

Simple Solutions.



Minutes a Day—Mastery for a Lifetime!

NextGen Science 7

Glossary and Index

Vowel Pronunciations				
a	e	i	o	u
at	end	it	hot	up
āpe	mē	īce	ōld	ūse
wigwām			sōng	rūle
âir			fōrk	pūll
			ōil	tūrn, sūre
			out	
ə = unstressed sound, as in lava, given, pencil, wagon, virus, and idea				

absorbed (v)

taken in

acoustics (n)

the science of controlling sound

active transport (n)

a way that particles can move through the cell membrane—from low concentration to high concentration; requires energy from the cell

aerobic respiration (n)

the process of breaking down glucose; requires oxygen

allele (n)

a gene form

amino acid (n)

a small molecule that contains carbon, oxygen, and nitrogen

amplitude (n)

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

anaerobic respiration (n)

the process of breaking down glucose; does not require oxygen

analog (adj)

having a continuous range of possible values; a type of instrument with dials or needles that portrays such values

aquifer (n)

an area where groundwater collects; a large underground body of water (reservoir)

asexual reproduction (n)

a way of creating offspring that includes only one parent

atom (n)

the building block of all matter

binary code (n)

a type of communication using two numbers, 0 and 1

biofuel (n)

a fuel made from recently harvested plants or algae or from animal waste

carbohydrate (n)

a type of biomolecule used for energy

carbon cycle (n)

the movement of carbon atoms between living things and the environment

cell cycle (n)

the entire process of a cell's life

cell membrane (n)

the flexible covering that encloses every cell; it separates the cell from the outside environment

cell theory (n)

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

cellular respiration (n)

the process of breaking down glucose and releasing energy

cell wall (n)

an additional layer around the cell membrane; found only in plant cells

cement (n)

a synthetic material; a composite in concrete that binds the components together

cementation (n)

one of the ways that sedimentary rock forms

chemical bond (n)

a force that holds atoms together

chemical change (n)

a rearrangement of atoms that forms a different substance from the original; occurs during burning, rusting, and baking

chemical reaction (n)

another name for a chemical change; it happens, for example, during decaying and digesting

chloroplast (n)

a plant organelle that captures the sun's energy; used to make sugars

chromosome (n)

a DNA structure that contains an organism's genes

circuit (n)

a loop in an electric wire that carries negatively charged particles; creates an electric current

combustion (n)

a process of burning

compaction (n)

the pressing down of layers of sediment, one on top of the other; pulled by gravity

compound (n)

two or more atoms bonded together

compression (n)

the area in a 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

concave (adj)

rounded inward like the inside of a bowl; describes a lens that is thicker at the edge and thinner in the center; one or both surfaces curve inward, causing any light going through the lens to spread outward

concrete (n)

a synthetic construction material used in bridges, stadiums, buildings, etc.

condensation (n)

a change in the state of matter from vapor to liquid

conduction (n)

the transfer of thermal energy through the collision of particles

connective tissue (n)

provides structure and support for organs and other tissues; examples are blood, bones, tendons, and ligaments

contact force (n)

a push or a pull that acts between two objects that touch each other

convection (n)

the transfer of thermal energy in which heated fluid rises and cooler fluid descends

convex (adj)

rounded outward like the outside of a sphere; describes a lens that is thinner at the edges and thicker in the center; one or both surfaces curve outward, causing any light going through the lens to bend inward

crest (n)

the peak or high point of a wave

crystal (n)

a mineral with atoms arranged in a repeating structure

crystallization (n)

the process of crystal formation

current electricity (n)

the flow of negatively charged particles

cytokinesis (n)

the process of cell division in which the cell creates two daughter cells

cytoplasm (n)

