*

motor starter /'moʊtə ,stɑ:rtə/ *noun*, **Y.3 (electrical)**

★ an electrical device that safely starts and stops an electric motor: *The engineer inspected the **motor starter** to ensure the machine would start safely.*

mount /maʊnt/ *verb*, **C2, Y.2**

★ to fix something into position on something, so that you can use it, look at it or study it: *We need to **mount** the sensor on the wall.*

multimeter /'mʌlti mi:tə/ *noun*, **Y.1 (electrical)**

★ an instrument that can measure voltage, current, and resistance in electrical circuits: *The engineer used a **multimeter** to check the circuit's voltage and resistance levels.*

N

narrow /'nærəʊ/ *adjective*, **B1, Y.1**

★ measuring a short distance from one side to the other, especially in relation to length: *The engineers designed a **narrow** bridge to cross the small river efficiently.*

neural network /'nʊrəl 'netwɜ:k/ *noun*, **Y.3 (mechatronics)**

★ a set of connected processing units that learn patterns from data: *The engineer trained a **neural network** to detect faults in the manufacturing process.*

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numerical analysis /nu:ˈmerɪkəl əˈnæləsis/ *noun*,
Y.3 (mechatronics)

★ the study of methods for solving math problems using approximate numbers: *Engineers used **numerical analysis** to predict the bridge's strength under different load conditions.*

nut /nʌt/ *noun*, **B2, Y.1 (mechanical)**

★ a small metal block with a hole and internal thread that is screwed onto a bolt to hold parts tightly together in a joint: *The engineer tightened the **nut** to secure the metal frame.*



ohmmeter /ˈəʊmmi:tər/ *noun*, **C2, Y.2 (electrical)**

★ a device for measuring electrical resistance: *The technician used an **ohmmeter** to check the resistance of the circuit.*

ohm's law /ˈoʊmz lɔ: / *noun*, **Y.1 (electrical)**

★ a rule that links voltage, current, and resistance in an electric circuit: *The engineer used **ohm's law** to find the voltage across the resistor in the circuit.*

open-loop control /ˌoʊpən ˈlu:p kənˈtroʊl/ *noun*,
Y.2 (mechatronics)

★ a control method that does not use feedback from the output to make corrections: *The conveyor belt uses **open-loop control** to move items at a constant speed.*

operate /ˈɑ:pəreɪt/ *verb*, **B2, Y.2**

★ to use or control a machine or make it work: *The engineer learned to **operate** the robotic arm in the assembly line.*

optimize /'ɑ:ptɪmaɪz/ verb, **B2, Y.3**

★ to make something as good as it can be; to use something in the best possible way: *Engineers **optimize** the car engine to improve fuel efficiency and reduce emissions.*

orthographic projection /ˌɔ:rθə'græfɪk prə'dʒɛkʃən/

noun, **Y.1 (civil)**

★ a way of drawing different flat views of an object, such as front, top, and side: *The engineer used **orthographic projection** to create the detailed plans for the new machine.*

oscilloscope /ə'sɪləskəʊp/ noun, **C2, Y.1 (electrical)**

★ a piece of equipment that shows changes in electrical current as waves in a line on a screen: *The engineer used the **oscilloscope** to check the voltage changes in the circuit.*

outlet /'aʊtlet/ noun, **C2, Y.2 (electrical)**

★ a device in a wall that you put a plug into in order to connect electrical equipment to the power supply of a building: *Plug the device into the **outlet** for power.*

output device /'aʊt,pʊt dɪ'vaɪs/ noun, **Y.3 (mechatronics)**

★ hardware that shows or plays the results from a computer, such as a screen or speaker: *The engineer tested the new software using a digital display as the **output device**.*

overhaul /'əʊvərhaʊl/ verb, **C2, Y.3 (mechanical)**

★ to examine every part of a machine, system, etc. and make any necessary changes or repairs: *The team will **overhaul** the engine to ensure it runs smoothly.*

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overhead /ˌəʊvər'hed/ *noun*, **C1, Y.3 (civil)**

★ the extra indirect costs or work needed to support a construction project, such as management, planning, and site running costs, that are not part of the main building work: *The **overhead** costs must be calculated for the project budget.*

overload /ˌəʊvər'ləʊd/ *noun*, **C1, Y.2 (electrical)**

★ a condition where a system or component exceeds its designed capacity, potentially causing failure: *An **overload** can cause the circuit to shut down automatically.*

P

paint /peɪnt/ *noun*, **A1, Y.2 (civil)**

★ a liquid that is put on surfaces to give them a particular color; a layer of this liquid when it has dried on a surface: *The engineers applied **paint** to the metal to prevent rust.*

parallel /'pærəlel/ *adjective*, **B2, Y.1**

★ two or more lines that are parallel to each other are the same distance apart at every point: *The two beams must be installed **parallel** to each other for stability.*

parallel communication /'pærəˌlel kəˌmjuːnəˈkeɪʃən/ *noun*, **Y.3 (mechatronics)**

★ data transfer where several bits are sent at the same time on many lines: *The old computer uses **parallel communication** to transfer data quickly between its processor and memory.*

PCB /ˌpiː siː 'biː/ *noun*, **A1**, **Y.1 (electrical)**

★ printed circuit board (a flat board that supports electronic parts and connects them with thin copper tracks so that a circuit can work): *We solder components onto the **PCB** to create the electronic device.*

peak voltage /ˌpiːk 'voʊltɪdʒ/ *noun*, **Y.3 (electrical)**

★ the maximum value of voltage reached in one cycle of a waveform: *The oscilloscope shows the **peak voltage** of the circuit during the test.*

phase /feɪz/ *noun*, **B2**, **Y.2 (electrical)**

★ one of the separate alternating voltage or current waveforms in an AC power system, often combined to form single-phase or three-phase supply: *The electrical system operates in three **phases** to provide stable power to the factory.*

phase angle /'feɪz ˌæŋɡəl/ *noun*, **Y.3 (electrical)**

★ the amount by which one AC waveform leads or lags another in time: *The engineer measured the **phase angle** to ensure the motor operated efficiently in the AC circuit.*

phasor /'feɪzə/ *noun*, **Y.3 (electrical)**

★ a rotating arrow used to show the size and phase of a sinusoidal quantity like AC voltage: *The engineer used a **phasor** to analyze the electrical circuit's current and voltage relations.*

pillar /'pɪlər/ *noun*, **C2**, **Y.2 (civil)**

★ a large round stone, metal or wooden post that is used to support a bridge, the roof of a building, etc., especially when it is part of an attractive design: *The bridge has strong **pillars** that support its heavy structure.*

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pinned joint /ˌpɪnd 'dʒɔɪnt/ *noun*, **Y.3 (civil)**

★ a connection in a structure that allows rotation but not movement in or out: *The load was transferred efficiently through the beam using a **pinned joint** at the support.*

piston /ˈpɪstən/ *noun*, **B1, Y.3 (mechanical)**

★ a cylindrical part of an engine that moves up and down or back and forth to drive other engine components: *The **piston** moves up and down to power the engine.*

plan /plæn/ *verb*, **A2, Y.3**

★ to make detailed arrangements for something you want to do in the future: *The team will **plan** the layout for the new factory floor next week.*

plastic /ˈplæstɪk/ *noun*, **A2, Y.3 (mechanical)**

★ a light, strong material that is produced by chemical processes and can be formed into shapes when heated. There are many different types of plastic, used to make different objects and fabrics: *The casing of the device is made from durable **plastic** to protect the components.*

PLC /ˌpiː el 'siː/ *noun*, **A1, Y.3 (electrical)**

★ a rugged industrial computer that controls machines and processes using input and output signals: *The **PLC** controls the assembly line and monitors production.*

P-N junction /ˌpiː 'ɛn 'dʒʌŋkʃən/ *noun*, **Y.3 (electrical)**

★ the boundary between p-type and n-type semiconductor regions in a diode: *The diode effectively regulates current flow at the **p-n junction**.*

pneumatic circuit /nu:'mætɪk 'sɜːrkət/ *noun*,

Y.2 (mechatronics)

★ a system of pipes and components that carries compressed air: *The engineer drew a **pneumatic circuit** to show the airflow between the compressor and the actuator.*

polymer /'pɑːlɪmər/ *noun*, **B1, Y.2 (mechanical)**

★ a substance made of large molecules formed from combinations of smaller, simpler molecules, either natural or synthetic: *The engineer tested the new **polymer** for strength and flexibility in the lab.*

position control /pə'zɪʃən kən'trəʊl/ *noun*, **Y.3 (mechatronics)**

★ control that keeps a part at a required location or angle: *The robotic arm uses **position control** to place parts accurately on the assembly line.*

pour /pɔːr/ *verb*, **B2, Y.1**

★ to make a liquid or other substance flow from a container in a continuous stream, especially by holding the container at an angle: *The engineer will **pour** the concrete into the mold for the foundation.*

power /'paʊər/ *noun*, **A2, Y.1 (electrical)**

★ energy that can be collected and used to operate a machine, to make electricity, etc.: *The solar panels generate enough **power** to run the entire building.*

power factor /'paʊə ˌfæktə/ *noun*, **Y.3 (electrical)**

★ a number that shows how effectively electrical power is being used: *The engineer improved the system's efficiency by increasing the **power factor** of the electrical circuit.*

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PPE /ˌpiː piː 'iː/ *noun*, **C2**, **Y.3** (**civil**)

★ personal protective equipment (safety gear such as hard hats, safety boots, goggles, and gloves that workers wear to reduce the risk of injury): *Wearing **PPE** is essential when working in a hazardous environment.*

precise /prɪ'saɪs/ *adjective*, **B2**, **Y.1**

★ clear and accurate: *The engineer used **precise** measurements to ensure the bridge would be safe and strong.*

pressure regulator /'prɛʃə ˌrɛɡjəˌleɪtə/ *noun*, **Y.2** (**mechatronics**)

★ a device that keeps fluid or gas pressure at a set value: *The **pressure regulator** ensures the hydraulic system operates safely and efficiently at the correct pressure level.*

pressure sensor /'prɛʃə ˌsensə/ *noun*, **Y.2** (**mechatronics**)

★ a device that measures fluid or gas pressure and gives an electrical signal: *The **pressure sensor** alerts us when the gas pressure is too low.*

principle /'prɪnsəpl/ *noun*, **Y.1**

★ a basic rule or scientific law that explains how something works or guides how something is designed: *The course introduces the basic **principles** of electricity used in engineering systems.*

program /'prəʊgræm/ *verb*, **A2**, **Y.1**

★ to give a machine instructions to do a particular task: *The engineer will **program** the robot to sort the materials by size.*

properties /'prɑ:pətɪz/ *noun*, **B1, Y.2 (civil)**

★ qualities of a material, such as strength, hardness, or flexibility, that describe how it behaves: *The engineer tested the metal's **properties** to ensure it could withstand high temperatures.*

proportional control /prə'pɔ:ʃənəl kən'troʊl/ *noun*,
Y.3 (mechatronics)

