

A

acid compound that dissolves in water to form a solution with a pH lower than 7

active transport process in which plant cells use energy to move nutrient molecules from areas of lower concentration to areas of higher concentration

aerobic refers to processes or environments that require or contain oxygen (“aero-” means “air”)

alkali metals group 1 elements in the periodic table, not including hydrogen; the most reactive of the metals

alkaline-earth metals group 2 elements in the periodic table; their reactivity is not as strong as that of the alkali metals

allele a possible form of a gene

alternating current current that flows back and forth 60 times per second; this is the current used in homes

altitude the height of a celestial body above the horizon, ranging from 0 at sea level to 90° straight up

amino acids building blocks of proteins

ammeter meter used to measure electrical current in amperes

ampere (A) the unit of electrical current

anaerobic refers to processes or environments that do not require or contain oxygen (“an-” means without; “aero-” means “air”)

anther a part of the stamen that produces pollen and stores it

aqueous solution a solution in which water is the solvent

armature rotating shaft and coil in a motor or generator

artificial insemination artificial collection and injection of sperm from a male into a female; used in livestock breeding

artificial satellite see *satellite*

artificial selection breeding by humans of plants and animals with desirable traits to produce offspring with those desirable traits

asexual reproduction reproduction without the fusion of sex cells, resulting identical offspring and parent

asterism a distinctive star grouping that is not one of the 88 recognized constellations (e.g., the Big Dipper, which is part of the constellation Ursa Major)

asteroids small, rocky bodies orbiting the Sun and lying mainly in a narrow belt between Mars and Jupiter

astronomical unit (AU) a measure of distance used to describe the position of planets relative to the Sun; 1 AU is equal to the average distance from the centre of Earth to the centre of the Sun (149 599 000 km)

atom the smallest part of an element that is representative of that element; a neutral particle made up of a nucleus containing protons and neutrons, and in which the number of electrons equals the number of protons

atomic mass mass of one atom of an element calculated from the total number of protons, neutrons, and electrons of that atom; measured in atomic mass units (amu)

atomic mass unit measure of atomic mass; 1 amu is equal to 1/12th the mass of a carbon 12 atom

atomic number number of protons in the nucleus of one atom of an element

azimuth the angle between the most northerly point of the horizon and the point directly below a celestial body; also the horizontal angle or direction of a compass bearing

B

base compound that dissolves in water to form a solution with a pH higher than 7

battery set of cells connected together

binary fission a type of asexual reproduction in amoebas and other organisms in which a parent cell divides exactly into two identical cells

binary number number having two as its base (instead of 10) and so having only ones and zeroes

biodegradation breakdown of materials by organisms such as earthworms, bacteria, and fungi; “bio-” refers to living things and “degrade” means to break up

biological diversity the variety of species and ecosystems on Earth and the ecological processes of which they are a part; ecosystem diversity, community diversity, and genetic diversity are three main components

biomagnification increase in concentration of a chemical or element as it moves up the food chain

biomass organic matter, such as food or agricultural waste, used as an energy source

biotechnology the use of living things to make agricultural, industrial, or medicinal products

black dwarf the final phase in the life cycle of a Sun-like star

black hole a super-dense remnant of a supernova; an object around which gravity is so intense that even light cannot escape

brush mechanism that makes electrical contact with the moving commutator in a motor

budding a type of asexual reproduction in which a new organism develops from an outgrowth, or bud, on the parent

C

carbohydrates organic molecules made up of atoms of carbon, hydrogen, and oxygen (e.g., pasta, rice, potatoes, fruits, bread); can form simple molecules, such as sugar, or large, complex molecules, such as starch, cellulose, and glycogen

carbon monoxide ($\text{CO}_{(g)}$) colourless, odourless gas; produced by incomplete combustion of chemicals containing carbon (e.g. hydrocarbons); major source: motor vehicles

catalyst substance that helps a chemical reaction to proceed more quickly

cellular respiration chemical reaction that takes place in cells; food (sugar) reacts with oxygen to produce energy, water, and carbon dioxide

charge separation concentration of like charges in specific areas of a neutral object, caused by the approach of a charged object; for example, a negatively charged object brought close to a wall repels the electrons in the wall, leaving the area of the wall closest to the object positively charged

