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# Glossary

As you read your science book, you will notice that new or unfamiliar words have been respelled to help you pronounce them while you are reading. Those respellings are called *phonetic respellings*. In this Glossary you will see the same kind of respelling.

In phonetic respelling, syllables are separated by a bullet (•). Small uppercase letters show stressed syllables.

The boldfaced letters in the examples in the Pronunciation Key below show which letters and combinations of letters are pronounced in the respellings.

The page number (in parentheses) at the end of a definition tells you where to find the term, defined in context, in your book. Depending on the context in which it is used, a term may have more than one definition.

## Pronunciation Key

Sound	As in	Phonetic Respelling	Sound	As in	Phonetic Respelling
a	bat	(BAT)	oh	over	(OH•ver)
ah	lock	(LAHK)	oo	pool	(POOL)
air	rare	(RAIR)	ow	out	(OWT)
ar	argue	(AR•gyoo)	oy	foil	(FOYL)
aw	law	(LAW)	s	cell	(SEL)
ay	face	(FAYS)		sit	(SIT)
ch	chapel	(CHAP•LHl)	sh	sheep	(SHEEP)
e	test	(TEST)	th	that	(THAT)
	metric	(MEH•trik)		thin	(THIN)
ee	eat	(EET)	u	pull	(PUL)
	feet	(FEET)	uh	medal	(MED•Uhl)
	ski	(SKEE)		talent	(TAL•uhnt)
er	paper	(PAY•per)		pencil	(PEN•suhl)
	fern	(FERN)		onion	(UHN•yuhn)
eye	idea	(eye•DEE•uh)		playful	(PLAY•fuhl)
i	bit	(BIT)		dull	(DUHL)
ing	going	(GOH•ing)	y	yes	(YES)
k	card	(KARD)		ripe	(RYP)
	kite	(KYT)	z	bags	(BAGZ)
ngk	bank	(BANGK)	zh	treasure	(TREZH•er)

**A**

- abyssal plain** [uh•BIS•uhl PLAYN] The vast floor of the deep ocean (347)
- acceleration** [ak•sel•er•AY•shuhn] An object's change in velocity divided by the time it takes for that change to occur (600)
- acid** [AS•id] A substance that turns blue litmus paper red (512)
- adaptation** [ad•uhp•TAY•shuhn] A feature of an organism that helps it survive in its surroundings (82)
- air pressure** [AIR PRESH•er] The force of the weight of air pressing down on a unit of area (378)
- amplitude** [AM•pluh•tood] The distance in a wave from the resting position to the top of the crest or the bottom of the trough (537)
- angiosperm** [AN•jee•oh•sperm] A flowering vascular plant whose seeds are surrounded by a fruit (126)
- asexual reproduction** [ay•SEK•shoo•uhl ree•pruh•DUHK•shuhn] A type of reproduction in which a new organism is formed without the joining of a sperm cell and an egg cell (121)
- asteroid** [AS•ter•oyd] A piece of rock and metal that orbits the sun (423)
- atmosphere** [AT•muhs•feer] The layers of air that surround Earth (372)
- atom** [AT•uhm] The smallest unit of an element that still has the properties of that element (452)
- atomic number** [uh•TAHM•ik NUHM•ber] The number of protons in an atom (453)
- axis** [AK•sis] An imaginary line running through the center of Earth from the North Pole to the South Pole (406)

**B**

- balanced forces** [BAL•uhnst FAWRS•iz] Equal forces that act in opposite directions on an object and cancel one another out (606)
- base** [BAYS] A substance that turns red litmus paper blue (512)
- bedrock** [BED•rahk] The bottom layer of soil, made mostly of solid rock (291)
- biome** [BY•ohm] A region of the world defined by its climate and by the types of plants and animals that live there (174)
- blizzard** [BLIZ•erd] A winter storm with strong winds and large amounts of heavy, blowing snow (394)
- boiling point** [BOYL•ing POYNT] The temperature at which a substance changes from a liquid to a gas (472)