★ control where the output changes in direct relation to the size of the error: *The temperature system uses **proportional control** to maintain a steady room temperature.*

protect /prə'tekt/ *verb*, **B1, Y.3 (mechatronics)**

★ to make sure that someone or something is not harmed, injured, damaged, etc.: *Engineers design safety barriers to **protect** workers from moving machinery.*

prototype /'prəʊtətaɪp/ *noun*, **C1, Y.3 (mechatronics)**

★ an initial working model of a product used to test and refine design concepts before mass production: *We built a **prototype** to test the new engine design and improve it before production.*

protractor /prə'træktər/ *noun*, **C1, Y.2 (civil)**

★ an instrument for measuring and drawing angles, usually made from a half circle of clear plastic with degrees (0° to 180°) marked on it: *The engineer used a **protractor** to measure the precise angle of the metal beam.*

proximity sensor /prɑ:k'sɪməti ,sensə/ *noun*,
Y.2 (mechatronics)

★ a sensor that detects when an object is near without touching it: *The robot uses a **proximity sensor** to stop when it is near a wall.*

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pulley /'pʊli/ *noun*, **B1**, **Y.2 (mechanical)**

★ a wheel or set of wheels over which a rope or chain is pulled in order to lift or lower heavy objects: *The engineer used a **pulley** to lift the heavy steel beam onto the construction site platform.*

Q

quality control /'kwɑ:ləti kən'trəʊl/ *noun*, **Y.3 (civil)**

★ the process of checking products or work to make sure they meet required standards: *The team checks each product carefully to ensure strict **quality control** in the assembly line.*

R

reaction /ri'ækʃn/ *noun*, **A2**, **Y.3 (civil)**

★ the response of materials or structures to applied forces or environmental conditions, critical in engineering analysis: *The **reaction** of the concrete to stress was analyzed during testing.*

read /ri:d/ *verb*, **A1**, **Y.1**

★ to look carefully at technical drawings, symbols, or instrument displays in order to understand the information they show: *You must **read** the technical drawings before starting the project.*

reaming /'ri:miŋ/ *noun*, **Y.2 (mechanical)**

★ the process of finishing a drilled hole to an accurate size and smooth surface with a reamer: *The technician performed **reaming** on the drilled holes to ensure they fit the metal rods perfectly.*

rebar /'riːbəʀ/ *noun*, **Y.1 (civil)**

★ a steel bar placed inside concrete to make it stronger in bending and tension: *The engineer checked the alignment of **rebar** before the concrete was poured for the bridge foundation.*

receiver /rɪ'si:vər/ *noun*, **B2, Y.3 (electrical)**

★ a device that converts electrical or radio signals into usable information, such as audio, data, or visual content: *The **receiver** in the communication system converts radio signals into audio for the operator.*

redundancy /rɪ'dʌndənsi/ *noun*, **C1, Y.3 (mechatronics)**

★ the use of extra components or paths in a system so it can keep working if one part fails: ***Redundancy** in the system ensures it remains operational during failures.*

register /'redʒɪstər/ *noun*, **B1, Y.2 (electrical)**

★ an official list or record of names, items, etc.; a book that contains such a list: *The engineer checked the equipment **register** to ensure all tools were accounted for before starting the project.*

regulate /'regjuleɪt/ *verb*, **B2, Y.2**

★ to control the speed, pressure, temperature, etc. in a machine or system: *The thermostat helps **regulate** the temperature in the heating system.*

reinforced concrete /,riːɪn'fɔːrst 'kɑːnkriːt/ *noun*, **Y.3 (civil)**

★ concrete that contains steel bars or mesh to increase its strength: *The bridge was built using **reinforced concrete** for increased strength and durability.*

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relay /'rɪleɪ/ *noun*, **Y.2 (electrical)**

★ an electrical device that opens or closes a circuit in response to an input signal: *The **relay** controls the motor based on the temperature sensor.*

repair /rɪ'per/ *verb*, **A2, Y.3**

★ to restore something that is broken, damaged, or torn to good condition: *The engineer will **repair** the leaking pipe in the factory.*

replace /rɪ'pleɪs/ *verb*, **A2, Y.3**

★ to be used instead of something or someone else; to do something instead of someone or something else: *The engineer will **replace** the broken motor with a new one to fix the machine.*

report /rɪ'pɔːrt/ *verb*, **A1, Y.3**

★ to give people information about something that you have heard, seen, done, etc: *The engineers **report** the test results to the project manager every Friday.*

resistance /rɪ'zɪstəns/ *noun*, **C1, Y.1 (electrical)**

★ the opposition to the flow of electric current, measured in ohms, affecting circuit performance: *Higher **resistance** in the circuit can lead to reduced current flow.*

resistor /rɪ'zɪstər/ *noun*, **B2, Y.1 (electrical)**

★ a device that has resistance to an electric current in a circuit: *A **resistor** limits the current flowing through the LED in the circuit.*

rigid /'rɪdʒɪd/ *adjective*, **C2**, **Y.1**

★ having a fixed shape or structure that does not easily bend or change under stress: *The **rigid** frame can support heavy loads without bending.*

rivet /'rɪvɪt/ *noun*, **C2**, **Y.2 (mechanical)**

★ a metal pin that is used to fasten two pieces of leather, metal, etc. together: *The engineer checked each **rivet** to ensure the metal plates were securely fastened.*

RMS /ˌɑːrˌɛmˈɛs/ *noun*, **Y.3 (electrical)**

★ a way of expressing the effective value of an AC voltage or current that gives the same heating as DC: *We measure the **RMS** voltage for safety in electrical circuits.*

robot /'rəʊbɑːt/ *noun*, **B1**, **Y.3 (mechatronics)**

★ a programmable machine that senses its environment and carries out tasks automatically with little or no human control: *The **robot** assembles parts on the production line automatically.*

robotics /rəʊˈbɑːtɪks/ *noun*, **C1**, **Y.2 (mechatronics)**

★ the science of designing and operating robots: ***Robotics** is essential for automating tasks in modern manufacturing.*

rotary encoder /'rəʊtəri ɛnˈkəʊdər/

noun, **Y.3 (mechatronics)**

★ a sensor that measures angle or rotation and gives a coded signal: *The robot uses a **rotary encoder** to track the movement of its arms accurately.*

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rotate /'rəʊteɪt/ verb, **B2, Y.2**

★ to move or turn around a central fixed point; to make something do this: *The engineer will **rotate** the turbine blade to check for any signs of wear or damage.*

rotor /'rəʊtər/ noun, **C2, Y.3 (electrical)**

★ a part of a machine that turns around a central point: *The engineer checked the **rotor** for damage during the routine inspection of the wind turbine.*

rough /rʌf/ adjective, **B1, Y.1**

★ having a surface that is not even or regular: *The **rough** metal surface needs more polishing for a smooth finish.*

round /raʊnd/ adjective, **A2, Y.1**

★ shaped like a circle or a ball: *The **round** gear fits perfectly into the circular slot of the machine.*

rpm /ˌɑːr piː 'em/ noun, **C2, Y.2 (mechanical)**

★ revolutions per minute; a measure of how fast an engine or device rotates: *The engine runs smoothly at 2000 **rpm** during the test.*

S

safety /'seɪfti/ noun, **Y.1**

★ the state of being protected from danger, risk, or injury: ***Safety** is the first priority when operating heavy construction equipment.*

safety interlock /'seɪftɪ 'ɪntəˌlɔːk/ *noun*, **Y.3 (mechatronics)**

★ a device that prevents a machine from running when safety conditions are not met: *The machine will not start until the **safety interlock** confirms the guard is closed.*

safety regulations /'seɪftɪ ˌrɛɡjəˈleɪʃənz/ *noun*, **Y.3 (civil)**

★ official rules that help prevent accidents and protect people at work: *Engineers must follow **safety regulations** when designing new buildings to protect workers and future occupants.*

sawing /'sɔːɪŋ/ *noun*, **Y.1 (civil)**

★ the process of cutting material using a blade with teeth that moves back and forth or in a circle: ***Sawing** is a critical step in preparing the wooden beams for the frame.*

scaffolding /'skæfəldɪŋ/ *noun*, **C2, Y.3 (civil)**

★ poles and boards that are joined together to make a structure for workers to stand on when they are working high up on the outside wall of a building: *The workers set up **scaffolding** to safely reach the top of the new building.*

scale /skeɪl/ *noun*, **B2, Y.2 (civil)**

★ the size or extent of something, especially when compared with something else: *The engineer measured the model to ensure it was the correct **scale** for testing.*

screw /skruː/ *noun*, **C1, Y.1 (civil)**

★ a thin, pointed piece of metal like a nail with a raised spiral line (called a thread) along it and a line or crosscut into its head. Screws are turned and pressed into wood, metal, etc. with a screwdriver to fasten two things together: *Use a **screw** to secure the metal plate to the frame.*

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scribe /skraɪb/ verb, **B1, Y.1**

★ to mark or cut a line on a surface, often used to guide cutting or assembly in engineering projects: *We will **scribe** lines on the metal sheet before cutting.*

section /'sekʃn/ noun, **A2, Y.2 (civil)**

★ a separate part of a structure from which the whole can be put together: *Each **section** of the bridge must be assembled carefully to ensure safety and stability.*

secure /sɪ'kjʊr/ verb, **B2, Y.3**

★ to attach or fasten something so that it does not move: *You must **secure** the pipes to prevent leaks during operation.*

select /sɪ'lekt/ verb, **B1, Y.3**

★ to choose someone or something from a group of people or things, usually according to a system: *The engineer will **select** the right material for the bridge based on strength tests.*

sensor /'sensər/ noun, **B2, Y.2 (electrical)**

★ a device that can react to light, heat, pressure, etc. in order to make a machine, etc. do something or show something: *The temperature **sensor** triggers the cooling fan when the engine gets too hot.*

serial communication /'sɪriəl kəˌmjuːnə'keɪʃən/ noun, **Y.3 (mechatronics)**

★ data transfer where bits are sent one after another on a single line: *The microcontroller sends data to the computer using **serial communication**.*

service /'sɜːrvɪs/ verb, **A2, Y.3**

★ to examine a vehicle or machine and repair it if necessary, so that it continues to work correctly: *The technician will **service** the air conditioning unit to ensure it works properly.*

servo motor /'sɜːrvəʊ 'moʊtə-/ noun, **C1, Y.1 (mechatronics)**

★ a motor that can be controlled very accurately for position or speed: *The robot uses a **servo motor** to move its arm to the correct position.*

set /set/ verb, **B2, Y.2**

★ to prepare or arrange something so that it is ready for use or in position: *Please **set** the machine to the correct temperature.*

setpoint /'set.pɔɪnt/ noun, **Y.3 (electrical)**

★ the desired value that a control system tries to keep a process at: *The thermostat adjusts the heating system to maintain the room temperature at the **setpoint**.*

shaft /ʃæft/ noun, **C2, Y.2 (mechanical)**

★ a metal bar that joins parts of a machine or an engine together, enabling power and movement to be passed from one part to another: *The motor rotates the **shaft** to drive the gears in the machine.*

shallow /'ʃæləʊ/ adjective, **B2, Y.1**

★ not having much distance between the top or surface and the bottom: *The **shallow** foundation is suitable for supporting light structures on stable soil.*

shape /ʃeɪp/ verb, **A2, Y.1**

★ to make something into a particular shape: *Engineers **shape** the metal sheet to fit the car's body design.*