chemical change change that results when two or more substances react to create a different substance or substances; the new substances have completely different properties from the original ones

chemical energy energy stored in chemicals and released when chemicals react; a form of potential or stored energy

chemical formula combination of symbols that represent a compound; the formula identifies the elements in the compound and the amount of each element

chemical property description of how a substance interacts with other substances, such as acids; chemical properties are observable only when a chemical change occurs

chemical reaction a reaction that takes place when two or more substances react to form new substances

chromosome a structure in which DNA is arranged and along which genes are located

circuit complete path that charged particles flow through

circuit breaker special wire that heats up and turns off switch when excess current flows through an electrical circuit

class a category in the classification of living things, more general than an order, but more specific than a phylum

cleavage the first divisions of a fertilized egg

clone a genetically identical copy of an entire organism or of its cells or genes; cloning is the process of creating a clone

closed system an experiment in which all reactants and all products of a chemical reaction are accounted for

cogeneration use of waste energy from a process for another purpose, such as heating or generating electricity

colloid cloudy mixture in which tiny particles of one substance are held within another and particles cannot be separated out from the other substance

combustion chemical reaction that occurs when oxygen reacts with a substance to form a new substance and give off energy



comet a celestial body composed of dust and ice that orbits the Sun; it has a bright centre and long, faint tail that always points away from the Sun

commensalism the relationship between species in which one species benefits, and the other species neither benefits nor is harmed

community a group of populations of different species living in the same area

commutator split ring in a motor that breaks the flow of electricity for a moment and then reverses the connection of the coil

compound chemical combination of two or more elements in a specific ratio

condensation change of state from a gas to a liquid

conductivity ability of a substance to conduct electricity or heat

conductor a material that electric charge can move through easily

conservation of mass principle that matter is not created or destroyed in a chemical reaction; the mass of the products always equals the mass of the reactants

constellations groupings of stars that form patterns in the night sky (e.g., Ursa Major); officially, there are 88 constellations

continuous variation variation in a heritable characteristic that falls within a range, such as height

corrosion slow chemical change that occurs when oxygen in the air reacts with a metal

cross-fertilization the joining of a gamete from a pollen grain and a gamete from an ovule to form a zygote

cross-pollination the transfer of pollen from the anther of one plant to the stigma of another by wind, water, or animals

current electricity electricity that flows continuously

D

density amount of mass in a given volume of a substance

deposition change of state from a gas to a solid

diffusion process in which molecules move from an area of higher concentration to one of lower concentration

dilution mixing of a substance with air or water; this reduces the substance's concentration

direct current current that flows in only one direction

discrete variation variation in a heritable characteristic that has an either/or form, such as either being albino or not being albino

dispersion scattering of a substance away from its source

DNA deoxyribonucleic acid, genetic material found mainly in the nuclei of cells of living things

dominant trait the outward form observed when two opposite-acting alleles are inherited, e.g., long leg length in fruit flies; an offspring with one short-leg allele and one long-leg allele will grow long legs; the short-leg allele is recessive because it has no influence if a dominant, long-leg allele is present

Doppler effect the apparent change in frequency of sound, light, and other waves as the observer and the wave source move towards or away from each other; also referred to as "Doppler shift"

dry cell cell that has its electrolyte in the form of a paste, usually in a sealed case; the type of cell commonly used in portable devices such as flashlights

ductile description of a solid that can be stretched into a long wire

E

ecliptic the apparent path of the Sun and planets through the stars during the year, as viewed from Earth

ecosystem a particular environment where living things interact with other living things and non-living things

efficiency ratio of the useful energy output to the total energy input in a device or system; usually given as a percent

effluent wastewater released from a factory or sewage treatment plant

egg cell or ovum, a female sex cell

electrical current steady flow of charged particles



electrical discharge sudden transfer of electrical charge from one object to another, indicated by a spark

electrical energy energy of charged particles; transferred when electrons travel from place to place

electrochemical cell package of chemicals designed to produce small amounts of electricity; produces electricity from chemical reactions

electrochemistry study of chemical reactions involving electricity

electrode conductor through which electric current enters or leaves a device or material

electrolysis decomposition of a substance by an electric current

electrolyte liquid or paste that conducts electricity because it contains ions

electromagnet coil of insulated wire (usually wrapped around a soft iron core) that becomes a magnet when current flows through it