**C**

- carbon cycle** [KAR•buhn SY•kuhl] The movement of carbon as solids, liquids, or gases through Earth's ecosystems (204)
- cast** [KAST] A model of an organism formed when sediment fills a mold and hardens (305)
- cell wall** [SEL WAWL] A stiff outer layer that surrounds a plant cell, protects it, and gives it its shape (34)
- chemical change** [KEM•ih•kuhl CHAYNJ] A change in which one or more new substances are formed (504)
- chemical property** [KEM•ih•kuhl PRAHP•er•tee] A property that involves the ability of a substance to react with other materials and form new substances (505)

- chloroplasts** [KLAWR•uh•plasts] Organelles, found only in plant cells, in which sugar is made during photosynthesis (34)
- chromosomes** [KROH•muh•sohmz] Structures in the nucleus that contain an organism's genetic information and regulate the cell's activities (35)
- circuit** [SER•kit] A continuous path through which electric charges flow (580)
- classification** [klas•uh•fih•KAY•shuhn] The sorting of things into groups of similar items (76)
- climate** [KLY•muht] The average of all weather conditions in an area over a period of time (384)
- colloid** [KAHL•oyd] A mixture that contains particles that are too small to see (500)
- comet** [KAHM•it] A ball of ice, rock, and frozen gases that orbits the sun (428)
- community** [kuh•MYOO•nuh•tee] All the populations living in an ecosystem (152)
- competition** [kahm•puh•TISH•uhn] The struggle among organisms for limited resources in an area (166)
- compound** [KAHM•pownd] A substance made up of atoms of two or more elements that are chemically combined (464)
- condensation** [kahn•duhn•SAY•shuhn] The process by which water vapor changes into liquid water (338)
- conduction** [kuhn•DUK•shuhn] The transfer of thermal energy that results from the collision of particles (564)
- conifer** [KAHN•uh•fer] A type of gymnosperm whose seeds develop inside a cone (124)
- conservation** [kahn•ser•VAY•shuhn] The careful use of resources so that they will last as long as possible (196)
- consumer** [kuhn•SOOM•er] An organism that eats other organisms (159)
- continental shelf** [kahnt•uhn•ENT•uhl SHELF] A gradually sloping portion of the ocean floor that is made of continental crust (346)
- continental slope** [kahnt•uhn•ENT•uhl SLOHP] The border between continental crust and oceanic crust where the ocean floor drops in depth (346)
- convection** [kuhn•VEK•shuhn] The transfer of thermal energy through the movement of a liquid or a gas (565)
- coral reef** [KAWR•uhl REEF] A large, delicate structure formed by the skeletons of small animals called corals (358)
- core** [KAWR] The layer of Earth that extends from Earth's center to the bottom of the mantle (231)
- crust** [KRUHST] The thin, outermost layer of Earth, which includes both dry land and the ocean floor (230)
- current** [KUR•uhnt] A steady, streamlike movement of ocean water (348)
- current electricity** [KUR•uhnt ee•lek•TRIS•uh•tee] The flow of electric charges through a wire (572)

## D

**density** [DEN•suh•tee] The amount of mass something has in relation to its volume (488)

**deposition** [dep•uh•ZISH•uhn] The dropping or settling of eroded materials (233)

**diffraction** [dih•FRAK•shuhn] The bending of light around the edge of an object (549)

**diversity** [duh•VER•suh•tee] The variety of species in an ecosystem (154)

**DNA** [dee•en•AY] The abbreviation for deoxyribonucleic acid, the chemical that provides detailed instructions for cells (36)

**dominant** [DAHM•uh•nuhnt] Describes a stronger trait that will show up in an organism even if only one factor for it is present (62)