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shaping /'ʃeɪpɪŋ/ *noun*, **C2**, **Y.2 (mechanical)**

★ the machining process of forming material into a desired shape using a cutting tool: ***Shaping** is used to form the metal surface so that the part fits correctly in the assembly.*

sharp /ʃɑːrp/ *adjective*, **B1**, **Y.1**

★ having a fine edge or point, especially of something that can cut or make a hole in something: *The **sharp** blade cuts metal sheets quickly and precisely in the workshop.*

shear force /'ʃɪr fɔːrs/ *noun*, **Y.3 (civil)**

★ a force that causes two parts of a material to slide past each other in opposite directions: *The beam must be strong enough to withstand the **shear force** from the heavy load above.*

short circuit /ˌʃɔːrt 'sɜːrkət/ *noun*, **Y.2 (electrical)**

★ a fault where current takes an unintended low-resistance path, often causing damage: *The technician quickly turned off the power to prevent damage from the **short circuit** in the motor controller.*

shuttering /'ʃʌtəɪŋ/ *noun*, **Y.2 (civil)**

★ temporary boards or panels used as formwork to shape and support wet concrete: *The workers installed **shuttering** before pouring the concrete for the new bridge foundation.*

signal /'sɪgnəl/ *noun*, **B1**, **Y.2 (electrical)**

★ an electrical quantity, such as voltage or current, that changes over time to carry information from one place to another: *The **signal** from the sensor is sent to the microcontroller.*

simulate /ˈsɪmjuleɪt/ verb, **B2, Y.3**

★ to create a model or representation of a system to analyze its behavior under various conditions: *We will **simulate** the bridge's response to strong winds.*

simulation /ˌsɪmjʊˈleɪʃn/ noun, **C1, Y.3 (mechatronics)**

★ the artificial creation of a system's conditions to study its behavior or performance in a controlled environment: *The **simulation** of the robotic arm showed how it would move and react under different loads.*

sketch /sketʃ/ verb, **C1, Y.2**

★ to make a quick drawing of someone or something: *The engineer will **sketch** the bridge design on paper before starting the detailed plans.*

slab /slæb/ noun, **C1, Y.2 (civil)**

★ a thick, flat piece of stone, wood, or other hard material used in construction: *The engineers inspected the concrete **slab** for cracks before starting the new building project.*

slump /slʌmp/ noun, **C2, Y.2 (civil)**

★ the distance that fresh concrete drops in height in a slump test, showing how wet and workable the concrete is: *During the **slump** test, the concrete's slump showed that the mix was too wet for the foundation.*

small /smɔːl/ adjective, **A1, Y.1**

★ not large in size, number, degree, amount, etc.: *The **small** gear is crucial for the motor to function properly.*

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speaker /'spi:kər/ *noun*, **A2, Y.2 (electrical)**

★ the part of a radio, computer, or piece of musical equipment that the sound comes out of: *The engineer tested the **speaker** to ensure it produced clear sound at all volume levels.*

specify /'spesɪfaɪ/ *verb*, **B2, Y.3**

★ to state something, especially by giving an exact measurement, time, exact instructions, etc.: *The engineer will **specify** the dimensions for the new machine parts in the design document.*

spline /spleɪn/ *noun*, **Y.2 (mechanical)**

★ a series of ridges on a shaft that fit into grooves in a mating part to transmit torque: *The engineer checked if the **spline** aligned correctly before attaching the gear to the shaft.*

spring /sprɪŋ/ *noun*, **A2, Y.2 (mechanical)**

★ a metal part that can be pressed or stretched and then returns to its original shape to store energy: *The engineer designed a **spring** to absorb shock in the new suspension system.*

sprocket /'sprɑ:kɪt/ *noun*, **C2, Y.2 (mechanical)**

★ a wheel with a row of teeth around the edge that connect with the holes of a bicycle chain or with holes in a film, etc. to turn it: *The engineer checked the **sprocket** for wear before assembling the new bicycle.*

stair /ster/ *noun*, **A2, Y.2 (mechanical)**

★ a set of steps built between two floors of a building: *The engineer inspected the **stair** design to ensure it met the safety standards for the new building.*

stamping /'stæmpɪŋ/ *noun*, **B2, Y.2 (mechanical)**

★ the process of cutting or forming sheet metal by pressing it between dies: *The factory uses **stamping** to produce car door panels quickly and efficiently.*

standard /'stændəd/ *noun*, **Y.2 (electrical)**

★ an accepted level of quality or a rule that something must meet: *All electrical wiring must follow the national safety **standard**.*

start /stɑːrt/ *verb*, **A1, Y.3**

★ to initiate the operation of a machine or system, allowing it to function: *You need to **start** the generator before the test begins.*

starter /'stɑːrtər/ *noun*, **B1, Y.3 (mechanical)**

★ an electrical device (starter motor) that turns an engine so that it begins to run by itself: *The **starter** helps the engine begin running when you turn the key.*

statics /'stætɪks/ *noun*, **Y.3 (mechanical)**

★ the study of forces on objects that are not moving: ***Statics** helps engineers design bridges by analyzing forces to ensure stability and safety.*

stator /'steɪtər/ *noun*, **Y.3 (electrical)**

★ the stationary part of an electric motor or generator that works with the rotating part: *The technician checked the **stator** for any signs of wear before starting the motor.*

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steel /sti:l/ noun, **B2, Y.2 (mechanical)**

★ a strong alloy of iron and carbon used for shafts, gears, frames, and many machine parts: *The frame of the building is made from strong **steel**.*

steel rule /,sti:l 'ru:l/ noun, **Y.1 (civil)**

★ a flat metal tool used to measure length or draw straight lines: *The engineer used a **steel rule** to measure the length of the metal sheet.*

stepper motor /'stepə 'moutə/ noun, **Y.2 (mechatronics)**

★ a motor that moves in small, fixed steps when it receives pulses: *The 3D printer uses a **stepper motor** to control the movement of the print head.*

stop /sta:p/ verb, **A1, Y.3**

★ to cease the operation of a machine or system, halting its function: *Please **stop** the pump if you hear any strange noises.*

strain /streɪn/ noun, **C1, Y.3 (civil)**

★ the pressure that is put on something when a physical force stretches, pushes, or pulls it: *The engineer measured the **strain** on the bridge during the stress test.*

stress /stres/ noun, **B1, Y.3 (civil)**

★ pressure put on something that can damage it or make it lose its shape: *The bridge can fail if the **stress** on its supports becomes too high.*

strip /stri:p/ verb, **Y.2**

★ to separate a machine, etc. into parts so that they can be cleaned or repaired: *The technician will **strip** the engine to check for any worn-out parts.*

structure /'strʌktʃə(r)/ *noun*, **Y.1 (mechanical)**

★ a building or other constructed object, or the way parts are arranged to form something: *The bridge **structure** was designed to carry both vehicle and pedestrian loads.*

strut /strʌt/ *noun*, **C2, Y.3 (mechanical)**

★ a long thin piece of wood or metal used to support part of a vehicle or building or make it stronger: *The engineer installed a **strut** to support the bridge's main beam.*

support /sə'pɔ:rt/ *noun*, **A2, Y.3 (civil)**

★ a structure that holds something in place and prevents it from falling: *The **support** under the beam keeps the structure stable during construction.*

survey /'sɜ:veɪ/ *verb*, **A2, Y.3**

★ to look carefully at the whole of something, especially in order to get a general impression of it: *Engineers will **survey** the construction site to ensure it meets all safety and design requirements.*

survey equipment /sə'veɪ ɪ'kwɪpmənt/ *noun*, **Y.3 (civil)**

★ tools such as levels, tripods, and total stations used for land measurement: *The engineering team used **survey equipment** to measure the land for the new bridge project.*

surveying /sə'veɪɪŋ/ *noun*, **C1, Y.1 (civil)**

★ the work of measuring land and positions on the ground to make maps or set out construction: ***Surveying** is essential before starting any construction project to ensure accurate land measurements.*

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switch /swɪtʃ/ *noun*, B1, Y.1 (electrical)

★ an electrical component that opens or closes a circuit to control the flow of electricity: *The **switch** controls the power to the entire lighting system.*

symbol /ˈsɪmbəl/ *noun*, B1, Y.2 (mechatronics)

★ a sign, mark, or letter used on diagrams or screens to represent a function, device, or value in a system: *Each **symbol** on the diagram represents a different component in the circuit.*

system integration /ˈsɪstəm ˌɪntəˈɡreɪʃən/ *noun*, Y.3 (mechatronics)

★ the work of connecting different subsystems so they function as one system: *The team completed **system integration** to ensure the robot operated smoothly with all its parts.*

T

tap /tæp/ *verb*, B2, Y.1

★ to cut internal screw threads inside a drilled hole using a tool called a tap: *We need to **tap** the hole so that the bolt can screw in securely.*

tapping /ˈtæpɪŋ/ *noun*, Y.2 (mechanical)

★ the process of cutting internal threads inside a hole with a tap: ***Tapping** is necessary to create threads for the screws in this component.*

technical drawing /'tɛknɪkəl ,drɔːɪŋ/ *noun*, **Y.1 (civil)**

★ a detailed drawing that shows how an object should be made or built: *The engineer reviewed the **technical drawing** to ensure all parts fit together correctly.*

temperature sensor /'tɛmpərətʃə ,sɛnsə/ *noun*,
Y.2 (mechatronics)

★ a device that measures how hot or cold something is: *The **temperature sensor** sends data to the control system to adjust the cooling process.*

test /test/ *verb*, **A1, Y.2**

★ to use or try a machine, substance, etc. to find out how well it works or to find out more information about it: *The engineers will **test** the new bridge design for strength and safety.*

testing /'tɛstɪŋ/ *noun*, **Y.2**

★ the process of checking the quality, performance, or safety of something: *Materials **testing** is required to confirm that the steel meets the design specifications.*

thickness gauge /'θɪknəs geɪdʒ/ *noun*, **Y.1 (civil)**

★ a tool used to measure how thick a material or coating is: *The engineer used a **thickness gauge** to check the metal sheet before cutting it.*

thinner /'θɪnər/ *noun*, **B1, Y.2 (civil)**

★ a substance that is added to paint, varnish, etc. to make it less thick: *The engineer added **thinner** to the paint for a smoother finish on the machine parts.*