electromagnetic energy forms of radiated energy that travel at the speed of light (300 000 km/s), although they have different wavelengths and frequencies than light

electromagnetic induction generation of electric current in a conductor by a changing magnetic field

electromagnetic spectrum the complete range of wavelengths over which electromagnetic energy extends; includes gamma rays, X-rays, ultraviolet rays, visible light, infrared radiation, microwaves, and radio and television signals

electron invisible negatively charged particle that orbits the nucleus of an atom

electron shell orbit of electrons around the nucleus of an atom

electroplating use of electricity to coat a thin layer of metal onto an object

element pure substance that cannot be broken down into other substances; substance made up of only one type of atom

ellipse an oval formed around two foci (a circle is formed around one focus); the orbital paths of planets travelling around the Sun are ellipses

embryo an undeveloped organism in its beginning stages

endothermic reaction chemical reaction that absorbs energy

energy ability to do work

enhanced greenhouse effect greenhouse effect made greater by human activities, such as burning fossil fuels and clearing land, that add greenhouse gases to the atmosphere

enzyme catalyst involved in chemical reactions in living things

equinox either of the two times a year (once in spring and once in autumn) when the Sun crosses the equator and day and night are of equal length; usually on or about March 21 and September 23

evaporation change of state from a liquid to a gas

exothermic reaction chemical reaction that releases energy

ex-situ conservation the maintenance of organisms outside of their ecosystems or natural habitats; an endangered species maintained in a zoo is an example

extinction no longer in existence on the planet

extirpation extinction of an organism from a specific region

F

family (in biology) a category in the classification of living things, more general than a genus, but more specific than an order

family (in chemistry) vertical column of elements in the periodic table; elements in a family all have similar chemical properties; also called a group

fertilization the union of a female sex cell and a male sex cell

fertilizer substance that enriches soil so that plants will grow better

fly ash fine airborne ash produced by burning coal or other solid fuels

fossil fuel fuel formed from dead plants and animals; coal, oil, and natural gas

freezing change of state from a liquid to a solid

fuel cell primary cell that generates electricity directly from a chemical reaction with a fuel

fuse thin piece of metal that melts to break an electrical circuit when excess current flow occurs

G

- galaxy** a grouping of millions or billions of stars, gas, and dust, held together by gravity
- galvanometer** device for detecting and measuring small electric currents
- gamete** a sex cell, either female or male, that can unite with another to form a fertilized cell (zygote) that can develop into a new individual
- gene** a segment of DNA, located at one particular place on a chromosome, which determines a specific characteristic of an organism
- genetic code** arrangement of four chemical “letters” on a DNA molecule that can be arranged into “words” that form the instructions for making an organism
- genetic engineering** the intentional altering of the DNA of an organism or a population of organisms
- genetics** the study of how heritable characteristics are transmitted through generations of organisms
- genus** (plural, **genera**) a category in the classification of living things, more general than a species, but more specific than a family
- geocentric model** the Earth-centred model of the solar system originally proposed about 2000 years ago by the Greek philosopher Aristotle
- geothermal energy** energy derived from the internal heat of Earth
- global warming** increased average temperatures worldwide caused by the enhanced greenhouse effect
- gravity** the force of attraction between masses
- greenhouse gases** gases in Earth’s atmosphere that trap the heat that forms when radiant energy from the Sun reaches Earth’s surface; water vapour, carbon dioxide, methane, and nitrogen oxide are all greenhouse gases
- groundwater** the water that fills all the interconnected spaces in the soil
- group** vertical column of elements in the periodic table; elements in a family all have similar chemical properties; also called a family

H

- halogens** group 17 elements in the periodic table; the most reactive non-metals

heavy metals metals that have a density of 5 or higher (e.g., copper, zinc, lead, mercury, cadmium, nickel); heavy metals are one type of substance monitored to determine water quality

heliocentric model the Sun-centred model of the solar system first proposed by Polish astronomer Nicholas Copernicus in 1530

heritable characteristics characteristics that are transmitted from generation to generation, such as eye colour