## E

**earthquake** [ERTH•kwayk] A vibration in Earth's crust, caused by the release of energy in a fault (248)

**eclipse** [ih•KLIPS] An event that occurs when one object passes into the shadow of another object (410)

**ecosystem** [EE•koh•sis•tuhm] An area where living things interact with one another and with nonliving things (151)

**electromagnet** [ee•lek•troh•MAG•nit] A temporary magnet that is made by passing an electric current through a coil of wire that surrounds an iron core (584)

**electromagnetic spectrum**  
[ee•lek•troh•mag•NET•ik SPEK•truhm] All energy waves that travel at the speed of light in a vacuum; includes radio, infrared, visible, ultraviolet, X rays, and gamma rays (540)

**electron** [ee•LEK•trahn] A subatomic particle that orbits an atom's nucleus, has a negative electric charge, and has very little mass (453)

**element** [EL•uh•muhnt] A substance made up of only one kind of atom (460)

**endangered species** [en•DAYN•jerd SPEE•sheez] A species with so few individuals that it could die out (213)

**energy** [EN•er•jee] The ability to cause change in matter (528)

**energy pyramid** [EN•er•jee PIR•uh•mid] A diagram that shows that energy is lost at each level in a food chain (162)

**epicenter** [EP•ih•sent•er] The point on Earth's surface directly above the focus of an earthquake (249)

**erosion** [uh•ROH•zhuhn] The removal and transportation of weathered materials (232)

**evaporation** [ee•vap•uh•RAY•shuhn] The process by which liquid water changes into water vapor (338)

**extinction** [ek•STINGK•shuhn] The loss of an entire species (213)

## F

**fault** [FAWLT] A break in Earth's crust where rocks can slide past each other (248)

**fern** [FERN] A vascular plant that reproduces without seeds (122)

**first quarter** [FERST KWAWRT•er] The phase of the moon when it is one-quarter of the way through its orbit and we see half of the moon lighted (416)

**focus** [FOH•kuhs] The point inside Earth where an earthquake begins (249)

**food chain** [FOOD CHAYN] A sequence of connected producers and consumers (159)

**food web** [FOOD WEB] A group of connected food chains in an ecosystem (160)

**force** [FAWRS] A push or a pull (600)

**fossil** [FAHS•uhl] Any naturally preserved evidence of life (304)

**fossil fuel** [FAHS•uhl FYOO•uhl] An energy-rich resource formed from the buried remains of once-living organisms (308)

**frequency** [FREE•kwuhn•see] The number of vibrations or waves in a given amount of time (539)

**friction** [FRIK•shuhn] A force that acts between any two surfaces in contact with one another and prevents or slows motion (610)

**front** [FRUHNT] The boundary between two air masses that collide (380)

**fruit** [FROOT] The ripened ovary of a flowering plant (134)

**fulcrum** [FUL•kruhm] The fixed point that the effort arm of a lever moves around (632)

**full moon** [FUL MOON] The phase of the moon in which we see the entire moon lighted and it appears bright and round (416)

**fungus** [FUHNG•guhs] An organism that has cell walls but does not have chloroplasts (84)

## G

**galaxy** [GAL•uhk•see] A huge system of stars (436)

**genes** [JEENZ] Pieces of DNA that carry all the information passed from parents to their offspring (51)

**genus** [JEE•nuhs] A group of organisms that share major characteristics and are therefore closely related (91)

**glacier** [GLAY•sher] An immense sheet of moving ice that stays frozen year-round (234)

**gravitational force** [grav•ih•TAY•shuhn•uhl FAWRS] The force that acts between any two masses in the universe and pulls them toward one another (614)

**gravitropism** [gra•VIH•truh•piz•uhm] The growth response of plants to gravity (114)

**groundwater** [GROWND•waw•ter] Water located within the gaps and pores in rocks below Earth's surface (339)

**gymnosperm** [JIM•noh•sperm] A vascular plant that produces seeds that are not surrounded by a fruit (124)

## H

**habitat** [HAB•ih•tat] The part of an ecosystem in which an organism lives (153)

**heat** [HEET] The transfer of thermal energy from warmer objects to cooler ones (564)

**host** [HOHST] The organism that a parasite lives in or on (168)

**hurricane** [HER•ih•kayn] A large, rotating tropical storm system with wind speeds of at least 119 km (74 mi) per hour (392)

