

# Simple Solutions.



Minutes a Day—Mastery for a Lifetime!

## NextGen Science 8

### Glossary

Vowel Pronunciations				
a	e	i	o	u
at	end	it	hot	up
āpe	mē	īce	ōld	ūse
wigwām			sòng	rüle
âir			fòrk	pùll
			òil	tùrn, sùre
			out	
ə = unstressed sound, as in lava, given, pencil, wagon, virus, and idea				

**abiotic (adj)**

describes the nonliving parts of an ecosystem

**adaptation (n)**

an inherited trait that can end up helping organisms to survive

**air mass (n)**

a body of air that has a similar temperature, moisture content, and pressure

**air pressure (n)**

the weight of the atmosphere pressing down on Earth

**allele (n)**

a version of a gene

**alluvial fan (n)**

a cone-shaped feature created by the deposition of alluvium

**alluvium (n)**

deposits of sand, silt, clay, and gravel that are carried by rushing water and are deposited when the water reaches a flat plain

**amplitude (n)**

the distance from a wave's resting position to its peak disturbance

**analog (n)**

a chemical compound that is comparable to another substance

**analogous structures (n)**

body parts in different species that perform the same function but by very different structures

**angiosperm (n)**

a plant that produces flowers and fruit

**aquifer (n)**

a large underground body of water (reservoir)

**archaea (n)**

ancient single-celled bacteria that lived in extreme conditions

**artificial selection (n)**

the process by which humans use animal or plant breeding to selectively develop a particular trait

**asthenosphere (n)**

the soft layer of Earth's mantle just below the lithosphere; Earth's tectonic plates move on this layer

**atmospheric circulation (n)**

the movement of air around the globe; its movement distributes heat

**basin (n)**

a low-lying area on Earth's crust created by divergent plate movement

**biodiversity (n)**

biological diversity; can be related to differences in DNA, populations, or ecosystems

**biofuel (n)**

a type of fuel made from corn and other plant material

**biogas (n)**

a mixture of methane and carbon dioxide

**biological weathering (n)**

the breaking down of rock through the processes of living things

**biotic (adj)**

describes the living parts of an ecosystem

**bowl-shaped valley (n)**

a glacier carve-out having steep walls and flat bottoms

**carrying capacity (n)**

the number of organisms of a particular species that can be supported by an ecosystem

**cell cycle (n)**

the entire process of a cell's life

**cell membrane (n)**

a structure that encloses and supports a cell

**cell theory (n)**

a set of ideas stating that all living things are made of cells, the cell is the basic unit of life, and all new cells come from existing cells

**cell wall (n)**

an additional layer around the cell membrane of plant cells

**chemical weathering (n)**

a type of weathering that breaks down rock by changing the chemical composition of the rock

**chloroplast (n)**

the plant organelle that conducts photosynthesis; uses the sun's energy to make sugars

**chromosome (n)**

a structure that holds a cell's DNA

**cladogram (n)**

a diagram or model resembling a branching tree that shows evolutionary relationships between groups with common characteristics and possibly a common ancestor

**climate (n)**

the established weather patterns that occur in an area over a period of years

**climate change (n)**

a long-term change in weather patterns

**coal (n)**

a fossil fuel made primarily of carbon and hydrogen

**codon (n)**

a group of three bases, each one representing a particular amino acid

**cold front (n)**

a boundary in which the incoming air mass is denser and colder; a cold front replaces warmer air

**community (n)**

all the populations that interact in a shared habitat or living area

**comparative anatomy (n)**

the study of similarities and differences in the body structures of different organisms

**compression (n)**

the area in a longitudinal (compression) wave where the particles are closest together

**compression wave (n)**

a wave in which the disturbance moves parallel to the direction the wave is traveling

**continental drift (n)**

Wegener's theory that at some point in time all the continents were part of a single super-continent, called Pangea; the large landmass broke up and the continents drifted apart

**continental position (n)**

the position of an area on a continent relative to the ocean

**convection cell (n)**

matter that moves due to differences in temperature and density

**convection current (n)**

see convection cell

**convergent boundary (n)**

a boundary in Earth's surface where two or more plates move toward each other

**Coriolis effect (n)**

the perceived curve of objects moving North or South above Earth's surface; caused by Earth's rotation