Hubble Space Telescope (HST) one of the largest, most complex satellites ever built; launched in 1990 from the space shuttle *Discovery*, the HST (named for American astronomer Edwin P. Hubble) uses a series of mirrors to focus light from extremely distant objects

hybrid an organism produced by crossing two individuals purebred for different forms of a trait

hydrolysis reaction of a substance with water; “hydro” means water and “lysis” means break down

hydrolyze break down by water

I

in vitro fertilization fertilization that happens outside the body, usually in a Petri dish; used in livestock breeding

incomplete dominance a pattern of inheritance seen when two different alleles are present at the same gene location, but neither is dominant; for example, in pink snapdragons, both a white-flower allele and a red-flower allele are present and both influence flower colour

induction creation of electrical current

ingestion process by which we take food into our bodies

inorganic compounds compounds whose molecules do not contain carbon, also included as inorganic compounds are carbon dioxide, carbon monoxide, carbonates, and cyanides

in-situ conservation the maintenance of wild organisms within their functioning ecosystems

insulator substance that strongly resists the flow of electricity

integrated circuit circuit of inseparable, often microscopic, components formed on the surface of a single piece or chip of semiconductor crystal, usually silicon

interferometry a technique of combining the observations of two or more telescopes to produce images that have better resolution than what one telescope alone could produce

interspecies competition two or more species using the same limited resource

interstellar matter the gases and dust that exist in the space between stars

invertebrates animals without backbones

ion atom that has become electrically charged because it has lost or gained electrons; a positive ion is an atom that has lost one or more electrons; a negative ion is an atom that has gained one or more electrons

ionic compound pure substance formed when at least one metal and one non-metal combine

issue any subject of importance about which people have strong, conflicting points of view

K

kilowatt hour commonly used unit of electrical energy, equal to a power consumption of 1000 W for one hour

kingdom one of the five or six main categories in the current classification system of living things

L

law of conservation of energy fundamental principle that energy cannot be created or destroyed

LD50 lethal dose 50; amount of a substance that causes 50% of a group of test animals to die if they are given a specified dose of the substance all at once

leachate liquid that dissolves and carries substances as it passes through soil

light-year the distance that light travels in 1 year (approximately 9.5 trillion km); used to measure distances between stars and galaxies

lipids organic molecules made up of atoms of carbon, hydrogen, and oxygen (e.g., fats, oils and waxes); lipids are insoluble in water

load device in a circuit that converts electrical energy to another form of energy (e.g., a light bulb)

M

macronutrients nutrients that organisms need in relatively large amounts

main sequence on the Hertzsprung-Russell diagram, the stage in the life cycle of most stars during which they produce energy by converting hydrogen into helium; main sequence stars, including our Sun, are in a stable state

malleable description of a substance that can be pounded or rolled into sheets

mass number the sum of the number of protons and neutrons in an atom

massive star one of the two main types of stars that can form (the other being Sun-like stars, which are, by comparison, smaller in mass than massive stars)

Material Safety Data Sheet (MSDS) detailed information sheet about a potentially hazardous product, provided by the manufacturer; includes a detailed description of the product, precautions to take when using it, first aid treatments, spill procedures, and disposal advice

matter anything that has mass and occupies space

mechanical energy energy possessed by an object because of its motion or its potential to move; a thrown baseball has mechanical energy because of its movement and its potential to fall

mechanical mixture heterogeneous mixture; mixture in which the different substances that make up the mixture are visible

meiosis a type of cell division that produces four sex cells from one parent cell; each sex cell contains half the genetic material of the original cell

melting change of state from a solid to a liquid

metal shiny, malleable, ductile element that conducts electricity

metalloid element that has both metallic and non-metallic properties

meteor a meteoroid that enters Earth's atmosphere, where the heat of friction causes it to glow brightly



meteorite the remains of a meteor that do not burn up completely and so last long enough to hit Earth's surface

meteoroid a solid body, usually a fragment of rock or metal, travelling in space with no particular path

microcircuit circuit made up of miniaturized components, especially an integrated circuit

microgravity the condition in which the gravitational forces that act on a mass are greatly reduced

micronutrients nutrients that organisms need in only minor or trace amounts

millivoltmeter instrument used to measure small voltages

mitosis a type of cell division that produces two identical daughter cells from one parent cell

mixture combination of pure substances; unlike a compound, the components of a mixture do not combine chemically and are not always in the same ratio