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thread /θred/ *noun/verb*, C2, Y.1 (civil)

★ the helical ridge on a screw that enables it to be secured by rotation into a material: *Ensure the screw's **thread** is clean for a proper fit.*

★ to pass something long and thin, especially thread, through a narrow opening or hole: *The technician will **thread** the wire through the small hole in the circuit board.*

three-phase /'θriː feɪz/ *noun*, Y.2 (electrical)

★ a system of AC power that uses three voltages of equal size, spaced evenly in phase: *The factory upgraded its machines for a more efficient **three-phase** power system.*

tighten /'taɪtn/ *verb*, B2, Y.1

★ to hold or fix something more securely in position; to make something or become more difficult to move, open or separate: *Please **tighten** the screws to secure the panel in place.*

toe /təʊ/ *noun*, A2, Y.3 (mechanical)

★ the slight inwards or outwards tilt of a vehicle wheel, measured relative to the center line, that affects steering and tire wear: *The **toe** angle affects how the vehicle steers and wears its tires.*

tolerance /'tɒlərəns/ *noun*, C2, Y.1 (mechanical)

★ the amount by which the measurement of a value can vary without causing problems: *The gear's dimensions must remain within the **tolerance** to ensure smooth operation.*

tooling /'tuːlɪŋ/ *noun*, Y.2 (mechanical)

★ the tools, fixtures, and dies needed to manufacture a part or product: *The engineer checked the **tooling** before*

starting the machine to ensure everything was ready for production.

torque /tɔːrk/ noun, **B1, Y.3 (electrical)**

★ the rotational force applied to an object, causing it to turn around an axis: *Apply the correct **torque** to tighten the bolts securely.*

torque control /tɔːrk kən'troʊl/ noun, **Y.3**

★ control that sets or limits the turning force produced by a motor: *The new electric vehicle uses **torque control** to improve its efficiency and handling on the road.*

trajectory /trə'dʒektəri/ noun, **C1, Y.3 (mechatronics)**

★ the path that an object or point follows through space over time, especially when engineers analyze motion or control systems: *The engineers simulated the robot's **trajectory** to make sure its arm would avoid obstacles.*

transfer /træns'fɜːr/ verb, **A2, Y.2**

★ to move from one place to another; to move something or someone from one place to another: *The conveyor belt will **transfer** the packages to the loading area.*

transformer /træns'fɔːrmər/ noun, **C2, Y.2 (electrical)**

★ a device for reducing or increasing the voltage of an electric power supply, usually to allow a particular piece of electrical equipment to be used: *The **transformer** adjusts the voltage for the electrical appliances.*

transmit /trænz'mɪt/ verb, **B2, Y.2**

★ to send an electronic signal, radio or television broadcast, etc: *The antenna will **transmit** data to the satellite every hour.*

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truss /trʌs/ *noun*, **C2**, **Y.2** (**civil**)

★ a framework of beams forming a rigid structure, used to support roofs or bridges: *The bridge uses a **truss** to support its heavy load.*

turn /tɜːrn/ *verb*, **A1**, **Y.1**

★ to move or make something move around a central point: *You need to **turn** the knob to adjust the speed of the motor.*

turning /'tɜːrnɪŋ/ *noun*, **B1**, **Y.1** (**mechanical**)

★ the machining process of cutting a rotating workpiece on a lathe to change its diameter: ***Turning** shapes the metal rod into a precise cylinder on the lathe machine.*

U

ultrasonic sensor /ˌʌltrə'sɔːnɪk ˌsensə/ *noun*, **Y.2** (**mechatronics**)

★ a sensor that uses high-frequency sound waves to detect distance or objects: *The robot stops when its **ultrasonic sensor** detects an object one meter away.*

unit price /'juːnət praɪs/ *noun*, **Y.3** (**civil**)

★ the cost for one unit of material or work, such as per meter or per piece: *The engineer compared the **unit price** of steel from different suppliers for the new bridge project.*

upgrade /ˌʌp'greɪd/ *verb*, **B2**, **Y.3**

★ to make a piece of machinery, computer system, etc. more powerful and efficient: *The engineers will **upgrade** the software to improve the robot's speed and accuracy.*

utility /juːˈtɪləti/ *noun*, **C1, Y.2 (civil)**

★ a service provided for the public, for example an electricity, water, or gas supply: *The engineer checked the plans to ensure the new building connected to the main water utility.*



valve /vælv/ *noun*, **C2, Y.3 (mechanical)**

★ a device that controls the flow of fluids by opening, closing, or partially obstructing passageways: *The valve controls the flow of water in the pipeline.*

velocity control /vəˈlɪːsəti kənˈtroʊl/
noun, **Y.3 (mechatronics)**

★ control that sets or keeps the speed of moving parts: *The engineer tested the motor's velocity control to ensure smooth operation at different speeds.*

verify /ˈverɪfaɪ/ *verb*, **C1, Y.2**

★ to check that something is true or accurate: *The engineer must verify the machine's settings before starting the production process.*

VFD /ˌviː ˌɛf ˈdiː/ *noun*, **Y.3 (electrical)**

★ a device that changes the frequency of AC power to control the speed of an electric motor: *The VFD adjusts the motor speed based on load requirements.*

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vision system /'vɪʒən 'sɪstəm/ *noun*, **Y.3 (mechatronics)**

★ a set of cameras, lighting, and software that lets a machine inspect or guide work: *The robot uses a **vision system** to identify and sort different parts on the assembly line.*

voltage /'vɒltɪdʒ/ *noun*, **C2, Y.1 (electrical)**

★ the electric potential difference between two points, measured in volts: *The **voltage** needs to be checked before connecting the battery.*

W

washer /'wɑːʃər/ *verb*, **Y.2 (mechanical)**

★ a thin flat ring, usually of metal or plastic, placed under a nut or bolt head to spread the load and protect the surface: *A **washer** is used to prevent leaks under the bolt in the pipe connection.*

waveform /'weɪvɔːrm/ *noun*, **B2, Y.3 (electrical)**

★ a curve showing the shape of a wave at a particular time: *The oscilloscope displayed the voltage **waveform** from the circuit.*

weld /weld/ *verb*, **A2, Y.2**

★ to join pieces of metal by heating their edges and pressing them together: *The technician will **weld** the steel beams to build the bridge.*

welding /'weldɪŋ/ *noun*, **Y.2 (mechanical)**

★ the process of joining materials by melting their edges and adding filler metal if needed: *The engineer inspected the **welding** on the steel beams for any signs of weakness or defects.*

welding symbol /'weldɪŋ ˌsɪmbəl/ *noun*, **Y.2 (mechanical)**

★ a mark on a drawing that shows the type and size of weld required: *The blueprint shows a **welding symbol** for a fillet weld on the steel beam connection.*

winding /'waɪndɪŋ/ *noun*, **B2, Y.3 (electrical)**

★ a coil of insulated wire wrapped around a core that carries current to create or transfer a magnetic field in devices such as transformers, motors, or inductors: *The transformer has a copper **winding** to carry current.*

wire /'waɪər/ *verb/noun*, **B2, Y.1 (electrical)**

★ to connect a building, piece of equipment, etc. to an electricity supply using wires: *The engineer will **wire** the new machine to the main power supply today.*

★ a thin, flexible conductor used to transmit electrical current or signals: *Use a **wire** to connect the circuit components properly.*

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Food Engineering

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acid food /'æsaɪd fuːd/ *noun*, **B1**

★ foods that have a natural pH of 4.6 or below, which naturally inhibits the growth of spore-forming pathogenic bacteria: *Because tomato sauce is classified as an **acid food** with a pH below 4.6, it can be safely processed using a boiling water bath rather than a high-pressure sterilizer.*

agitating retort /'ædʒɪteɪtɪŋ rɪ'tɔːrt/ *noun*, **C1**

★ a retort that mechanically rotates or shakes food containers during processing to induce convection and speed up heat transfer: *The factory installed an **agitating retort** to rotate the canned soups during heating, which drastically reduced the processing time and prevented the product from burning.*

agitation /,ædʒɪ'teɪʃən/ *noun*, **C1**

★ the induced motion of a material in a specified way, usually in a circulatory pattern inside a vessel: *Continuous **agitation** in the jacketed vessel ensures uniform heat transfer and prevents the milk proteins from scorching on the bottom surface.*

amorphous state /ə'mɔːrfəs steɪt/ *noun*, **C2**

★ a non-crystalline solid state where the food molecules are disordered, often sensitive to moisture absorption and caking: *During spray drying, rapid moisture removal locks the sugar molecules into an **amorphous state**, creating a highly soluble powder that must be protected from humidity to prevent caking.*

antimicrobial /,æntɪmaɪ'kroʊbiəl/ *noun*, **C1**

★ an agent or preservative that kills microorganisms or suppresses their growth and reproduction in food: *The packaging film was coated with a natural **antimicrobial** agent derived from rosemary extract to inhibit mold growth and extend the bread's shelf life.*

antioxidant /,ænti'ɒksɪdənt/ *noun*, **B2**

★ a substance added to food to inhibit or delay oxidation, thereby preventing rancidity and extending shelf-life: *The food engineer added a synthetic **antioxidant** to the vegetable oil formulation to slow down lipid oxidation and prevent rancidity during storage.*

aseptic processing /eɪ'septɪk 'prəʊsesɪŋ/ *noun*, **C1**

★ a system where liquid food products are sterilized continuously and then filled into pre-sterilized packages within a sterile environment: *By utilizing **aseptic processing**, the juice is sterilized in a continuous heat exchanger and filled into pre-sterilized cartons, allowing it to be stored at room temperature without preservatives.*

B

Bingham plastic /'bɪŋəm 'plæstɪk/ *noun*, **C2**

★ a visco-plastic material that behaves as a rigid body at low stresses but flows as a Newtonian fluid at high stresses: *Tomato ketchup behaves as a **Bingham plastic**, meaning it requires a specific threshold of yield stress to be applied before it will begin to flow through the processing pipes.*

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blanching /'blæntʃɪŋ/ *noun*, **B2**

★ a mild heat treatment used primarily for fruits and vegetables to inactivate enzymes, expel tissue gases, and reduce initial microbial load: ***Blanching** the vegetables in hot water inactivates enzymes, removes trapped gases, and reduces microbes before they are frozen.*

