

GLOSSARY

absorb To take in.

acceleration The rate of change in speed and direction (velocity).

atom The smallest part of an element that still retains all the properties of that element.

Big Dipper A part of the constellation Ursa Major, the Great Bear.

Boyle's law At a constant temperature, the pressure of a gas in a confined space increases as the volume decreases.

Cassiopeia The W-shaped constellation in the Northern Hemisphere.

cell The functional unit of living things.

cell membrane The membrane that surrounds a cell, forming a boundary between the inside and the outside of the cell and holding all of the cell parts together inside.

cell wall The thick wall outside the cell membrane of plant cells, which functions in supporting the plant.

Cepheus A constellation near Cassiopeia and Draco.

chemical equation A way to describe a chemical reaction using symbols and numbers.

chemical formula A formula made of letters and numbers that tells the exact numbers and kinds of atoms in a molecule.

chemical reaction The change that occurs when two or more substances interact to form a new substance.

chloroplast The part of a plant cell that contains chlorophyll.

circuit The path comprised of wires and other components through which electric current may flow.

constant A factor that is kept the same during a controlled experiment.

constellation An area of the sky containing stars that seem to outline a figure, as viewed from Earth.

controlled experiment An experiment in which the factors are controlled so that the effects of changing one factor (variable) at a time can be observed. Two setups are tested side by side and are identical except for the variable being tested.

controlled variable. In a controlled experiment, the variable that does not change.

covalent bond A type of bond between atoms in which one pair of electrons is shared.

covalent compound A compound formed when two or more atoms of different elements bond together covalently.

crescent The first and last phase of the lunar cycle, in which the Moon appears to have one very concave edge and one very convex edge.

cytoplasm The semi-solid part of the cell, between the nucleus and the cell membrane, that contains the cell organelles.

density A measure of the amount of matter that exists in a given volume of material.

dependent variable In a controlled experiment, the variable that changes in response to changes in the independent variable.

direct sunlight Sunlight that reaches the surface of Earth at angles greater than 45° from the horizon.

electric current The flow of electrons through an electric circuit.

electrical energy Energy provided by the flow of electrons; movement of electric charge through matter.

electromagnetic field The magnetic field existing around objects that have electric current flowing through or around them.

electron A negatively charged particle orbiting the nucleus of an atom.

element A pure substance that cannot be broken down chemically into any other substances.

energy The ability to do work or to bring about change in a system or the surroundings.

energy level One of a number of electron clouds located at distinct distances from the nucleus of an atom.

energy transfer The movement of energy from an energy source to an energy receiver.

equinox The moment when the Sun crosses the celestial equator and the day and night are of equal length anywhere in the world; *equinox* means “equal night.”

evaporation The conversion of a liquid to a gas or vapor.

filtrate A substance in a solution that passes through a filter.

first quarter Moon The lunar phase between new Moon and full Moon in which half of the lighted portion of the Moon is visible.

float height The height at which an object will float in a liquid. Float height is directly related to the density of the liquid.

force A push or pull on an object, measured in newtons.

friction A force that resists motion whenever the surfaces of two objects rub against each other.

full Moon The lunar phase in which the entire lighted surface of the Moon is visible.

guard cells In plants, the two cells on either side of a stoma that function to open and close the stoma.

gibbous The lunar phases between quarter Moon and full Moon in which the Moon has convex edges.

heterogeneous A mixture in which the components are not evenly mixed, so that its properties are not the same throughout.

homogeneous A mixture in which the components are evenly mixed, so that the mixture has the same properties throughout.

horizon The apparent junction between Earth and the sky.

hypothesis An educated guess about a scientific problem.

independent variable In a controlled experiment, the variable that changes.

indirect sunlight Sunlight that reaches the surface of Earth at angles less than 45° to the horizon.

inverse relationship A relationship between variables in which one increases as the other decreases.

isotopes Atoms of the same element that have the same number of protons but different numbers of neutrons in their nuclei, and therefore different masses.

joule A unit of work; 1 joule of work is performed when a force of 1 newton is used to move an object a distance of 1 meter.