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

cytoskeleton (n)

a network of protein filaments throughout the cytoplasm; helps support the cell

decibel (n)

a unit of measure of sound

decomposer (n)

an organism that gets energy and nutrients by breaking down dead organisms and animal waste

decomposition (n)

the breaking down of organic compounds; produces carbon dioxide

denitrification (n)

the process of converting nitrates into nitrogen gas; performed by special bacteria

dermal tissue (n)

the covering that protects the outer surface of a plant

differentiate (v)

to split into multiple cells to perform specific functions

diffusion (n)

the process of spreading out; particles move from an area of high concentration to an area of low concentration

digestion (n)

a process of breaking down food molecules; changes food into something an animal can use

digital (adj)

having a limited range of possible values

discrete (adj)

separate and distinct

DNA (n)

the material in every living cell that carries information about how it will look and act

dominant allele (n)

a gene that is prominent and influences an organism's traits

electric current (n)

the flow of negatively charged particles

electromagnet (n)

an object that attracts or repels only while a current is passed through it

electromagnetic force (n)

a noncontact force; the energy between charged particles

electromagnetic wave (n)

a wave carried by disturbances in electric and magnetic fields

element (n)

a substance made of a single type of atom

endothermic (n)

refers to a process in which energy is taken in

energy (n)

the ability to cause change

energy pyramid (n)

a model that shows the loss of energy in an ecosystem

epithelial tissue (n)

the lining on the body and organ surfaces

eukaryote (n)

an organism with cells that have nuclei

evaporation (n)

the process of a liquid turning to vapor

exocytosis (n)

the way cells rid themselves of waste

exothermic (adj)

refers to a process in which energy is released

extensive property (n)

properties of matter such as mass, length, and volume; extensive properties change when the size of the sample changes

extrusive igneous rock (n)

the hardened magma on Earth's surface

fermentation (n)

the breaking down of starch molecules into sugar and ethanol; a part of anaerobic respiration

field (n)

an invisible area where energy is stored

food chain (n)

a model that illustrates how energy flow in an ecosystem

food web (n)

a model that shows the transfer of energy and matter in an ecosystem; a food web contains multiple food chains

force (n)

a push or a pull; it has magnitude and direction

freezing (n)

the process of changing the state of matter from liquid to solid

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

gene (n)

a section of DNA; a factor that controls each trait in an organism

generator (n)

an apparatus that uses changing magnetic fields to produce electricity

genotype (n)

an organism's alleles

Golgi apparatus (n)

a structure that makes changes to proteins, lipids, and other material

gravitational field (n)

an invisible area that attracts objects, even when objects are not touching

gravity (n)

a force of attraction

ground tissue (n)

a type of tissue that makes up the bulk of a plant; one part holds the plant upright, while another is responsible for photosynthesis and storage

heat (n)

the transfer of thermal energy

heat capacity (n)

the amount of thermal energy required to change the temperature of a substance

heredity (n)

the passing on of traits from parent to offspring

hydrosphere (n)

the system that includes all of Earth's water

igneous rock (n)

hardened and crystallized magma

infrasonic sound (n)

a very low-frequency sound; sound that has a lower frequency than humans can hear

inorganic (adj)

compounds related to things that are not living

insoluble (adj)

not able to be dissolved in a certain solvent

interphase (n)

the growing phase of a cell

intensive property (n)

properties of matter such as color, odor, density, melting and boiling point, solubility, and magnetism; intensive properties do not change when the size of a sample changes

intrusive igneous rock (n)

the hardened magma beneath Earth's surface

kinetic energy (n)

the energy of motion

law of conservation of energy (n)

the principle that states that energy cannot be created or destroyed

law of conservation of mass (n)

the principle that states matter is neither created nor destroyed; also known as the law of conservation of matter

light wave (n)

a wave carried by disturbances in electric and magnetic fields

lipid (n)

a macromolecule used for long-term storage

lysosome (n)

a vesicle that digests and breaks down materials

macromolecule (n)

a large organic molecule composed of many atoms; all living things are made of these

magma (n)

the melted rock beneath Earth's crust

magnetic field (n)

a force field surrounding every magnet

magnetism (n)

a type of electromagnetic force caused by negatively charged particles

mechanical wave (n)

a wave that transfers energy through oscillating particles of matter

medium (n)

any substance that waves pass through (may be solid, liquid, or gas)

meristem cell (n)

the cell of special tissue in plants that creates new cells

metamorphic rock (n)

rock that has changed from one form to another; created by newly formed minerals

micronutrient (n)

elements that living things need but only in small amounts, such as nitrogen, phosphorous, and sulfur

mineral (n)

inorganic substance that has a crystalline structure

mitochondria (n)

an organelle that breaks down sugars and releases energy the cell needs

mitosis (n)

the part of the cell cycle when the cell divides

molecule (n)

a group of two or more atoms that act as a single unit

monomer (n)