★ a rapid heating process used primarily to destroy enzyme activity prior to freezing, drying, or canning: ***Blanching** is a rapid heating process used to destroy enzyme activity before fruits and vegetables are frozen, dried, or canned.*

bound water /baʊnd 'wɔ:tər/ *noun*, **B2**

★ water that is chemically or physically bound to food matrices, making it unavailable for microbial growth or chemical reactions: *Unlike free water, **bound water** is tightly coupled to the food's molecular structure, meaning it does not freeze at 0°C and cannot be easily removed during standard dehydration.*

bulk density /bʌlk 'densɪti/ *noun*, **C1**

★ the mass of many particles of the food material divided by the total volume they occupy, including pore space: *Food engineers must measure the **bulk density** of the newly formulated cereal flakes to accurately size the packaging boxes and design the storage silos.*

C

12D Concept (Botulinum Cook) /twelv di:

'kɒnsɛpt/(/ˌbɒtʃʊ'laɪnəm kʊk/) *noun*, **C2**

★ a thermal processing standard designed to reduce the survival probability of *C. botulinum* spores by 12 decimal

reductions: *The thermal process for canned corn relies on the **12D Concept** to achieve a twelve-log reduction of hazardous bacterial spores.*

caking /'keɪkɪŋ/ *noun*, **B2**

★ the undesirable phenomenon where powder particles agglomerate and form a hard mass due to moisture absorption or temperature changes: *If the milk powder absorbs too much moisture during storage, it will undergo **caking** and form hard, undesirable lumps.*

cavitation /ˌkævɪ'teɪʃən/ *noun*, **C2**

★ the formation and rapid collapse of vapor bubbles within a liquid, causing mechanical erosion in pumps and piping: *Food engineers use ultrasonic **cavitation** to create intense localized pressure that breaks down fat globules during homogenization.*

centrifugal pump /sɛn'trɪfjuːgəl pʌmp/ *noun*, **C1**

★ a kinetic pump that utilizes a rotating impeller to increase the velocity of a liquid, commonly used for low-viscosity fluids: *A standard **centrifugal pump** is ideal for moving low-viscosity liquids like water and juice through the plant's piping system.*

centrifugation /sɛn'trɪfjuː'geɪʃən/ *noun*, **C1**

★ a mechanical separation process that uses centrifugal force to separate materials of different densities: *The dairy plant utilizes high-speed **centrifugation** to efficiently separate raw milk into cream and skim milk.*

chelating agent /'kiːleɪtɪŋ 'eɪdʒənt/ *noun*, **C2**

★ a chemical compound that binds to metal ions (like iron or copper) to prevent them from catalyzing food oxidation:

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*Citric acid acts as a **chelating agent** in soft drinks by binding to trace metal ions and preventing unwanted color changes.*

Clostridium botulinum /klɒ'strɪdiəm ˌbɒtʃʊ'laɪnəm/

noun, C2

★ a highly heat-resistant, anaerobic, spore-forming bacterium that produces a deadly neurotoxin; the primary target organism in canning: *Thermal processing guidelines for low-acid canned foods are strictly designed to destroy the deadly spores of **Clostridium botulinum**.*

coalescence /ˌkoʊsə'lesəns/ *noun, C2*

★ the process by which two or more droplets or particles merge during contact to form a single larger droplet or particle: *Without a proper emulsifier, the oil droplets in mayonnaise will undergo **coalescence** and merge into a single separate layer.*

cold point /koʊld pɔɪnt/ *noun, A2*

★ the location within a food container that receives heat the slowest; critical for determining safe thermal processing times: *When sterilizing a can of thick beef stew, the temperature sensor must be placed at the geometric center, which represents the slowest-heating **cold point**.*

commercial sterility /kə'mɜːrʃəl stə'rɪlɪti/ *noun, C1*

★ a condition achieved by heat treatment which renders the food free of microorganisms capable of reproducing under normal non-refrigerated conditions: *The primary goal of retort processing is to achieve **commercial sterility**, ensuring the food is free of microorganisms capable of growing under normal storage conditions.*

concentration /ˌkɒnsən'treɪʃən/ *noun*, **B2**

★ the removal of a portion of the solvent (usually water) from a liquid food to reduce weight, volume, and water activity: *Evaporators are used in fruit juice processing to increase the solute **concentration** by boiling off excess water.*

conduction /kən'dʌkʃən/ *noun*, **B2**

★ heat transfer through a solid body or stationary fluid via molecular vibration, without physical movement of the matter: *Heat transfers via **conduction** through solid foods like canned pumpkin puree, moving slowly from the outside of the can toward the center.*

Controlled Atmosphere (CA) /kən'trəʊld 'ætməsfɪər/ *noun*, **B2**

★ an agricultural storage method where gas concentrations, temperature, and humidity are precisely regulated (commonly for apples): *Storing apples in a **Controlled Atmosphere** room with low oxygen and high carbon dioxide slows down their respiration rate to extend shelf life.*

convection /kən'vekʃən/ *noun*, **B2**

★ heat transfer by the actual movement of the heated molecules within a fluid (liquid or gas): *In a thin soup, heat transfers rapidly via **convection** currents as the liquid circulates inside the heated container.*

cryogenic freezing /ˌkraɪoʊ'dʒenɪk 'friːzɪŋ/ *noun*, **C2**

★ very rapid freezing achieved by exposing food directly to extremely cold liquefied gases, such as liquid nitrogen: *Liquid nitrogen is used in **cryogenic freezing** to rapidly freeze berries, minimizing ice crystal size and preserving texture.*

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crystallization /ˌkrɪstəlaɪˈzeɪʃən/ *noun*, **B2**

★ the formation of solid crystals precipitating from a solution, melt, or gas (critical in sugar and fat processing): *Controlled **crystallization** of sugar is essential when manufacturing chocolate to ensure a smooth texture and a glossy finish.*

curing /ˈkjʊərɪŋ/ *noun*, **B2**

★ a food preservation technique using a combination of salt, sugar, and nitrate/nitrite to draw moisture out of meat via osmosis: *Meat **curing** involves adding salt and nitrates to ham to inhibit bacterial growth and develop its characteristic pink color.*

C-value (Cook Value) /siː ˈvæljuː/ (/kʊk ˈvæljuː/) *noun*, **C2**

★ a measure of the cumulative thermal impact on food quality attributes, used to optimize thermal processes to maintain food quality while ensuring safety: *While the F-value measures microbial destruction, the **C-value** helps food engineers calculate how much the thermal process will soften or degrade the food's quality.*

D

dehydration /ˌdiːhaɪˈdreɪʃən/ *noun*, **B2**

★ the deliberate removal of water from a food product under controlled conditions to extend shelf-life: *Industrial **dehydration** removes moisture from sliced apples to lower their water activity and prevent microbial growth during storage.*

dehydrofreezing /diːˌhaɪdrouˈfriːzɪŋ/ *noun*, **C2**

★ a preservation process where food is partially dehydrated to about 50% moisture content and then frozen: *The processing plant uses **dehydrofreezing** to remove half the water from the potatoes before freezing them, which saves on shipping weight and prevents texture loss.*

denaturation /diːˌneɪtʃəˈreɪʃən/ *noun*, **C1**

★ a process in which proteins lose their quaternary, tertiary, or secondary structure due to external stress or compounds (like heat or acid): *Heat-induced protein **denaturation** occurs when egg whites are cooked, changing them from a clear liquid into an opaque solid gel.*

die /daɪ/ *noun*, **B2**

★ a specialized tool used in extrusion to cut or shape the material as it exits the machine: *In a food extruder, the corn dough is forced through a shaped **die** to form the specific structure of puffed breakfast cereal.*

dilatant /daɪˈleɪtənt/ *noun*, **C2**

★ a fluid whose viscosity increases as the shear rate increases, also known as shear-thickening behavior (e.g., cornstarch paste): *A concentrated starch-water mixture acts as a **dilatant** fluid because its viscosity increases the harder and faster it is stirred.*

distillation /ˌdɪstɪˈleɪʃən/ *noun*, **B2**

★ the process of separating components from a liquid mixture based on differences in their boiling points: *The distillery uses fractional **distillation** to separate alcohol from water based on their different boiling points.*

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D-value (Decimal Reduction Time) /di: 'vælju: /

(/'desiməl rɪ'dʌkʃən taɪm/) *noun*, **C2**

★ the time (in minutes) required at a specific temperature to reduce the microbial population by 90% (1- log reduction): *The **D-value** for Salmonella at 60°C tells the engineer how many minutes it takes to kill 90% of the bacteria population.*

E

emulsification /ɪˌmʌlsɪfɪ'keɪʃən/ *noun*, **C1**

★ the process of dispersing two immiscible liquids into each other to form an emulsion: *High-pressure homogenization achieves efficient **emulsification** by breaking down fat droplets into a stable, uniform blend.*

emulsion /ɪ'mʌljən/ *noun*, **C1**

★ a colloid mixture of two or more liquids that are normally immiscible, where one phase is dispersed into another (e.g., milk, mayonnaise): *Mayonnaise is a classic example of an oil-in-water **emulsion** that requires a stabilizing agent to keep the oil and water from separating.*

enzymatic browning /ˌɛnzəɪ'mætɪk 'braʊnɪŋ/ *noun*, **C1**

★ a chemical process involving polyphenol oxidase that occurs in fruits and vegetables, resulting in a brown color: *Slicing an apple exposes its tissue to oxygen, triggering rapid enzymatic browning that turns the flesh brown.*

evaporation /ɪˌvæpə'reɪʃən/ *noun*, **B2**

★ a unit operation used to concentrate a liquid food by boiling off a volatile liquid solvent (usually water): *The*

processing plant uses vacuum **evaporation** to remove water from fresh milk at lower temperatures, preserving its nutritional quality.

extraction /kən'dʌkʃən/ noun, **B2**

★ a unit operation used to separate a desired substance from a matrix using physical or chemical means (e.g., solvent extraction): *Supercritical fluid **extraction** is widely used to remove caffeine from coffee beans without using harsh chemical solvents.*

extrusion /ɪk'struːʒən/ noun, **C1**

★ a unit operation that forces a pumpable or dough-like material through a die to shape it while applying heat, shear, and pressure: *High-temperature **extrusion** forces grain dough through a heated barrel to simultaneously cook and shape ready-to-eat breakfast cereals.*

F

F0-value /ɛf zɪəroʊ 'væljuː/ noun, **C2**

★ the F-value calculated at a reference temperature of 121.1°C (250°F) with a Z-value of 10°C, typically used for low-acid canned foods: *To guarantee commercial safety, the thermal process for low-acid canned vegetables must achieve a minimum **F0-value** of 3 minutes.*

fermentation /fɜːrmən'teɪʃən/ noun, **B2**

★ a metabolic process that consumes sugar in the absence of oxygen, producing acids or alcohol that act as natural preservatives: *Industrial **fermentation** utilizes specific yeast*

strains to convert sugars into alcohol and carbon dioxide during bread and beer production.