molecular compound pure substance formed when non-metals combine

molecule group of atoms joined by covalent bonds

monitoring keeping track of something for a specific purpose; certain chemicals are monitored in the environment to ensure they do not exceed safe levels

multimeter meter that can measure voltage, current, or resistance in a circuit

mutualism the relationship between species in which both species benefit

N

natural selection a process in which the environment “selects” which individuals will survive and reproduce

nebulae vast clouds of gas (mostly hydrogen) and dust in space, where stars form; nebula (singular)

neutral (in chemistry) pH of 7; a neutral substance is neither an acid nor a base

neutral (in electricity) description of an object that has equal amounts of positive and negative charges

neutralization reaction between an acid and a base that produces water and a solid compound called a salt

neutron neutral particle in the nucleus of an atom

neutron star a small, super-dense remnant of a supernova

niche the role of an organism or species in an ecosystem, including where it lives, what it eats, how it reproduces, and how it interacts with other living and non-living things

nitrogen fixation process of changing free nitrogen so that the nitrogen atoms can combine with other elements to form compounds that organisms can use; carried out mainly by bacteria in the soil

nitrogen oxides $\text{NO}_{x(g)}$; major air pollutant; forms when nitrogen combines with oxygen as a result of fuel combustion; gives smog its characteristic brown colour; major source: motor vehicles

noble gases group 18 elements in the periodic table; the most stable and unreactive elements

non-heritable characteristics characteristics caused by the environment, such as tanned skin due to exposure to sunlight

non-metal dull, brittle element that does not conduct electricity

nonrenewable resource a resource, such as coal or natural gas, that cannot be replenished

nuclear fission splitting of atoms, which transforms them into lighter elements and releases large amounts of energy

nucleic acids largest and most complicated molecules found in all the cells of living things; the two most important are deoxyribonucleic acid (DNA) and ribonucleic acid (RNA), made up of phosphates, a simple sugar called ribose, and nitrogen-containing bases; play a major role in heredity and in controlling a cell's activities

nucleus positively charged centre of an atom; contains protons and neutrons

nutrients elements and compounds that organisms need for living, growing, and reproducing

O

ohm (Ω) the unit of resistance

Ohm's law law stating that, as long as the temperature remains constant, the resistance of a conductor remains constant, and the current is directly proportional to the voltage applied;
 $R = V/I$ or $I = V/R$ or $V = IR$

open system an experiment in which one or more products of a chemical reaction can escape

optimum amount amount of a substance that provides an organism with the best health

order a category in the classification of living things, more general than a family, but more specific than a class

organic compounds compounds whose molecules contain carbon (e.g., fossil fuels), except carbon dioxide, carbon monoxide, carbonates, and cyanides, which are inorganic compounds

osmosis type of diffusion in which water molecules move across a membrane from an area where there are more water molecules to an area where there are fewer water molecules

ova (singular, ovum) female sex cells

ovary female reproductive organ in which egg cells are produced; in plants, the structure contains the ovules

overspecialization species has adaptations for a small set of environmental conditions, which leaves it vulnerable to extinction

ovule sac containing the female sex cells (gametes) of a plant

ozone ($O_{3(g)}$) colourless, odourless gas; at ground level, it's a pollutant produced as a result of industrial processes and the use of motor vehicles; high in the atmosphere, it forms a layer protecting Earth from the Sun's ultraviolet radiation

ozone layer layer of ozone $O_{3(g)}$ in the atmosphere 15 to 50 km above Earth's surface; protects Earth's surface from the Sun's ultraviolet radiation

P

parallax the apparent shift in position of a nearby object against a distant background when the object is viewed from two different positions

parallel circuit circuit in which the current can flow in two or more paths

parasitism the relationship between species in which one species benefits and the other species is harmed

parts per million (ppm) measurement used to describe very small concentrations of chemicals; a solution having a concentration of 1 ppm has one part of solute per million parts of solution

period horizontal row of elements in the periodic table

periodic table a table in which the elements are organized by their physical and chemical properties

permeable description of a substance that contains connected pores; fluids can flow through a permeable substance

pest organism that harms people, crops, or structures

pesticide chemical used to kill pests

pH measure of the percent of hydrogen ions in a solution; most solutions have a pH in the range of 0 to 14; 0 is very acid, 14 is very basic, and 7 is neutral

