Glossary

abiotic factor a nonliving part of an ecosystem (Lesson 17)

absolute age the actual age of a rock or fossil, or how long ago it formed (Lesson 28)

adaptation a trait that helps an organism survive in a particular environment (Lesson 30)

addiction a physical dependence on a substance (Lesson 13)

algal bloom an extremely rapid growth of algae caused by too many nutrients in the water (Lesson 24)

analogous structures body parts of different organisms that perform similar functions but do not have similar structures (Lesson 31)

antibiotic a drug that kills bacteria or slows their growth (Lesson 14)

aquifer a rock layer that collects and stores water (Lesson 21)

Archaea one of two domains of prokaryotes (Lesson 32)

asexual reproduction a process of reproduction that involves only one parent and produces offspring genetically identical to the parent (Lesson 12)

atom the basic building block of most of the matter around us; the smallest particle of an element that has all the properties of that element (Lesson 1)

atomic mass a measure of an atom's mass that is equal to the number of protons and neutrons in the atom's nucleus (Lesson 1)

atomic number the number of protons in the nucleus of an atom (Lesson 1)

autotroph an organism that makes its own food; a producer (Lesson 18)

bacteria (singular: *bacterium*) one-celled prokaryotes, some of which can cause disease (Lesson 14)

Bacteria one of two domains of prokaryotes (Lesson 32)

binomial nomenclature the system of unique, two-part names for organisms (Lesson 32)

bioindicator an organism used to monitor the health of an ecosystem (Lesson 25)

biomass any material from living things that can be used as an energy source (Lesson 8)

biotechnology the manipulation of living things to make useful products (Lesson 16)

biotic factor a living part of an ecosystem (Lesson 17)

boiling the process in which bubbles of gas form throughout a liquid and rise to the surface (Lesson 5)

boiling point the temperature at which a substance boils (Lesson 5)

Cambrian the first period of the oldest era on the geologic time scale (Lesson 29)

carbon cycle the movement of carbon among living organisms, the air, and the ground (Lesson 19)

cell the basic unit of structure and function in all living things (Lesson 10)

cell membrane the thin, flexible outer covering of a cell that controls which materials enter and leave the cell (Lesson 10)

cell wall the rigid structure that surrounds the cell membrane in plant cells and the cells of some other organisms (Lesson 10)

cellular respiration the process by which cells break down sugar to release stored energy (Lesson 11)

charge an electrical property that can be either positive or negative (Lesson 1)

chemical bond a force that holds atoms together in molecules (Lesson 5)

chemical change a change that results in the formation of a new substance or substances (Lesson 5)

chemical energy the energy that is stored in chemical bonds (Lesson 7)

chemical equation a description of a chemical reaction using chemical formulas, subscripts, and coefficients (Lesson 6)

chemical formula a group of chemical symbols and numbers that shows the number of atoms of each element in a molecule (Lesson 3)

chemical property a characteristic of a substance that cannot be observed without changing the identity of the substance (Lesson 2)

chemical reaction a process by which elements and compounds combine to form new substances (Lesson 5)

chemical symbol a code, usually made up of one or two letters, used to represent an element (Lesson 1)

chemosynthesis the process by which some organisms use the energy stored in chemical bonds to make their own food (Lesson 23)

chloroplast an organelle found in plant cells and some other organisms that captures the energy of sunlight and converts it into chemical energy during photosynthesis (Lesson 10)

chromosome a structure in the nucleus of a cell that contains the cell's genetic material (Lessons 10, 12)

circle graph a visual display used to show data as parts of a whole (Lesson 9)

circulatory system the human body system that carries oxygen and food to cells and carries carbon dioxide and wastes away from cells (Lesson 13)

class a classification group made up of similar orders (Lesson 32)

classification the systematic grouping of organisms based on shared characteristics (Lesson 32)

cloning a technique that produces an organism that is an exact genetic copy of another (Lesson 16)

coefficient a number written before a chemical formula to show how many atoms or molecules of that substance are involved in a reaction (Lesson 6)

coexist to live in the same habitat without competing (Lesson 20)

commensalism a symbiotic relationship in which one organism benefits and the other neither benefits nor is harmed (Lesson 20)

community all the populations of organisms in an ecosystem (Lesson 17)

competition an interaction that occurs when organisms try to get the same resources (Lesson 20)