filtration /fɪl'treɪʃən/ *noun*, **B2**

★ a unit operation used to separate solid particles from a liquid or gas by passing it through a porous medium: *Membrane **filtration** is commonly used in dairy plants to separate whey proteins from liquid milk without applying heat.*

fluidized bed /'fluːɪdaɪzd bɛd/ *noun*, **C2**

★ a system where solid particles are suspended in an upward-flowing stream of fluid (gas or liquid), enhancing heat and mass transfer: *A **fluidized bed** dryer suspends wet green peas in a high-velocity stream of hot air to ensure rapid and uniform drying.*

fouling /'faʊlɪŋ/ *noun*, **C2**

★ the undesirable accumulation of food components (like proteins or minerals) on heat exchanger surfaces, reducing heat transfer efficiency: *Milk proteins often cause severe **fouling** on the hot plates of pasteurizers, which reduces heat transfer efficiency and requires regular cleaning.*

free water /fri: 'wɔːtər/ *noun*, **B1**

★ water within food that retains its physical properties and can act as a solvent or be easily removed during drying: *Unlike bound water, the **free water** found in fresh fruits is easily squeezed out or evaporated during standard drying processes.*

freeze drying /friːz 'draɪɪŋ/ *noun*, **B2**

★ a dehydration process where frozen food is dried under vacuum by sublimating ice directly into vapor: *The factory uses **freeze drying** to remove moisture from coffee extract via sublimation, preserving the premium aroma and flavor.*

freezing point depression /'fri:zɪŋ pɔɪnt dɪ'preʃən/

noun, C1

★ the phenomenon where the freezing point of a liquid (water in food) is lowered by the addition of solutes (like salt or sugar): *The addition of sugar to an ice cream mix causes **freezing point depression**, meaning the blend must be cooled well below 0°C to freeze.*

friction factor /'frɪkʃən 'fæktər/ *noun, C1*

★ a dimensionless number used to calculate the resistance to fluid flow in pipes and channels: *Engineers calculate the **friction factor** inside stainless-steel pipes to determine how much pump power is needed to move tomato paste.*

F-value (Thermal Lethality)

/ɛf 'vælju:/(/'θɜ:rməl lɪ'θæltɪ/) *noun, C2*

★ the total time equivalent required to destroy a given percentage of microorganisms at a specified target temperature: *The **F-value** tells the process engineer the total time required at a specific temperature to destroy a target number of microorganisms.*

G

gear pump /gɪər ɒmp/ *noun, C1*

★ a type of positive displacement pump that moves fluid using rotating interlocking gears, often causing high shear stress: *A heavy-duty **gear pump** is ideal for moving thick chocolate through the processing line because it can handle highly viscous fluids without slipping.*

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gelatinization /dʒəˌlætɪnaɪˈzeɪʃən/ *noun*, **C2**

★ the process where starch granules absorb water and swell irreversibly upon heating, disrupting the crystalline structure: *Heating starch granules in water causes **gelatinization**, which makes the mixture swell and thicken into a smooth paste.*

glass transition temperature (T_g)

/glæs trænˈzɪʃən ˈtɛmpɹətʃər/ *noun*, **C2**

★ the temperature range where an amorphous food material changes from a hard, glassy state to a rubbery, viscous state: *If spray-dried powder is stored above its **glass transition temperature**, it changes from a stable glass to a sticky rubber, causing severe caking.*

H

headspace /ˈhedˌspeɪs/ *noun*, **B2**

★ the unfilled space between the top of the food product and the underside of the lid in a sealed container: *Food engineers leave a small **headspace** of air or gas at the top of a can to allow for food expansion during thermal processing.*

hermetic seal /hɜːrˈmetɪk siːl/ *noun*, **C2**

★ an airtight seal that completely prevents the entry of microorganisms, air, or moisture into the container: *A perfect **hermetic seal** on the pouch prevents any oxygen or bacteria from re-entering the package after sterilization.*

High-Pressure Processing (HPP) /haɪ 'prɛʃər 'prəʊsesɪŋ/
noun, **C1**

★ a non-thermal food preservation method that subjects food to pressures up to 600 MPa to inactivate vegetative microorganisms: *The factory uses **high-pressure processing** to pasteurize fresh guacamole, destroying pathogens with intense pressure instead of heat to preserve its fresh taste.*

holding tube /'hoʊldɪŋ tuːb/ noun, **B1**

★ a specific section of pipe in continuous pasteurization/UHT systems sized to ensure the product is held at the sterilization temperature for the required duration: *In a continuous pasteurizer, milk must flow through the **holding tube** for at least 15 seconds to guarantee that all of it stays at the target pasteurization temperature.*

homogenization /həˌmɒdʒənəɪ'zeɪʃən/ noun, **C1**

★ a unit operation used to reduce particle sizes of suspended liquids (like fat globules in milk) to create a stable emulsion: *High-pressure **homogenization** breaks down fat globules in raw milk to prevent a cream layer from separating during storage.*

HTST (High Temperature Short Time)

/eɪtʃ tiː ɛs tiː/ (/haɪ 'tɛmprətʃər ʃɔːrt taɪm/) noun, **C1**

★ a continuous pasteurization method, for example, heating milk to 72°C for at least 15 seconds: *The dairy plant uses **HTST** pasteurization to heat milk to 72°C for 15 seconds, killing harmful bacteria while maintaining a fresh flavor.*

hurdle technology /'hɜːrdəl tek'nɒlədʒi/ noun, **C2**

★ a method of ensuring food safety by combining multiple preservative factors (hurdles) that microorganisms cannot

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overcome: *Combining a low pH, moderate salt, and refrigeration is a classic example of **hurdle technology** used to keep processed meats safe from pathogens.*

hydrolysis /haɪ'drɒlɪsɪs/ *noun*, **C1**

★ the chemical breakdown of a compound (like lipids or proteins in food) due to reaction with water: *Enzymatic **hydrolysis** breaks down complex corn starch into simple glucose molecules to produce sweet corn syrup.*

hydrostatic retort /ˌhaɪdrə'stætɪk rɪ'tɔːrt/ *noun*, **C2**

★ a continuous retort system that uses columns of water to create and maintain the required steam pressure inside the heating chamber: *Large canning facilities install a **hydrostatic retort** to continuously sterilize thousands of cans using a massive column of water to control internal steam pressure.*

hygroscopicity /ˌhaɪgrəskə'pɪsɪti/ *noun*, **C2**

★ the ability of a food product to absorb or adsorb moisture from the surrounding environment: *Because of its high **hygroscopicity**, instant coffee powder rapidly absorbs moisture from the air and must be packed in airtight containers.*

hysteresis /ˌhɪstə'riːsɪs/ *noun*, **C2**

★ the phenomenon where the desorption and adsorption curves of a food sorption isotherm do not coincide: *In food drying, **hysteresis** explains why a dehydrated food absorbs less moisture during rehydration than it originally held at the same water activity level.*

I

impeller /ɪm'pɛlər/ *noun*, **C1**

★ a rotating component of a mixer or pump designed to force fluid movement: *The mixing tank utilizes a high-shear **impeller** to thoroughly blend sugar and stabilizers into the liquid juice base.*

in-container sterilization /ɪn kən'teɪnər ˌsterəlaɪ'zeɪʃən/ *noun*, **B2**

★ a process where food is packed and sealed into containers (like cans or pouches) before undergoing thermal sterilization in a retort: *Traditional canning relies on **in-container sterilization**, where both the food and its packaging are heated together inside a pressurized retort.*

irradiation /ɪˌreɪdi'eɪʃən/ *noun*, **C1**

★ the process of exposing food to ionizing radiation (like gamma rays) to destroy insects, fungi, and spoilage microorganisms: *Food **irradiation** uses controlled ionizing radiation to destroy foodborne pathogens and delay sprouting in stored potatoes.*

L

laminar flow /'læmɪnər fləʊ/ *noun*, **C1**

★ a fluid flow regime characterized by smooth, parallel layers with minimal mixing, commonly found in highly viscous liquid foods: *During processing, highly viscous liquid honey moves through the stainless steel pipes in a smooth **laminar flow**, where the fluid flows in parallel layers with minimal mixing.*

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★ a smooth, orderly fluid flow pattern where layers move parallel to each other with minimal lateral mixing: *Highly viscous melted chocolate moves through the pipe in a smooth **laminar flow**, creating an orderly pattern where fluid layers slide parallel to each other with minimal lateral mixing.*

latent heat /'leɪtənt hi:t/ *noun*, **C1**

★ the heat required to convert a solid into a liquid or vapor, or a liquid into a vapor, without change of temperature (critical in freezing/drying): *The freezing system must remove a large amount of **latent heat** to convert liquid water in meat into solid ice without changing its temperature.*

leaker spoiled /'li:kər spɔɪld/ *noun*, **C1**

★ food spoilage caused by microorganisms re-entering a sealed container through microscopic defects during post-process cooling: *A defective seam allowed bacteria to slip into the cooling can, resulting in a **leaker spoiled** product that bloated on the shelf.*

lipid oxidation /'lɪpɪd ˌɒksɪ'deɪʃən/ *noun*, **C1**

★ a major cause of food spoilage where unsaturated fatty acids react with oxygen, leading to rancidity and off-flavors: *Exposing potato chips to oxygen triggers **lipid oxidation**, which breaks down fats and creates an unpleasant rancid flavor.*

low-acid food /loʊ 'æsɪd fu:d/ *noun*, **B2**

★ any food with a finished equilibrium pH greater than 4.6 and a water activity greater than 0.85, requiring high-temperature sterilization: *Canned peas are classified as a **low-acid food** because their pH is greater than 4.6, meaning they require high-heat pressure sterilization to kill dangerous spores.*

LTLT (Low Temperature Long Time)/ɛl tiː ɛl tiː/ (/loo 'tɛmpɾətʃər lɔːŋ taɪm/) *noun*, **C1**

★ a batch pasteurization method, for example, heating milk to 63°C and holding it for 30 minutes: *Batch pasteurization utilizes the **LTLT** method, heating milk in a vat to 63°C and holding it there for 30 minutes.*

lyophilization /laɪˌpʃɪlaɪˈzeɪʃən/ *noun*, **C2**

★ the technical term for freeze-drying; removing water via sublimation from a frozen product: *The pharmaceutical and food industries use **lyophilization** to gently freeze-dry sensitive ingredients like probiotics, preserving their activity.*

M**Maillard reaction** /maɪˈjɑːr riˈækʃən/ *noun*, **C2**

★ a non-enzymatic browning chemical reaction between amino acids and reducing sugars that gives browned food its desirable flavor and color: *The golden-brown crust and rich aroma of freshly baked bread are the result of the **Maillard reaction** between reducing sugars and amino acids.*

Mass balance /mæs 'bæləns/ *noun*, **B2**

★ an application of conservation of mass to the analysis of physical systems; input must equal output plus accumulation: *Engineers calculated a strict **Mass balance** across the evaporator to ensure the total weight of incoming juice matched the combined weight of the concentrated juice and evaporated water.*

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mass transfer /mæs 'trænsfɜːr/ *noun*, **B2**