photoconductor a resistor that becomes more conductive when exposed to light

photolysis breakdown of compounds by sunlight; "photo" means light and "lysis" means break down

phylum (plural, **phyla**) a major category in the classification of living things, more general than a class, but more specific than a kingdom

physical change change in the appearance or state of a substance that does not change the composition

physical property property that describes the physical appearance and composition of a substance

phytoremediation clean up of the environment using plants; "phyto-" means plant and "remediation" means cleanup; plants have been used to clean up metals, hydrocarbons, and other chemicals

pistil the female reproductive organ of a flower

pollen fine yellow powder on the anthers of flowers, consisting of grains that contain male sex cells (gametes)

pollination the transfer of pollen from anther to stigma

pollution any change in the environment that produces a condition that is harmful to living things

polyatomic ions group of atoms acting as one (for example, carbonate or CO_3^{2-})

population group of individuals of the same species living in an area

pores tiny spaces between soil grains or mineral grains in a rock; a substance with many pores is porous; if these pores are connected, a substance is permeable

potential difference change in the potential energy of electric charge compared to its potential energy at a reference point, such as the ground; voltage

power rate at which a device converts energy

primary cell cell that produces electricity by means of a chemical reaction that cannot be reversed

product new substance produced in a chemical reaction between reactants

property characteristic that describes a particular substance (e.g., colour, lustre, melting point, crystal shape, solubility, density)

protein organic compound made up of units called amino acids; protein molecules contain atoms of nitrogen, hydrogen, oxygen, and carbon

proton positively charged particle in the nucleus of an atom

protostar a contracting mass of gas in the first stage of a star's formation

pure substance substance made of only one kind of matter, which has a unique set of properties

purebred referring to a plant or animal that has ancestors all with the same form of a trait

R

radio telescope a telescope system that collects and analyzes radiation in the radio frequency range from stars and other bodies in space

reactant substance that reacts with another substance or substances in a chemical reaction to create new substances with different properties

recessive trait the outward form observed only when two same-acting, non-dominant alleles are inherited. Short leg length in fruit flies is an example. An offspring with two short-leg alleles will grow short legs. The short-leg allele is recessive; it has no influence if the dominant long-leg allele is present.

rechargeable cell cell that produces electricity by means of a chemical reaction that can be reversed by using an external source to run electricity back through the cell

red giant the stage in the life cycle of a Sun-like star during which the star increases in size and becomes very bright

red supergiant the stage in the life cycle of a massive star during which the star increases in size and becomes very bright

reflecting telescope a type of optical telescope that uses mirrors instead of lenses to gather and focus light

refracting telescope a type of optical telescope that uses two lenses to gather and focus light

renewable resource resource such as water or wind energy that is continually replenished and therefore can be used indefinitely

resistance measure of how difficult it is for electrons to flow through a substance; unit of measure is the ohm

resistor device having resistance to the passage of electrical current, often used to control current in a circuit

resource partitioning division of a resource among two or more coexisting species such that the niche of each species differs slightly

rheostat continuously variable resistor used to regulate electric current

S

salt compound produced in a neutralization reaction between an acid and a base

satellite a small body that orbits a larger one; satellites may be natural, such as a moon orbiting a planet, or artificial, such as a spacecraft put into orbit around Earth by humans for research or communication purposes

schematic or schematic diagram diagram using standardized symbols to show the components and connections in a circuit

secondary cell rechargeable cell

semiconductor a material, such as silicon or germanium, having a conductivity greater than an insulator but less than a good conductor

septic tank underground container where bacteria break down organic materials in sewage before they are moved out to the soil

series circuit circuit in which there is only a single pathway for the current so the same current passes through all the components

sewage wastewater containing dissolved and undissolved materials from your kitchen, bathroom, and laundry

sewage treatment plant building and grounds containing special equipment to treat wastes from homes, businesses, industries, and institutions so the wastes can be disposed of safely

sexual reproduction reproduction involving the exchange of genetic material between two individuals resulting in offspring that are genetically different from the parents

short circuit accidental low-resistance connection between two points in a circuit, often causing excess current to flow

solar wind streams of electrically charged particles discharged by the Sun in every direction; solar wind passes Earth at nearly 400 km/s

solstice either of two times in the year when the Sun reaches its highest or lowest point in the sky at noon; in the northern hemisphere, the summer solstice occurs near June 21 (longest day of the year) and the winter solstice occurs near December 21 (shortest day)

solubility mass of a substance that can dissolve in a given amount of solvent to form a saturated solution at a given temperature

solution homogeneous mixture; mixture of two or more pure substances that looks like one substance