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compound a pure substance that forms when two or more elements join chemically in a fixed proportion (Lesson 3)

conclusion a statement explaining the results of an investigation and what they mean (Investigations 1, 2)

condensation the process by which a gas changes to a liquid (Lesson 19)

conservation the careful use and management of natural resources (Lesson 9)

consumer an organism that does not make its own food and gets energy from other organisms (Lesson 18)

controlled variable a condition that is kept the same in all parts of an experiment (Lesson 13, Investigation 1)

cooperation a helpful interaction among organisms living in a limited area that aids each organism's survival (Lesson 20)

crust the outer layer of the lithosphere (Lesson 26)

crystal a solid made up of particles that are arranged in a regular, repeating pattern (Lesson 3)

cytoplasm the fluid that fills most of the space in a cell (Lesson 10)

data information gathered during an investigation (Investigation 1)

data table a chart that shows information in columns and rows (Lesson 9)

decomposer an organism that gets energy by breaking down dead organisms and the wastes of living things (Lesson 18)

decomposition the process in which dead organisms are broken down (Lesson 19)

denitrification the conversion of nitrates and other compounds containing nitrogen into nitrogen gas (Lesson 19)

density the ratio of mass to volume of a substance (Lesson 5)

dependent variable the experimental variable that responds to changes in the independent variable (Lesson 13, Investigation 1)

deposition the dropping of pieces of weathered rock carried by water, wind, or ice (Lesson 27)

digestive system the human body system that takes in food and breaks it down into smaller molecules that can be used by cells (Lesson 13)

DNA (deoxyribonucleic acid) a large molecule containing the genetic information that determines an organism's traits (Lesson 12)

domain the largest group in the biological classification system (Lesson 32)

ecosystem all the living and nonliving parts of an environment as well as the interactions among them (Lesson 17)

electrical energy the energy of moving electric charges (Lesson 7)

electromagnetic energy energy that travels in the form of waves, through matter or through space (Lesson 7)

electron a negatively charged subatomic particle that is located outside the nucleus of an atom (Lesson 1)

element one of the basic substances that combine to form all other substances; a substance that cannot be broken down into simpler substances by ordinary chemical means (Lesson 1)

embryo an early stage in the development of an organism (Lesson 31)

embryology the study of embryos (Lesson 31)

energy the ability to make things move or change (Lesson 7)

environment an organism's surroundings (Lesson 8)

eon the longest unit on the geologic time scale (Lesson 29)

epidemic an outbreak of a disease that affects many people in an area (Lesson 15)

epoch the shortest division of geologic time (Lesson 29)

era a division of an eon on the geologic time scale (Lesson 29)

erosion a process by which weathered rock is picked up and moved to new places (Lesson 27)

estuary a place where freshwater from a river meets and mixes with salt water from the ocean (Lessons 21, 23)

Eukarya a classification domain made up of organisms whose cells have organized nuclei (Lesson 32)

eukaryote an organism whose cells contain a nucleus and organelles enclosed by membranes (Lesson 10)

evaporation a method used to separate a dissolved solid from a liquid (Lesson 4); a process by which a liquid changes to a gas (Lesson 19)

evolution the process by which species of organisms change over time (Lesson 30)

experiment a carefully controlled test of a hypothesis (Lesson 13, Investigation 1)

extinct no longer found living on Earth (Lesson 28)

extinction the permanent dying out of a species or larger group of organisms (Lesson 29)

fault a break, or crack, in Earth's surface along which movement occurs (Lesson 26)

fertilization the joining of an egg and a sperm to form a zygote (Lesson 12)

field study a scientific investigation carried out in a natural setting (Lesson 17)

filtration a method for separating solids from liquids in a solution (Lesson 4)

folding the process in which rock layers are squeezed together and pushed upward, forming a ripple in Earth's crust (Lesson 26)

food chain a series of organisms in which each feeds on the one at the next lower trophic level (Lesson 18)

food web a network of interconnected food chains (Lesson 18)