★ the net movement of mass from one location (usually stream, phase, or component) to another: *During the drying process, moisture moves from the center of a fruit piece to its surface via a **mass transfer** mechanism.*

milling /'mɪlɪŋ/ *noun*, **B2**

★ the mechanical process of crushing or grinding grain or other solid materials into flour or powder: *Industrial **milling** grinds whole wheat grains into fine flour by passing them through a series of heavy rollers.*

Modified Atmosphere Packaging (MAP) /'mɒdɪfaɪd

'ætməsfɪər 'pækɪdʒɪŋ/ *noun*, **C1**

★ a packaging technique that alters the gas composition inside the package (usually lower O₂ and higher CO₂) to slow down spoilage: *Flushing a salad bag with nitrogen gas during **modified atmosphere packaging** slows down vegetable respiration and extends shelf life.*

N

Newtonian fluid /njuː'təʊniən 'fluːɪd/ *noun*, **C2**

★ a fluid whose viscosity remains constant regardless of the shear rate applied at a constant temperature: *Pure water is a **Newtonian fluid** because its viscosity stays exactly the same no matter how fast it is pumped or stirred.*

non-Newtonian fluid /nɒn njuː'təʊniən 'fluːɪd/ *noun*, **C2**

★ a fluid whose viscosity changes with the applied shear rate or shear stress: *Yogurt is a **non-Newtonian fluid** because its viscosity drops and it flows more easily the harder it is stirred.*

NPSH (Net Positive Suction Head) /ɛn piː ɛs ɛɪtʃ/ (/nɛt 'pɒzətɪv 'sʌkʃən hɛd/) *noun*, **C2**

★ the minimum pressure required at the suction side of a pump to prevent cavitation: *Engineers must calculate the **NPSH** at the pump inlet to prevent liquid food from boiling and causing damaging cavitation inside the pump.*

O

ohmic heating /'oʊmɪk 'hiːtɪŋ/ *noun*, **C2**

★ an advanced thermal process where alternating electrical current is passed through food, generating internal heat due to electrical resistance: *The processing line uses **ohmic heating** to pass an electrical current directly through the fruit puree, warming it instantly and uniformly from the inside out.*

overall heat transfer coefficient /'oʊvərɔːl hiːt 'trænsfɜːr ,koʊtʃɪjənt/ *noun*, **C1**

★ a measure of the total ability of a series of conductive and convective barriers to transfer heat: *Engineers calculated the **overall heat transfer coefficient** of the new pasteurizer to determine how efficiently heat moves from the steam through the steel wall into the milk.*

overpressure retort /'oʊvərˌprɛʃər rɪ'tɔːrt/ *noun*, **C1**

★ a retort capable of introducing compressed air to maintain pressure higher than steam pressure alone, protecting flexible packages from bursting: *Glass jars of baby food are sterilized in an **overpressure retort** because extra air pressure is required to prevent the metal lids from popping off during heating.*

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overprocessing /ˌoʊvərˈproʊsesɪŋ/ noun, **B2**

★ applying more heat than necessary to achieve microbial safety, resulting in burnt flavors, loss of nutrients, or ruined texture: *Excess heat during thermal sterilization caused **overprocessing** of the canned peas, turning them mushy and destroying their natural green color.*

P

pasteurization /ˌpæstʃəraɪˈzeɪʃən/ noun, **B2**

★ a heat process applied to food (usually below 100°C) to destroy pathogenic microorganisms and extend shelf-life under refrigeration: *Continuous **pasteurization** heats fresh milk to 72°C for 15 seconds to destroy harmful pathogens while maintaining a fresh flavor.*

pickling /ˈpɪklɪŋ/ noun, **B1**

★ the process of preserving or extending the shelf-life of food by either anaerobic fermentation in brine or immersion in vinegar: *Industrial **pickling** preserves cucumbers by submerging them in an acidic brine solution, lowering the pH to inhibit spoilage microorganisms.*

Plate Heat Exchanger (PHE) /pleɪt hi:t ɪksˈtʃeɪndʒər/ noun, **C1**

★ an equipment consisting of a series of thin, corrugated plates used to transfer heat between two fluids, ideal for low- viscosity liquids: *The dairy plant utilizes a **plate heat exchanger** (PHE) to rapidly cool hot pasteurized milk by running it counter-current to chilled water across thin metal plates.*

polymorphism /ˌpɒli'mɔːrfɪzəm/ noun, **C2**

★ the ability of a solid material (like cocoa butter or fats) to exist in more than one crystalline form or structure: *Understanding cocoa butter **polymorphism** is critical when tempering chocolate, as the fat must crystallize into the stable Form V structure to ensure a glossy snap.*

porosity /pɔː'rɒsɪti/ noun, **C1**

★ a measure of the void spaces in a food material, defined as the ratio of the volume of voids to the total volume: *The high **porosity** of freeze-dried strawberry pieces allows them to absorb liquid almost instantly when milk is added to the cereal bowl.*

positive displacement pump /'pɒzətɪv dɪs'pleɪsmənt ɾʌmp/ noun, **C2**

★ a pump that traps a fixed amount of fluid and forces (displaces) that trapped volume into the discharge pipe (ideal for high-viscosity foods): *A **positive displacement pump** is used to move thick peanut butter through the plant because it delivers a constant flow rate regardless of changes in line pressure.*

pressure drop /'prɛʃər drɒp/ noun, **B2**

★ the decrease in pressure from one point in a pipe or vessel to another due to friction and geometric resistance: *Long runs of narrow piping create a significant **pressure drop**, requiring engineers to install a stronger pump to maintain the flow of tomato paste.*

proteolysis /ˌprəʊti'blɪsɪs/ noun, **C2**

★ the breakdown of proteins into smaller polypeptides or amino acids, often leading to texture softening or bitterness: *During cheese ripening, controlled **proteolysis** breaks*

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down casein proteins into smaller peptides, giving aged cheddar its characteristic texture and sharp flavor.

pseudoplastic /ˌsuːdʊˈplæstɪk/ noun, **C2**

★ a fluid whose viscosity decreases as the shear rate increases, also known as shear-thinning behavior (e.g., ketchup): *Salad dressing behaves as a **pseudoplastic** fluid because its viscosity drops significantly when the bottle is shaken, allowing it to pour easily.*

Pulsed Electric Field (PEF) /pʌlst ɪˈlektɹɪk fiːld/ noun, **C2**

★ a non-thermal preservation method using short bursts of high voltage to cause electroporation in microbial cell membranes: *The juice line utilizes a **pulsed electric field** system to safely pasteurize fresh apple cider using brief high-voltage bursts instead of quality-degrading heat.*

R

radiation /ˌreɪdɪˈeɪʃən/ noun, **B2**

★ heat transfer through electromagnetic waves without requiring a physical medium, such as infrared or microwave heating: *Infrared **radiation** is applied in industrial ovens to rapidly toast the surface of breakfast cereals using electromagnetic waves.*

rancidity /rænˈsɪdɪti/ noun, **C1**

★ a condition produced by the aerial oxidation or hydrolysis of fats and oils, fats developing an unpleasant odor or flavor: *Packaging potato chips in nitrogen-flushed bags prevents lipid oxidation, protecting the fats from developing an unpleasant taste and odor due to **rancidity**.*

Residence Time Distribution (RTD)

/ˈrɛzɪdəns taɪm ˌdɪstrɪˈbjʊːʃən/ *noun*, **C1**

★ a probability distribution that describes the amount of time a fluid element spends inside a continuous thermal processing system: *Engineers measured the **residence time distribution** of the continuous cooker to ensure that every single particle of soup spent enough time inside to guarantee safety.*

retort /rɪˈtɔːrt/ *noun*, **C1**

★ a heavy-duty pressure vessel used in the food industry to steam-sterilize packaged foods: *The canning facility loaded pallets of sealed tuna cans into a pressurized **retort** for high-temperature steam sterilization.*

retort pouch /rɪˈtɔːrt paʊtʃ/ *noun*, **C1**

★ a flexible laminated food package that can withstand the high temperatures and pressures of retort processing: *Many ready-to-eat meals are now packed in a flexible, multilayered **retort pouch** instead of a traditional metal can because it heats up faster and saves shipping weight.*

retrogradation /ˌrɛtrəgræˈdeɪʃən/ *noun*, **C2**

★ a reaction that takes place when the amylose and amylopectin chains in gelatinized starch realign themselves as it cools, causing staling: *The staling of bread during storage is caused by starch **retrogradation**, where amylose molecules realign into a rigid, crystalline structure that expels moisture.*

reverse osmosis (RO) /rɪˈvɜːrs ɒzˈmoʊsɪs/ *noun*, **C1**

★ a purification process that uses a semipermeable membrane under high pressure to remove ions and molecules from water: *The maple syrup plant uses **reverse osmosis** to remove pure water from raw sap, concentrating the sugar before the final boiling step.*

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Reynolds number /'rɛnəldz 'nʌmbər/ *noun*, **C2**

★ a dimensionless quantity used to help predict fluid flow patterns (laminar or turbulent) : *The process engineer calculated a low **Reynolds number** for the flowing honey, confirming that its movement through the pipe was entirely laminar.*

rheology /ri'blədʒi/ *noun*, **C1**

★ the study of the flow and deformation of matter, especially under the influence of mechanical forces: *Studying food **rheology** helps engineers design the right piping and mixing systems by measuring how complex materials like dough and yogurt deform and flow.*

rheopectic /,ri:ʊʊ'pektɪk/ *noun*, **C2**

★ a fluid whose viscosity increases over time under a constant shear rate (rare in foods but critical in materials science) : *The specialized protein paste exhibits **rheopectic** behavior because its viscosity steadily increases the longer it is subjected to constant stirring.*

S

Scraped Surface Heat Exchanger

/skreɪpt 'sɜ:rfɪs hi:t ɪks'tʃeɪndʒər/ *noun*, **C2**

★ a heat exchanger equipped with internal blades that continuously scrape the heating wall to prevent fouling of highly viscous foods: *The factory pumps sticky ice cream mix through a **scraped surface heat exchanger** where rotating blades continuously wipe the inner walls to maintain high heat transfer.*

screw feeder /skruː 'fiːdə/ *noun*, **C1**

★ a mechanical conveying system utilizing a rotating helical screw to meter and deliver bulk or viscous materials: *A mechanical **screw feeder** precisely regulates the flow of dry flour into the continuous mixing hopper at a constant rate.*

sedimentation /ˌsɛdɪmə'n'teɪʃən/ *noun*, **B2**

★ the tendency for particles in suspension to settle out of the fluid in which they are entrained due to gravity: *In the juice industry, industrial clarifiers rely on **sedimentation** to let heavy pulp particles settle out of fresh apple juice by gravity.*

shear rate /ʃɪər reɪt/ *noun*, **C1**

★ the rate at which a progressive shearing deformation is applied to a material: *When pumping yogurt through a pipe, the **shear rate** depends on the fluid's velocity and the pipe's diameter.*

shear stress /ʃɪər stres/ *noun*, **C1**

★ the force applied parallel or tangential to a face of a material per unit area: *The engineer must apply enough **shear stress** to overcome the internal resistance of tomato paste so it will begin to move through the process line.*

shelf-life /ʃɛlf laɪf/ *noun*, **B1**

★ the length of time that a food product remains safe to consume and retains its desired sensory and chemical qualities: *Modifying the gas composition inside a salad bag extends the product's **shelf-life** by slowing down microbial spoilage and tissue browning.*

size reduction /saɪz rɪ'dʌkʃən/ *noun*, **B1**

★ a unit operation involving breaking solid food pieces into smaller particles (e.g., milling, grinding): *Hammer mills are*