**crest (n)**

the peak, or top, of a transverse wave

**critical mineral (n)**

a mineral that is important to society but may be limited in availability

**crossing over (n)**

the process by which homologous chromosomes become entangled and DNA is exchanged; occurs during meiosis

**crust (n)**

the thin, solid outermost layer of Earth; located just above the mantle

**cytokinesis (n)**

the process that divides a cell into two, creating daughter cells

**cytoplasm (n)**

a gelatin-like fluid that fills the inside of the cell

**cytoskeleton (n)**

a network of filaments in the cytoplasm that provides structure and support for the cell

**deep current (n)**

the stream-like movement of ocean water far below the surface that is driven by differences in density

**deforestation (n)**

the process of clearing a large area of land of trees; increases erosion of the soil

**delta (n)**

a low-lying area at the mouth (lower end) of a river, formed by eroded material that has been carried downstream

**deposition (n)**

the dumping of soil or rock in new locations by wind, water, glaciers, or other natural agents

**desertification (n)**

the process by which an area of fertile soil becomes dry and unable to retain moisture

**divergent boundary (n)**

a boundary in Earth's surface where two or more plates move away from each other

**Doppler radar (n)**

a radar-tracking system used to measure surface conditions on Earth, such as precipitation, storm-cloud rotation, and wind speed and direction

**drought (n)**

a long period of dry weather in which an area receives less precipitation than expected

**dune (n)**

a tall ridge of sand created by wind deposition; formed as wind blows sand particles in one direction until they meet an obstacle

**ecology (n)**

the study of the relationships between organisms and their environment

**ecosystem (n)**

all living and nonliving elements interacting in an area

**ecosystem service (n)**

the products and processes of ecosystems that benefit humans

**endoplasmic reticulum (n)**

a network of tube-like membranes in the cytoplasm of a cell that builds and transports chemical compounds through the cell

**energy (n)**

the ability to cause change

**erosion (n)**

the removal of soil and rock from its source

**eukaryote (n)**

an organism whose cells contain a nucleus

**explicit memory (n)**

a memory formed from a conscious or active attempt to remember, such as studying for a test

**exponential growth (n)**

growth that occurs when resources are abundant; continues with no limits; represented in graph form by a J-shaped curve

**extinct (adj)**

describes a species that has died out and has no more living members on Earth

**fault (n)**

a break in rock layers caused by Earth's internal forces

**fault-block mountains (n)**

a type of mountain chain formed from divergent boundaries; some rock moves upward and some rock moves downward

**flood (n)**

an overflow of water onto normally dry land

**floodplain (n)**

a mineral-rich area on either side of a river channel created by repeated flooding and receding waters

**folded mountains (n)**

mountains that form when two plates come together; Earth's surface is compressed and folded

**fossil record (n)**

a chart or table that ranks the relative age of fossils based on the layer of rock in which they're preserved

**frequency (n)**

the rate at which a vibration of a wave occurs; a measure of how many wave cycles occur during a certain unit of time

**front (n)**

the boundary where two air masses meet

**gamete (n)**

the reproductive cell that contains one set of chromosomes

**gene therapy (n)**

a treatment that involves introducing DNA into a patient to treat a genetic disease

**genetically modified organism (n)**

a plant or animal developed to resist pests or tolerate herbicides; also referred to as a GMO

**genetic disorder (n)**

a disease caused by a change in DNA

**genetic engineering (n)**

genetic modification; a process that inserts genes into an organism that were not originally part of the organism's DNA

**genetic variation (n)**

the differences in the DNA of individuals within a population

**geologic column (n)**

a chart or diagram used by geologists to determine the relative age of rock layers and fossils

**geologic time scale (n)**

a timetable that describes the order and duration of major events during Earth's history—when living things first came into existence and when they went extinct; a timetable that includes major events in Earth's development

**geology (n)**

the study of how Earth formed, how it has changed, and the materials that make up Earth