fossil the preserved remains or evidence of an organism that lived in a past age (Lesson 28)

fossil fuel a source of energy that formed from the remains of organisms that lived millions of years ago (Lesson 8)

freshwater water that is not salty (Lesson 21)

fungus a one-celled or many-celled organism such as a mushroom, yeast, or mold (Lesson 14); a member of the kingdom Fungi (Lesson 32)

gamete a specialized cell (sperm or egg) used for reproduction (Lesson 12)

gene a tiny part of a chromosome that helps determine a particular trait (Lesson 12)

genetic modification a technology that changes the genetic material of a living organism (Lesson 16)

genome the complete sequence of an organism's DNA (Lesson 16)

genus a taxonomic group that consists of closely related species (Lesson 32)

geologic time scale a timeline that organizes major events in Earth's history (Lesson 29)

geology the study of Earth's history, processes, and structures (Lesson 28)

geothermal energy heat energy from within Earth that can be used to heat buildings and produce electricity (Lesson 8)

groundwater water located below Earth's surface (Lessons 19, 21)

group a vertical column in the periodic table; also called a chemical family (Lesson 2)

habitat the place where an organism lives (Lesson 17)

heterogeneous mixture a mixture in which substances are not distributed evenly (Lesson 4)

heterotroph an organism that does not make its own food and gets energy from other organisms (Lesson 18)

homogeneous mixture a mixture in which substances are evenly distributed (Lesson 4)

homologous structures body parts of different organisms that have a similar structure but not necessarily a similar function (Lesson 31)

host an organism that a parasite lives in or on (Lesson 20)

hydropower the energy of moving water (Lesson 8)

hydrosphere all the water found on, above, and under Earth's surface (Lesson 21)

hypothesis a possible answer to a scientific question (Lesson 4, Investigation 1)

ice core a cylinder of ice removed from an ice sheet (Lesson 28)

igneous rock rock that forms when melted rock cools and hardens (Lesson 27)

independent variable the experimental variable that is deliberately changed by the experimenter (Lesson 13, Investigation 1)

index fossil a fossil that is useful for dating geologic layers because the organism lived for only a short period of time (Lesson 28)

infectious disease a disease that can be passed from one organism to another (Lesson 15)

inference a logical conclusion or explanation based on observation, knowledge, and experience (Lesson 5)

investigation a close study made of something in order to answer a question about it (Investigations 1, 2)

ion an atom that has lost or gained electrons and therefore has an electrical charge (Lesson 1)

kingdom a taxonomic group made up of similar phyla (Lesson 32)

lava melted rock that reaches Earth's surface (Lesson 26)

law of conservation of mass the scientific principle that matter is neither created nor destroyed during a chemical change (Lesson 6)

law of superposition the principle that in undisturbed sedimentary rock layers, older layers of rock lie beneath younger rock layers (Lesson 28)

line graph a graph that uses plotted points and lines to show a relationship between sets of data (Lesson 20)

lithosphere the outer part of Earth, made up of solid rock (Lesson 26)

magma melted rock beneath Earth's surface (Lesson 26)

marine found in or relating to the ocean (Lesson 23)

mechanical energy the energy of moving objects (Lesson 7)

meiosis the form of cell division that produces gametes (Lesson 12)

melting point the temperature at which a substance changes from a solid to a liquid (Lesson 5)

metal an element that conducts heat and electricity well, is shiny, and can be hammered into sheets or drawn into wires (Lesson 2)

metalloid an element that has some properties of both metals and nonmetals (Lesson 2)

metamorphic rock rock that forms when existing rock is exposed to high heat, high pressure, or both (Lesson 27)

microbiology the study of microscopic organisms (Lesson 14)

microorganism a living thing that cannot be seen without a microscope (Lesson 14)

mid-ocean ridge an underwater mountain range that forms where ocean plates move apart (Lesson 26)

mitochondria (singular: *mitochondrion*) organelles that release energy from glucose (Lesson 10)

mitosis a process during which the nucleus of a cell divides to form two nuclei just like the nucleus of the parent cell (Lesson 12)

mixture matter made up of two or more substances that are not joined chemically (Lesson 4)