“sour” gas natural gas that contains hydrogen sulfide

space junk refers to all the pieces of debris that have fallen off rockets, satellites, space shuttles, and space stations and remain floating in space

space probes unmanned satellites or remote-controlled “landers” used to explore areas or objects in space that are too difficult or dangerous to send humans to

species living things of the same kind that are able to reproduce successfully

spectrometer an instrument used by astronomers to observe and measure the spectrum of a star

sperm cell a male sex cell

spore a cell produced by asexual reproduction in certain organisms such as ferns, which can develop directly into an adult

spring acid shock concentration of acid that can dramatically lower the pH of the water in a pond, slough, lake, or river for a short period of time; occurs in areas where acid precipitation is a problem and acidic deposits build up in ice and snow in the winter; in spring, when the ice and snow melt, the acid meltwater flows into aquatic systems

stamen the male part of a flower

states of matter refers to the three common states in which matter can exist: solid, liquid, and gas

static electricity a stationary electric charge

stigma the female part of a flower, which receives pollen

storm sewers large pipes that carry runoff water from yards and streets directly (without treatment) into a river, lake, or ocean

style the structure that supports the stigma and connects it with the ovary of a plant

sublimation change of state from a solid to a gas or from a gas to a solid

subphylum (plural **subphyla**) a secondary category of a phylum in the classification of living things, which includes one or more classes

substrate surface on which an organism lives or moves

sulfur dioxide (SO_{2(g)}) forms when sulfur combines with oxygen in the air; major air pollutant that forms both smog and acid rain; major source: industrial processes

Sun-like stars one of the two main types of stars that can form (the other being massive stars, which are, by comparison, larger in mass than Sun-like stars)

superconductor perfect conductor; substance with no resistance to electron flow

supernova an enormous explosion that marks the death of a massive star

suspension cloudy mixture in which tiny particles of one substance are held within another, and the particles can be separated out

sustainability use of resources at a rate that can be maintained indefinitely without depleting the resources or harming the environment

symbiosis the relationship between two different species

T

thermal energy total kinetic energy of all the particles in a substance; the faster a particle moves the more kinetic energy it has; if you have two cups holding equal amounts of water, the one containing more thermal energy will feel warmer

thermocouple device consisting of two wires of different metals joined such that a voltage is produced between the ends in proportion to the difference in their temperatures

toxic poisonous

toxicity how poisonous a substance is

toxin poison; substance that produces serious health problems or death when introduced into an organism

trait a characteristic of an organism

transformer device that changes electricity at one voltage into electricity at a different voltage; a step-up transformer increases the voltage; a step-down transformer decreases the voltage

transistor device usually with three layers arranged such that a small voltage through the middle layer controls a current between the outer layers, allowing the device to act as a switch or amplifier

triangulation a method of indirectly measuring distance by creating an imaginary triangle between an observer and an object whose distance away is to be estimated

turbine machine that uses the flow of a fluid such as steam, water, or air to rotate a shaft

V

variability variations within a species

variable resistor resistor whose resistance can be changed by adjusting the portion of the resistor the current travels through

vegetative reproduction a type of asexual reproduction in plants that does not involve the formation of a seed

volt (V) the unit of voltage

voltage a measure of how much electrical energy a charged particle carries

voltage drop voltage across a resistor or other device in a circuit

voltmeter instrument for measuring potential difference in volts

W

water table top of the groundwater zone

watt (W) the unit of power, equal to one joule per second

wet cell electrochemical primary cell having a liquid electrolyte

white dwarf one of the latter stages in the life cycle of a Sun-like star during which the star collapses; white dwarfs are hot but very faint

WHMIS Workplace Hazardous Materials Information System; a system of easy-to-see warning symbols on hazardous materials

Z

zenith the highest point in the sky directly overhead

zygote a fertilized egg