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utilized for industrial **size reduction** to grind dried corn kernels into uniform, fine cornmeal particles.

sodium benzoate /'səʊdiəm 'benzəʊeɪt/ *noun*, **C1**

★ a widely used food preservative that inhibits the growth of mold, yeast, and some bacteria in acidic foods: *The beverage manufacturer added **sodium benzoate** to the acidic soft drink formula to prevent the growth of yeasts and molds during storage.*

sorption isotherm /'sɔ:rpʃən 'aɪsəʊθɜ:rm/ *noun*, **C2**

★ a graphical representation showing the relationship between the moisture content of a food and its water activity at a constant temperature: *A moisture **sorption isotherm** helps food scientists predict how much water a dehydrated soup mix will absorb from the air at a given humidity level.*

specific heat /spə'sɪfɪk hi:t/ *noun*, **B2**

★ the amount of heat per unit mass required to raise the temperature of a food product by one degree Celsius: *Because the **specific heat** of water is higher than that of fat, a lean meat product requires more energy to heat up than a high-fat one.*

spray drying /spreɪ 'draɪɪŋ/ *noun*, **C1**

★ a method of producing a dry powder from a liquid or slurry by rapidly drying it with a hot gas inside a chamber: *The dairy plant utilizes **spray drying** to atomize liquid milk into a heated chamber, instantly turning it into a stable, dry powder.*

steady state /'stedi steɪt/ *noun*, **B2**

★ a condition in a dynamic process where system variables (such as flow rate or temperature) do not change over time:

Once the pasteurization system reaches a **steady state**, the fluid temperatures at the inlet and outlet remain completely constant over time.

steam infuser /sti:m 1n'fju:zər/ *noun*, **C1**

★ a direct heating device where liquid food is sprayed as droplets into a chamber filled with pressurized steam: *In a **steam infuser**, the milk product is sprayed into a steam-filled chamber, heating the liquid rapidly and gently to minimize cooked flavors.*

steam injector /sti:m 1n'dʒektər/ *noun*, **B2**

★ a direct heating component that introduces high-pressure steam directly into a liquid food product for near-instantaneous heating: *High-pressure steam is forced directly into the passing liquid flow via a **steam injector** to achieve instant heating in UHT processing lines.*

sterilization /,st̩erəli'zeɪʃən/ *noun*, **B2**

★ a severe heat treatment (usually above 100°C) designed to destroy all viable forms of microorganisms, including highly resistant spores: *Commercial **sterilization** utilizes severe heat to destroy all pathogenic and spoilage microorganisms, making canned food safe for room-temperature storage.*

sublimation /,sʌblɪ'meɪʃən/ *noun*, **C1**

★ the phase transition of a substance directly from the solid to the gas state without passing through the liquid state: *During the freeze-drying process, ice turns directly into vapor via **sublimation** without passing through a liquid water phase.*

sulfite /'sʌlfait/ *noun*, **C1**

★ a group of chemical compounds used as preservatives to prevent browning and bacterial growth, commonly used in

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dried fruits and wine: *Golden raisins are treated with a **sulfite** solution before drying to inhibit enzymatic browning and maintain their bright yellow color.*

survival curve /sər'vaɪvəl kɜːrv/ noun, **B2**

★ a logarithmic plot showing the number of surviving microorganisms over time during a thermal treatment: *The microbiologist plotted a **survival curve** to visualize how the population of bacterial spores decreased over time at a constant sterilization temperature.*

syneresis /sɪ'nɛrəsis/ noun, **C2**

★ the extraction or expulsion of a liquid from a gel, such as the whey separating from yogurt or cheese: *If the yogurt formulation lacks sufficient stabilizers, whey separation or **syneresis** will cause a layer of water to pool on the surface.*

T

Texture Profile Analysis (TPA)

/ˈtɛkstʃər ˈproʊfaɪl əˈnæləsis/ noun, **C1**

★ an instrumental method used to determine the mechanical properties of food (like hardness, cohesiveness, and springiness): *The quality control lab uses a texture analyzer to perform a **texture profile analysis**, measuring the hardness and chewiness of the new protein bar.*

thermal conductivity /ˈθɜːrməl ˌkɒndʌkˈtɪvɪti/ noun, **C1**

★ a measure of a food material's ability to conduct heat, highly dependent on moisture and porosity: *Aluminum foil has a high **thermal conductivity**, which allows heat to pass quickly through the packaging material to cook the food inside.*

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Thermal Death Time (TDT) /'θɜːrməl dɛθ taɪm/ *noun*, **C1**

★ the shortest time required to kill a specific population of microorganisms at a specific temperature: *Engineers conduct laboratory tests to find the **thermal death time** (TDT) required to completely destroy Clostridium botulinum spores at a specific temperature.*

thermal degradation /'θɜːrməl ˌdɛgrəˈdeɪʃən/ *noun*, **C1**

★ the loss of food quality attributes (such as color, flavor, texture, or vitamins) caused by exposure to excessive heat: *Excessive exposure to high temperatures causes the **thermal degradation** of Vitamin C in orange juice, reducing its nutritional quality.*

thermal exhausting /'θɜːrməl ɪgˈzɔːstɪŋ/ *noun*, **C1**

★ heating the food container before sealing to remove dissolved gases and air from the headspace, ensuring a good vacuum after cooling: *Before sealing the metal cans, a **thermal exhausting** tunnel heats the product to drive out trapped air and create an internal vacuum after cooling.*

thermophile /'θɜːrməfaɪl/ *noun*, **C2**

★ microorganisms that thrive at relatively high temperatures, typically above 45°C, whose spores may survive standard sterilization if not cooled properly: *A highly heat-resistant **thermophile** bacterium can survive standard pasteurization and grow if the processed food is not cooled down quickly enough.*

thixotropic /ˌθɪksəˈtrɒpɪk/ *noun*, **C2**

★ a fluid whose viscosity decreases over time under a constant shear rate (e.g., certain gels or yogurt): *Tomato ketchup is a **thixotropic** fluid because its viscosity gradually decreases the longer it is shaken or stirred.*

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tubular heat exchanger /'tu:bjələr hi:t ɪks'tʃeɪndʒər/
noun, C1

★ a heat exchanger design using concentric tubes (tube-in-tube) suitable for fluids with higher viscosity or small particles: *The plant uses a multi-tube **tubular heat exchanger** to pasteurize low- viscosity apple juice running inside parallel stainless steel tubes.*

turbulent flow /'tɜ:rbjələnt floʊ/ *noun, C1*

★ a fluid flow regime characterized by chaotic property changes and rapid mixing, which greatly enhances heat transfer coefficients: *Pumping thin liquid juice at high velocities creates a **turbulent flow** inside the pipes, introducing chaotic property changes and rapid mixing that greatly enhances the heat transfer coefficient.*

★ a chaotic fluid flow pattern characterized by eddies, vortices, and rapid mixing across layers: *Pumping low- viscosity liquid milk at high speeds creates a **turbulent flow**, generating a chaotic fluid flow pattern full of eddies, vortices, and rapid mixing across layers.*

U

ultrafiltration /,ʌltrəfɪl'treɪʃən/ *noun, C2*

★ a pressure-driven membrane separation process that retains macromolecules while allowing smaller solutes to pass: *The dairy processor uses an **ultrafiltration** membrane to concentrate protein in milk while letting water, lactose, and minerals pass through.*

V

vacuum rate /'vækju:m reit/ *noun*, **B1**

★ the degree of pressure drops below atmospheric pressure inside a sealed container, crucial for food preservation: *The operator adjusted the **vacuum rate** on the flash evaporator to control how quickly water vapor was pulled out of the concentrated juice.*

viscoelasticity /ˌvɪskoʊɪˌlæs'tɪsɪti/ *noun*, **C1**

★ the property of materials that exhibit both viscous (liquid-like) and elastic (solid-like) characteristics when undergoing deformation: *Bread dough exhibits **viscoelasticity**, meaning it stretches like a fluid under pressure but partially snaps back like an elastic solid when released.*

viscosity /vɪs'kɒsɪti/ *noun*, **C1**

★ a measure of a fluid's resistance to gradual deformation by shear or tensile stress; it significantly influences the rate of convective heat transfer: *The high **viscosity** of the thick pumpkin puree increases its resistance to flow, which significantly slows down the rate of convective heat transfer during the heating process.*

★ a fluid's internal resistance to flow, defined as the ratio of shear stress to shear rate: *When pumping thick tomato paste through the processing line, its **viscosity** is calculated as the ratio of shear stress to shear rate, representing the fluid's internal resistance to flow.*

volumetric flow rate /ˌvɒlju'metɹɪk fləʊ reɪt/ *noun*, **C1**

★ the volume of fluid which passes per unit of time through a given cross-sectional area: *The digital flowmeter measures the **volumetric flow rate** to track how many liters of milk pass through the pasteurizer every minute.*

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water activity /'wɔ:tər æk'tɪvɪti/ *noun*, **C1**

★ the ratio of the vapor pressure of water in a food substrate to the vapor pressure of pure water at the same temperature: *Lowering the **water activity** of beef jerky below 0.85 prevents the growth of hazardous bacteria without requiring refrigeration.*

Water Vapor Transmission Rate (WVTR)

/'wɔ:tər 'veɪpər trænʒ'mɪʃən reɪt/ *noun*, **C1**

★ a measure of the passage of water vapor through a packaging film per unit area and time, critical for dry food preservation: *Potato chip bags must be made of plastic films with a very low **water vapor transmission rate** (WVTR) to keep humidity out and preserve crispness.*

Y

yield stress /ji:ld stres/ *noun*, **C1**

★ the minimum stress that must be applied to a material to make it begin to flow (e.g., mayonnaise): *To make a thick sauce flow through the processing line, the pump must apply enough force to exceed the fluid's **yield stress**.*

Z

Z-value /zi: 'vælju: / *noun*, **C2**

★ the temperature change required to alter the D-value by a factor of 10: *The **Z-value** indicates that a temperature increase of 10°C is required to reduce the thermal death time of the target bacteria by 90%.*

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