landfill An area of land that has been excavated, filled with garbage or waste, and covered up with soil. Landfills are

usually monitored for the contamination of surrounding soil and water.

leaf The broad, flat part of a plant where photosynthesis takes place.

lubricant A substance used to reduce the friction between two solid surfaces.

mass The measure of the amount of matter in an object.

mechanical energy The energy of motion. In motors, electrical energy is transformed into mechanical energy.

molecule A combination of two or more atoms joined by covalent bonds; the smallest part of a compound having all the properties of that compound.

mythology The study of myths.

neutron A subatomic particle with no electric charge, located in the nucleus of an atom.

new Moon The lunar phase in which the lighted side of the Moon faces away from Earth and so the Moon is not visible.

newton The international unit of force.

Newton's second law of motion An unbalanced external force causes acceleration of an object in the direction of the force. A greater unbalanced external force is required to accelerate an object with more mass at the same rate as an object with less mass. The equation for Newton's second law is $\text{force} = \text{mass} \times \text{acceleration}$.

nonrenewable resource A resource that is not easily replaced. Nonrenewable energy resources include fossil fuels such as coal, oil, and natural gas.

nucleus The "brain" of the cell, containing all the information for the functioning of the cell. Also, the core of an atom; contains protons and neutrons.

Orion A constellation near Gemini and Taurus.

oxidation A chemical reaction that occurs when a substance is exposed to oxygen.

periodic table A chart that presents an orderly listing of all known elements arranged from left to right (groups) and top to bottom (periods) in order of increasing atomic number.

phase Any of the various stages of illumination of the Moon or a planet by the Sun.

phloem A type of tissue in the stems of plants that transports water and dissolved materials, like sugar, between the leaves and roots.

photosynthesis The process by which plants use chlorophyll to trap solar energy to combine carbon dioxide from the air with water from the soil to make their own food.

phototropism The growth of plants toward light.

polarity The orientation of poles.

product A substance produced by a chemical reaction; typically shown on the right side of a chemical equation.

proton A subatomic particle with a positive charge, located in the nucleus of an atom.

pulley A simple machine consisting of a wheel that rotates around a stationary axle. The outer rim of the pulley is grooved to accommodate a rope or chain.

reactant The starting material in a chemical reaction; typically shown on the left side of a chemical equation.

recycle To use a material again in the same or in a new way.

reflect To throw or bend back from a surface.

renewable resource A resource that is easily replaced. Solar energy is renewable.

solar cell A device that converts solar energy to electrical energy.

solar collector A device used to collect solar energy and convert it to either electricity or heat.

solar energy Energy from the sun.

solstice The moment when Earth's axis is inclined at its maximum (23.5°) toward or away from the Sun; on or about June 21 and December 21.

solute The material dissolved in a solution.

solution A mixture in which one substance is dissolved in another. A solution is a homogeneous mixture.

solvent The substance in which the solute is dissolved in a solution.

stem The part of a plant that grows above ground, supports the leaves, and transports water and dissolved materials between the roots and leaves.

stoma (pl. stomata) An opening in the leaf, similar to a pore in skin, that allows gases and water to pass in and out.

subatomic particles The protons, neutrons, and electrons that make up an atom.

sunrise The apparent rising of the Sun above the horizon; the time when the uppermost portion of the Sun's disk appears above the horizon as a result of the rotation of Earth.

sunset The apparent descent of the Sun below the horizon; the time when the uppermost portion of the Sun's disk disappears below the horizon as a result of the rotation of Earth.

suspension A heterogeneous mixture in which solid particles are suspended in a liquid and may settle out.

terrarium A container of land plants and/or animals.

third quarter Moon The lunar phase between full Moon and new Moon when half the lighted portion of the Moon is visible.

transpiration The loss of water from the stomata in leaves.

variable The factor or condition in a controlled experiment.

volume A measure of the amount of space an object occupies.

work The transfer of energy resulting from a force acting to move an object over a distance. $Work = Force \times distance$.

xylem A type of tissue in the stems of plants that transports water and dissolved materials up from the roots to the leaves.