**glacier (n)**

a large frozen body of accumulated snow, ice, rock, and sediment that slowly moves, or spreads out, over land

**global warming (n)**

the rise in temperatures near Earth's surface over the past one to two centuries

**global winds (n)**

the large-scale wind patterns created by convection cells and the Coriolis effect; examples are westerlies, polar easterlies, and trade winds

**Golgi apparatus (n)**

a cell structure that modifies proteins, lipids, and other cell material

**greenhouse effect (n)**

the process by which gases in the atmosphere trap reflected energy from the sun and keep Earth warm

**greenhouse gas (n)**

a type of gas that keeps Earth's temperature from being too hot or too cold; examples are methane and carbon dioxide; an excess of greenhouse gases will make Earth too warm

**ground-level ozone (n)**

a pollutant created when products of car and factory exhaust are exposed to sunlight

**groundwater (n)**

the water stored in openings beneath Earth's surface

**Gulf Stream (n)**

a strong ocean current that distributes energy from the Gulf of Mexico across the Atlantic Ocean

**gymnosperm (n)**

a cone-bearing plant; conifers such as fir and pine trees

**habitat (n)**

the natural location and environment where an organism or population lives

**heat capacity (n)**

the amount of energy required to change the temperature of an object or substance.

**hertz (n)**

the unit used to measure the frequency of a wave; 1 Hz means 1 wave per second

**homologous pair (n)**

one pair of matching chromosomes

**homologous structures (n)**

similar anatomical structures possessed by different species; they are evidence of a common ancestor

**hot spot (n)**

an area, away from plate boundaries, where hot magma builds up beneath Earth's surface

**humidity (n)**

the amount of moisture in the air

**hurricane (n)**

a tropical storm with wind speeds greater than 120 km/hr

**ice age (n)**

a period when Earth's is much colder, and ice sheets cover huge areas of land

**implicit memory (n)**

an automatic memory; for example, how to ride a bike or tie shoes

**independent assortment (n)**

the random mixing of chromosomes during meiosis

**indoor air pollution (n)**

poor or toxic air in an enclosed environment, such as fumes from paint or cleaners

**inner core (n)**

the center of a planet; Earth's inner core is dense and made of solid iron

**insulin (n)**

a hormone that helps move glucose molecules into the body's cells; aids in storing glucose

**interglacial (n)**

(in tər glā shəl) the warmer period that occurs between ice ages

**interphase (n)**

a cell's growing phase; produces all the molecules the cell needs to function

**jet stream (n)**

a narrow band of high-speed winds that moves from west to east across the globe

**keystone species (n)**

an organism that occupies a niche essential to the health and balance of an ecosystem

**kinetic energy (n)**

energy of motion

**leeward (adj)**

describes the side of an object sheltered from the wind

**lithosphere (n)**

the solid, outer layer of Earth that consists of the crust and the rigid upper part of the mantle

**loess (n)**

a mineral-rich, yellowish-gray clay and silt deposited by the wind

**logistic growth (n)**

the growth pattern of an ecosystem that has reached carrying capacity; represented on a graph as an S-shaped curve



**long-term memory (n)**

a type of memory that is retained for a long time; formed when the brain combines a new stimulus with existing neurons, forming a network

**lysosome (n)**

a vesicle in the cell that digests and breaks down materials

**magma chamber (n)**

an underground space that stores a pool of magma

**mantle (n)**

the layer of rock between Earth's core and crust; Earth's widest layer

**mass wasting (n)**

the downhill movement of soil, loose rock, mud, and debris controlled by gravity

**meander (n)**

a curved section of river created by a combination of erosion and deposition

**mechanical weathering (n)**

weathering that breaks down rock physically but does not change the composition of the rock

**meiosis (n)**

the process of making reproductive cells known as gametes

**memory (n)**

the process the brain uses to store information

**meteorologist (n)**

a scientist who studies weather and prepares weather forecasts

**Mid-Atlantic Ridge (n)**

a volcanic mountain system that runs from the Arctic Ocean to the southern tip of Africa; the ridge sits halfway between the continents on either side of it