## I

**igneous rock** [IG•nee•uhs RAHK] Rock formed when melted rock hardens (274)

**inclined plane** [in•KLYND PLAYN] Any flat, sloping surface used as a simple machine (640)

**index fossil** [IN•deks FAHS•uhl] A fossil of a type of organism that lived in many places during a relatively short time span (315)

**indicator** [IN•dih•kayt•er] A material that indicates whether a substance is an acid or a base (514)

**inertia** [in•ER•shuh] The tendency of matter to resist a change in its state of motion (602)

**insulation** [in•suh•LAY•shuhn] A substance that conducts thermal energy poorly (566)

**intertidal zone** [in•ter•TYD•uhl ZOHN] The area of the ocean between the high-tide level and the low-tide level (354)

## K

**kinetic energy** [kih•NET•ik EN•er•jee] The energy of motion (528)

## L

**lava** [LAH•vuh] Magma that is exposed at Earth's surface (275)

**law of conservation of energy** [LAW UV kahn•ser•VAY•shuhn UV EN•er•jee] The rule stating that the total amount of energy in a closed system is always the same—energy cannot be created or destroyed (532)

**lever** [LEV•er] A simple machine that is an arm or rod that turns around a fixed point (632)

## M

**magma** [MAG•muh] Melted rock within Earth (274)

**mantle** [MAN•tuhl] The thick layer of Earth beneath the crust (231)

**mass** [MAS] The amount of matter something has (488)

**mass extinction** [MAS ek•STINGK•shuhn] A period in which a large number of species become extinct (323)

**melting point** [MELT•ing POYNT] The temperature at which a substance changes from a solid to a liquid (472)

**metal** [MET•uhl] A substance that conducts heat and electricity well and is malleable (461)

**metamorphic rock** [met•uh•MAWR•fik RAHK] Rock made from igneous or sedimentary rock that has been changed by pressure, high temperature, very hot water, or a combination of these factors (278)

**metamorphism** [met•uh•MAWR•fiz•uhm] The process by which metamorphic rock is formed (278)

**meteor** [MEET•ee•er] A piece of rock, smaller than an asteroid, that enters Earth's atmosphere and burns up (426)

**mid-ocean ridge** [mid•OH•shuhn RIJ] A chain of mountains that runs through the world's oceans (242)

**mineral** [MIN•er•uhl] A natural, solid substance that has a definite chemical composition and physical structure (266)

**mixture** [MIKS•cher] A combination of two or more substances that keep their original properties (496)

**mold** [MOHLD] An impression of an organism formed when sediments harden around the organism (305)

**moss** [MAWS] A small plant that does not have vascular tissues or true roots, stems, or leaves (120)

## N

**natural resource** [NACH•er•uhl REE•sawrs] A material that occurs in nature that is essential or useful to people (192)

## P

- near-shore zone** [neer•SHAWR ZOHN] The area of ocean over the continental shelf that is relatively shallow (356)
- neutron** [NOO•trahn] A subatomic particle that has the same mass as a proton but no electric charge (453)
- new moon** [NOO MOON] The phase of the moon in which only a dim outline of its shape is visible (416)
- niche** [NICH] An organism's role in an ecosystem (153)
- nitrogen cycle** [NY•truh•juhn sy•kuhl] The movement of nitrogen in different forms from living organisms to the nonliving part of the environment and back (206)
- nonmetal** [nahn•MET•uhl] A substance that does not conduct electricity and is not malleable (461)
- nonvascular plant** [nahn•VAS•kyuh•ler PLANT] A plant that lacks tissues for carrying water, food, and nutrients (110)
- nucleus** [NOO•klee•uhs] The control center of a cell that directs the cell's activities. (35) The center of an atom, usually made of protons and neutrons (453)