model a representation of an object, system, or process (Lesson 18, Investigation 2)

molecule a group of two or more atoms held together by chemical bonds (Lesson 3)

mutation a change in the genetic material of an organism (Lesson 30)

mutualism a symbiotic relationship between two organisms in which both organisms benefit (Lesson 20)

natural selection the process by which organisms that are best suited to a particular environment survive and reproduce most successfully (Lesson 30)

nervous system the human body system that gathers and responds to information about the surrounding environment (Lesson 13)

neutron a particle with no charge, found in the nucleus of an atom (Lesson 1)

niche an organism's role in its environment (Lesson 17)

nitrogen cycle the movement of nitrogen among living organisms, the air, and the ground (Lesson 19)

nitrogen fixation the process that converts nitrogen in the atmosphere into compounds in the soil that are useful to a variety of organisms (Lesson 19)

nonmetal an element that does not conduct heat or electricity well and is dull and brittle or gaseous (Lesson 2)

non–point-source pollution pollution that comes from many places or an unidentified source (Lesson 24)

nonrenewable energy resource a source of energy that is used much faster than it can be replaced (Lesson 8)

nuclear energy energy stored in the nucleus of an atom (Lesson 7)

nucleus the center of an atom, containing protons and neutrons (Lesson 1); a large structure in a cell that controls many of its functions and contains its genetic material (Lesson 10)

nutrient a substance that an organism needs to carry out life functions (Lesson 11)

observation information gathered through the senses (Lesson 5; Investigations 1, 2)

ocean basin a part of Earth's surface that is covered by ocean water (Lesson 22)

organelle a structure inside a cell that performs a specific function (Lesson 10)

organism a living thing (Lesson 10)

pandemic an epidemic that spreads over a large area, or throughout the world (Lesson 15)

parasite an organism that lives in or on another organism and benefits at the other organism's expense (Lessons 14, 20)

parasitism a symbiotic relationship in which one organism benefits and the other is harmed (Lesson 20)

pathogen a microorganism that causes disease (Lesson 14)

peer review the examination of a scientist's work by other scientists in the same field (Investigation 1)

period a horizontal row in the periodic table (Lesson 2); a block of time on the geologic time scale during which unique rock layers were laid down (Lesson 29)

periodic table a chart that organizes information about all the known elements according to their properties (Lesson 2)

pH a measure of how acidic or how basic a liquid is (Lesson 25)

photosynthesis the process by which the cells of plants and some other organisms use the energy of sunlight to make their own food (Lessons 11, 18)

photovoltaic cell a device that can change light energy into electricity; also called a solar cell (Lesson 8)

phylum a taxonomic group made up of related classes (Lesson 32)

physical change a change in a substance that does not change the chemical makeup of the substance (Lesson 5)

physical property a characteristic of a substance that can be observed directly or measured with a tool without changing the identity of the substance (Lesson 2)

plate boundary the place where two tectonic plates meet (Lesson 26)

point-source pollution pollution that comes from a single, identifiable site (Lesson 24)

pollutant a harmful material released into the environment (Lesson 24)

pollution the release of an unwanted substance into the environment (Lessons 8, 22)

population a group of organisms of the same species living in the same place (Lesson 17)

Precambrian geologic time that consists of three eons and includes most of Earth's history (Lesson 29)

precipitate a solid that forms during a chemical reaction that takes place in a solution (Lesson 5)

precipitation water that falls to Earth's surface in the form of rain, sleet, hail, or snow (Lesson 19)

predation a relationship in which one animal hunts, kills, and eats another (Lesson 20)

predator an animal that hunts and kills other animals for food (Lesson 20)

prediction a statement about what is likely to happen in the future (Investigation 2)

prey an animal that is hunted by other animals for food (Lesson 20)

procedure a series of steps to be followed in an investigation (Investigations 1, 2)

producer an organism that makes its own food; an autotroph (Lesson 18)

product a substance that is produced during a chemical reaction (Lesson 6)

prokaryote an organism whose cells lack a nucleus and organelles enclosed by membranes (Lesson 10)

protist a member of the kingdom Protista, which includes one-celled and many-celled organisms (Lesson 32)