**mining (n)**

a process by which valuable minerals or other geological materials are extracted from Earth's crust

**mitochondria (n)**

organelles that break down sugars and release the energy a cell needs

**mitosis (n)**

the process of cell division

**moraine (n)**

a large pile of till left behind by a glacier; forms along the edges of a glacier

**mountain breeze (n)**

the airflow created by uneven heating of mountain and valley landforms; often creates fog

**mutation (n)**

a change to a cell's DNA

**natural selection (n)**

a process through which populations pass favorable traits to their offspring; favorable traits are determined by the environment

**nerve (n)**

a bundle of neuron cells that work together with sensory receptors to connect the body with the environment

**niche (n)**

the way an organism interacts with its ecosystem

**nonvascular plant (n)**

a plant with no veins to transport water and nutrients; such plants are short and live near water

**nucleus (n)**

a cell structure that contains an organism's DNA and controls the activity of the cell

**ocean current (n)**

a stream of water that moves in a certain direction; a pattern of waterflow from warmer areas to colder

**oil reservoir (n)**

a supply of petroleum collected in porous rock

**ore (n)**

a concentrated, naturally occurring deposit of an element or compound

**outer core (n)**

a part of Earth's interior, deep inside; made of a liquid mixture of iron and nickel

**peat (n)**

a spongy, soggy material that forms from plant matter that has not decomposed completely; coal comes from peat

**petroleum (n)**

a natural resource that took millions of years to form; a mixture of organic and nonorganic materials

**plate (n)**

a large section of Earth's lithosphere that can move; also called a tectonic plate

**plate boundary (n)**

the intersection (area) where two plates meet

**plate tectonics (n)**

the changes to Earth's surface made by moving plates

**polar easterlies (n)**

a wind pattern that moves from east to west near the polar regions

**polar zone (n)**

the climate zone that extends north and south from the temperate zones to the poles

**population (n)**

all the members of the same species living in an ecosystem

**prokaryote (n)**

an single-celled microscopic organism whose cells do not have a nucleus

**protist (n)**

a simple eukaryote

**a radiosonde (n)**

meteorological instrument that attaches to a weather balloon and is sent into the lower atmosphere to collect data on air pressure, temperature, humidity, wind speed, and wind direction

**rain shadow (n)**

the dry or desert-like area on the leeward side of a mountain

**rarefaction (n)**

the area in a longitudinal (compression) wave where the particles are spread out

**reflex (n)**

the body's automatic response to a stimulus

**replication (n)**

the process of making new DNA

**resting position (n)**

the point halfway between the crest and trough of a wave; the undisturbed position of particles when they are not oscillating

**ribosome (n)**

an organelle that uses RNA to make proteins

**ridge (n)**

that new crust that forms at a divergent plate boundary as a result of rising magma

**rift valley (n)**

a valley formed by tectonic activity when plates pull away from each other

**river canyon (n)**

a deep valley with steep sides created by erosion

**root (n)**

the underground part of a plant that stabilizes the plant and brings in water and nutrients; alternately, the first node on a cladogram

**salinization (n)**

the process by which water-soluble salts build up in the soil; affects the ability of crops to take up water

**saltation (n)**

the process where medium and large sand and soil particles make small leaps across a surface

**seafloor spreading (n)**

a geologic process in which large pieces of Earth's lithosphere split apart from each other

**seam (n)**

a deposit of coal that developed over millions of years

**sediment (n)**

particles of sand and tiny bits of rock

**seed (n)**

the reproductive unit of a flowering plant that provides protection and nutrients for the young plant

**selective breeding (n)**

the process by which humans breed parents with the characteristics they want to see in the offspring; produces offspring with desirable traits

**sensory memory (n)**

the first stage of memory during which the body responds to a stimulus and briefly processes it

**sensory receptor (n)**

a nerve-ending that responds to different types of stimuli

**shear (n)**

the stress created at transform boundaries where plates move laterally, or sideways, against each other

**short-term memory (n)**

the recall of sensory information when the mind pays attention

**slab pull (n)**

the force that occurs as a subducting plate sinks into the hot mantle beneath it and pulls the rest of the plate with it