## O

- opaque** [oh•PAYK] Not allowing any light to pass through (550)
- open-ocean zone** [oh•puhn•OH•shuhn ZOHN] The area of ocean over the continental slope and abyssal plain (356)
- organ** [AWR•guh] A structure that contains at least two types of tissue that work together to perform a specific function (42)

- parallel circuit** [PAIR•uh•lel SER•kit] A circuit in which there is more than one path for the current to follow (582)
- parasite** [PAIR•uh•sy] An organism that benefits from its relationship with an organism that it lives in or on while the other organism is harmed (168)
- periodic table** [pir•ee•AHD•ik TAY•buhl] A table that shows the elements arranged by their atomic numbers (462)
- pH scale** [pee•AYCH SKAYL] A measure of the strength or weakness of acids and bases (514)
- phloem** [FLOH•em] Plant tissue that carries food from the leaves to other cells (108)
- phototropism** [foh•TAH•troh•piz•uhm] The growth response of plants to light (114)
- physical change** [FIZ•ih•kuhl CHAYNJ] A change that does not make a substance into a new substance (490)
- physical property** [FIZ•ih•kuhl PRAHP•er•tee] A property that describes a substance by itself, such as color, shape, density, or hardness (487)
- plasma** [PLAZ•muh] A state of matter made up of charged atoms, uncharged atoms, and free electrons (474)
- plate tectonics** [PLAYT tek•TAHN•iks] The theory that Earth's crust and upper mantle is divided into plates that are always moving (241)
- pollination** [pah•uh•NAY•shuhn] The first step of angiosperm reproduction, during which pollen from an anther lands on a stigma of a flower of the same kind (132)
- population** [pahp•yuh•LAY•shuhn] A group of organisms of the same species living together in an ecosystem (152)

**potential energy** [poh•TEN•shuhl EN•er•jee]

Energy that is due to the position or condition of an object (528)

**precipitation** [pree•sip•uh•TAY•shuhn] Solid or liquid water that falls from the air to Earth (339)

**producer** [pruh•DOOS•er] An organism that makes its own food (158)

**protist** [PROHT•ist] A microscopic organism that may have characteristics of plants, animals, or fungi (85)

**proton** [PROH•tahn] A subatomic particle that has a positive electric charge (453)

**pulley** [PUL•ee] A simple machine that is a grooved wheel that has a rope or a chain around it (634)

## R

**radiation** [ray•dee•AY•shuhn] The transfer of thermal energy as waves (565)

**reactivity** [ree•ak•TIV•uh•tee] The ability of a substance to go through a chemical change (505)

**recessive** [rih•SES•iv] Describes a weaker trait that will show up in an organism only if no factor for the dominant trait is present (62)

**recycle** [ree•SY•kuhl] To process used products into new products by using the materials again (196)

**reflection** [rih•FLEK•shuhn] The bouncing of light off a surface (546)

**refraction** [rih•FRAK•shuhn] The bending of light as it passes from one material to another (548)

**relative humidity** [REL•uh•tiv hyoo•MID•uh•tee] A comparison of the

actual amount of water vapor in the air to the amount of water vapor that would be in the air if it were saturated (379)

**reuse** [ree•YOOZ] To use items again after their original use (197)

**revolution** [rev•uh•LOO•shuhn] The movement of one object in an orbit around another object (406)

**rift** [RIFT] A deep valley at the highest part of the mid-ocean ridge, where tectonic plates are moving apart (242)

**rock cycle** [RAHK SY•kuhl] All of the processes that change rock from one type to another (285)

**rotation** [roh•TAY•shuhn] The turning of an object on an axis (406)

## S

**satellite** [SAT•uhl•yt] A body in space that orbits a larger body (424)

**screw** [SKROO] A simple machine that is an inclined plane wrapped around a cylinder or a cone (644)

**sea-floor spreading** [SEE•flawr SPRED•ing] The process, which takes place along the mid-ocean ridge, in which liquid rock rises and becomes solid as two tectonic plates move farther and farther apart (242)