proton a positively charged particle found in the nucleus of an atom (Lesson 1)

pure substance matter that has the same chemical composition throughout and cannot be separated into its parts by physical means (Lesson 1)

radioactive dating a means of measuring the age of a material by comparing the amount of a radioactive form of an element with the amount of its decay product (Lesson 28)

reactant a substance that is present at the beginning of a chemical reaction (Lesson 6)

reactivity the tendency of a substance to undergo chemical changes (Lesson 2)

relative age the age of a rock or fossil described in comparison to that of another rock or fossil (Lesson 28)

renewable energy resource a source of energy that can be replaced as it is used or that cannot be used up (Lesson 8)

reproduce to make new living things of the same kind (Lesson 12)

respiratory system the human body system that takes in oxygen from the air and passes it to the circulatory system, and releases carbon dioxide and water vapor to the air (Lesson 13)

ribosome an organelle that makes proteins (Lesson 10)

rock cycle the continual change of rock from one kind to another (Lesson 27)

runoff water that flows over the land without sinking into the ground (Lesson 19)

salinity the saltiness of a body of water (Lessons 22, 25)

sea-floor spreading the formation of new ocean floor from melted rock that seeps up from the mantle and flows into the space between plates that are moving apart (Lesson 26)

sediment weathered rock and other materials deposited by water, wind, or ice (Lesson 27)

sedimentary rock rock that forms from compacted sediment (Lesson 27)

sexual reproduction the process in which cells from two parents join to produce offspring (Lesson 12)

sifting a process used to separate the parts of a mixture by particle size (Lesson 4)

solar battery a device that stores electrical energy produced by a solar cell during the day (Lesson 8)

solar energy energy from the sun (Lesson 8)

solar reflector a device that gathers sunlight and reflects it onto fluid-filled pipes (Lesson 8)

solubility the ability of one substance to dissolve into another; the amount of solute that can dissolve in a particular substance (Lesson 5)

solute in a solution, the substance that dissolves (Lesson 4)

solution a homogeneous mixture in which one substance is completely dissolved in another substance (Lesson 4)

solvent in a solution, the substance that does the dissolving (Lesson 4)

species a group of organisms that share most characteristics and can interbreed to produce fertile offspring (Lessons 17, 32)

stewardship the following of practices that protect Earth's resources (Lesson 24)

subscript a number that tells how many atoms of each element are in a molecule (Lesson 3)

symbiosis a close relationship between two different species of organisms living together (Lesson 20)

taxonomy the science of classifying organisms (Lesson 32)

tectonic plate one of the large sections into which the lithosphere is broken (Lesson 26)

thermal energy the energy of the moving particles that make up all matter (Lesson 7)

toxic harmful to the body (Lesson 13)

transpiration the process in which water vapor is released into the air from the leaves of plants (Lesson 19)

trophic level a feeding level in an ecosystem (Lesson 18)

turbidity a measure of how clear water is (Lesson 25)

uplift the folding of rock upward due to stress between converging plates (Lesson 26)

upwelling the movement of cold, nutrient-rich water from deep layers of the ocean up to the surface (Lesson 23)

vaccine a weakened or dead form of a pathogen that causes an organism to develop immunity against that pathogen (Lesson 15)

vacuole a cell organelle that stores water, salts, proteins, and carbohydrates (Lesson 10)

variable any factor that can affect the results of an experiment (Lesson 13, Investigation 1)

variations differences that exist naturally among members of a population or species (Lesson 30)

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vector an organism that transmits a disease (Lesson 15)

vestigial structure a body part that does not seem to have a function in an organism (Lesson 31)

virus a pathogen that consists of a microscopic core of genetic material surrounded by a protein coating (Lesson 14)

volcano an opening in Earth's crust through which melted rock, ash, and gases are released (Lesson 26)

water cycle the continuous movement of water between Earth's surface and its atmosphere (Lesson 19)

watershed an area of land that drains into a stream, river, lake, or other body of water (Lesson 21)

weathering a process that breaks rock down into smaller pieces (Lesson 27)

wind energy the energy of moving air (Lesson 8)

zygote a cell formed as a result of fertilization (Lesson 12)