**soil fertility (n)**

the ability of soil to grow plants by providing the minerals and water that plants need

**speciation (n)**

the formation of new species over time

**stalactite (n)**

a rock formation made of mineral deposits; a sharp, icicle-shaped feature that forms as water drips down from a tiny opening in the ceiling of a cave

**stalagmite (n)**

a rock formation made of mineral deposits; a cone-shaped feature that forms as water drips onto the floor of a cave

**stationary front (n)**

a boundary where two fronts meet, and neither air mass has enough energy to push the other aside

**striation (n)**

a scratch or groove carved into the land by a flowing glacier

**subduction (n)**

the process that occurs when converging plates collide, and one of the plates is forced down into Earth's mantle

**substitution (n)**

a DNA replication error in which one base is incorrectly substituted for another base

**surface creep (n)**

the process by which the wind moves heavy soil particles

**surface current (n)**

a large-scale water pattern shaped by global winds, the continents, and Earth's rotation

**suspension (n)**

the movement of fine particles of silt and clay over long distances, often for long periods of time

**temperate zone (n)**

the climate zone that extends from the tropical zone to the polar regions (polar zones)

**tension (n)**

a stress created when rock stretches in two opposite directions; often occurs at divergent boundaries

**till (n)**

jumble of rock in all shapes and sizes left behind by a retreating glacier

**timescale (n)**

measures how slowly or quickly it takes for something to occur

**tornado (n)**

a rotating column of air that forms at the bottom of a storm cloud

**trade winds (n)**

the global winds that travel from east to west; located between the equator and about 30° N and S

**transcription (n)**

the process of creating RNA from DNA

**transform boundary (n)**

a boundary in Earth's surface where plates slide past each other in opposite directions

**translation (n)**

the process of making proteins from RNA

**transverse wave (n)**

a wave in which the disturbance moves perpendicular to the direction of the wave

**trap (n)**

a layer of nonporous rock in Earth's crust that substances such as petroleum cannot pass through

**tropical cyclone (n)**

a rotating system that forms near the equator and is characterized by strong winds and heavy rain

**tropical zone (n)**

the region that surrounds the equator, extending from 23.27° N latitude to 23.27° S latitude

**trough (n)**

the valley, or lowest part, of a transverse wave

**tsunami (n)**

a series of large and powerful ocean waves caused by a sudden displacement of water

**Type 1 diabetes (n)**

a condition in which the pancreas makes little or no insulin; therefore the body cannot process blood glucose

**upwelling (n)**

a process by which deep, cold ocean water rises, bringing nutrients from the depths of the ocean to the surface

**vacuole (n)**

a small sac, found in a cell, that stores material such as food, water, and waste

**valley breeze (n)**

a local wind that blows up from a valley, bringing cool air, and often, afternoon rains

**vascular plant (n)**

a plant with veins that allow water and nutrients to travel through the plant

**vertical farming (n)**

the practice of growing crops in vertically stacked layers

**vesicle (n)**

a small sac, within a cell, that carries materials out of a cell or to another part of the same cell

**volcano (n)**

an opening or crack in Earth's crust where magma, hot ash, and gas exit

**warm front (n)**

a boundary in which the incoming air mass is less dense and warmer than the air it is replacing

**waterfall (n)**

a feature with water that cascades from a height over a ledge or cliff

**water reclamation (n)**

water that is used more than once before returning to the water cycle; wastewater that has been treated and is reused in irrigation and industry

**wave (n)**

a disturbance that transfers energy from one place to another

**wavelength (n)**

the length of one wave cycle; on a transverse wave, it is the distance from crest to crest or trough to trough

**weathering (n)**

the process that breaks down rock into smaller and smaller pieces

**weather satellite (n)**

a meteorological instrument that sits high in the atmosphere and uses electromagnetic radiation to scan large areas of Earth's surface

**weather station (n)**

a collection of scientific equipment used to measure atmospheric conditions, such as temperature and air pressure, on Earth

**westerlies (n)**

global winds that curve from west to east; located between about 30° and 60° N and S

**windward (n)**

the side of an object facing the wind

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