**sedimentary rock** [sed•uh•MEN•ter•ee RAHK] Rock formed when layers of sediment settle and are cemented together (276)

**series circuit** [SIR•eez SER•kit] A circuit in which there is only one path for the current to follow (582)

**sexual reproduction** [SEK•shoo•uhl ree•pruh•DUHK•shuhn] A type of reproduction in which a sperm cell and an egg cell unite to form a single cell (50)



**solution** [suh•LOO•shuhn] A mixture in which all of the substances are evenly distributed (498)

**species** [SPEE•sheez] A single kind of organism that can reproduce among its own kind (91)

**spore** [SPAWR] A structure containing cells that can grow into a new plant without joining with other cells (121)

**stability** [stuh•BIL•uh•tee] The ability of a substance to resist going through a chemical change (505)

**static electricity** [STAT•ik ee•lek•TRIS•uh•tee] The electric charge that builds up on an object that has gained or lost electrons (570)

**succession** [suhk•SESH•uhn] The gradual long-term change of species in an ecosystem (202)

**suspension** [suh•SPEN•shuhn] A mixture that contains particles that are large enough to be seen (500)

**symbiosis** [sim•by•OH•sis] A close relationship between organisms of different species in which one or both of the organisms benefit (168)

## T

**thermal energy** [THER•muhl EN•er•jee] The kinetic energy of the moving particles of a substance or an object (562)

**third quarter** [THERD KWAWRT•er] The phase of the moon when it is three-quarters of the way through its orbit and we see half of the moon lighted (417)

**thunderstorm** [THUHN•der•stawrm] A strong storm with rain, lightning, and thunder (390)

**tides** [TYDZ] The regular rising and falling of the ocean's surface caused mostly by the moon's gravitational "pull" on Earth's oceans (412)

**tissue** [TISH•oo] A group of specialized cells with the same structure and function (40)

**topsoil** [TAHP•soyl] The top layer of soil, made in part from broken-up pieces of lower layers of rock (291)

**tornado** [tawr•NAY•doh] A violently rotating column of air that extends downward from a thundercloud and touches the ground (391)

**translucent** [tranz•LOO•suhnt] Allowing some light to pass through (550)

**transparent** [tranz•PAIR•uhnt] Allowing almost all light to pass through (550)

**tropism** [TROH•piz•uhm] A growth response of a plant toward or away from something in its environment (114)

## U

**unbalanced forces** [uhn•BAL•uhnst FAWRS•iz] Forces that do not cancel one another out (607)

## V

**vascular plant** [VAS•kyuh•ler PLANT] A plant that has transport tissues for carrying water, food, and nutrients to its cells (108)

**velocity** [vuh•LAHS•uh•tee] The speed and direction of a moving object (599)

**volcano** [vahl•KAY•noh] A mountain formed when molten rock is pushed to Earth's surface and builds up (252)

**volume** [VAHL•yoom] The amount of space something takes up (488)

**W**

- water cycle** [waw•ter sy•kuhl] The process by which water moves above, across, and through Earth's crust and ecosystems (338)
- wave** [wayv] A disturbance that carries energy through matter or space (536)
- wavelength** [wayv•length] The distance from the middle of the crest of one wave to the middle of the crest of the next wave (537)
- weathering** [weth•er•ing] The process by which rock is broken down into smaller and smaller pieces (232)
- wedge** [wej] A simple machine made of two inclined planes placed back to back (642)
- weight** [wayt] The measurement of the force of gravity on an object (618)
- wetland** [wet•land] An area of land that is covered by water all or much of the time (215)
- wheel-and-axle** [weel•uhnd•ak•suhl] A simple machine that is a large wheel and a small wheel that are connected and turn together (635)
- work** [werk] The result that occurs when a force causes an object to move in the direction of the force (630)

**X**

- xylem** [zy•luhm] Plant tissue that carries water and nutrients from a plant's roots to its leaves (108)