a small organic molecule

monosaccharide (n)

a single carbohydrate molecule (sugar)

muscle tissue (n)

a group of cells that can contract and expand

nervous tissue (n)

a group of nerve cells, responsible for communication in the body

newton (n)

a unit of measure; the magnitude of a force is measured this way

nitrogen cycle (n)

the movement of nitrogen atoms between living and nonliving elements of the environment

nitrogen fixation (n)

the conversion of nitrogen into a form that living things can use

noise (n)

the changes to a wave caused by obstacles encountered by the wave

noncontact force (n)

a push or pull that acts between two objects that do not touch

nucleic acid (n)

a molecule that carries an organism's genes

nucleotide (n)

a molecule made from a sugar, phosphate group, and a base; used to make nucleic acid

nucleus (n)

a membrane-bound organelle that contains a cell's DNA

opaque (adj)

describes an object that blocks all light from passing through

organ (n)

a group of tissues working together to perform a specific function

organelle (n)

a cell structure (inside the cell) that carries out specific tasks

organ system (n)

a group of organs working together; an example is the circulatory system

oscillate (v)

to vibrate back and forth or up and down around a resting position

osmosis (n)

the movement of water by diffusion

passive transport (n)

a way particles move into or out of a cell; no energy is needed

percolation (n)

the seeping of water into and through soil

petroleum (n)

a mixture of molecules called hydrocarbons; a fossil fuel used to make synthetic products

phenotype (n)

an organism's visible characteristics

phospholipid bilayer (n)

a component in the cell membrane; a double layer of lipids

photosynthesis (n)

the process of converting the sun's energy into a form living things can use

physical change (n)

an alteration of the form or appearance of a substance without changing its identity

pitch (n)

how high or low a sound is; a wave property that is related to frequency

polyester (n)

a fabric of strong synthetic fiber

polymer (n)

a large macromolecule; made of many monomers bonded together

polysaccharide (n)

a large molecule used to store energy

potential energy (n)

the energy stored in fields; related to the position of an object in a force field

precipitation (n)

droplets of water that falls from the atmosphere: rain, sleet, snow

product (n)

the atoms or molecules present at the end of a chemical reaction; the substances produced by a chemical reaction

prokaryote (n)

mostly unicellular organisms that do not contain a nucleus

protein (n)

a macromolecule responsible for almost every job a cell does; how a cell looks and works

pump (n)

a cell channel that forces particles into a concentrated area during active transport

radiation (n)

the transfer of thermal energy by waves

rarefaction (n)

the area in a compression wave where the particles are spread out

reactant (n)

the atoms or molecules present at the beginning of a chemical reaction; the starting substances in a chemical reaction

recessive allele (n)

the nondominant gene form; it is masked by the dominant gene

reflected (v)

bounced back

refraction (n)

the bending of light as light waves move from a medium of one density to a medium of another density, such as from water to air

replication (n)

the process of making new DNA

reservoir (n)

the place where a resource is stored

resting position (n)

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

ribosome (n)

an organelle that uses RNA to make proteins

rock (n)

a naturally occurring solid

rock cycle (n)

the processes that change rock from one form to another

runoff (n)

water that drains from Earth's surface into a body of water

sampling (n)

the process of taking measurements at regular intervals from a larger population of data

sediment (n)

tiny bits of rock

sedimentary rock (n)

a solid formed from bits of rock that settle and are compacted by gravity and the weight of layers of other rock

sexual reproduction (n)

the production of offspring through a process that requires two parents

solute (n)

in a solution, the substance being dissolved

solvent (n)

in a solution, the substance doing the dissolving

spring (n)

an opening in the ground from which water flows

static electricity (n)

a buildup of negatively charged particles

stem cell (n)

the first cell formed from another cell; stem cells produce all other cells

sublimation (n)

the process whereby a substance goes directly from solid to gas without ever being a liquid

sublime (v)

to cause molecules on the surface of ice or snow turn to water vapor and enter the atmosphere

sugar (n)

another name for monosaccharides; used for energy

synthetic (adj)

produced by chemical processes

taxol (n)

the name given to a synthetic molecule from the Pacific yew tree; proved to be an effective cancer treatment

temperature (n)

the measure of average kinetic energy of the particles in a substance

thermal energy (n)

the sum of the energy of a collection of particles; the amount is related to the temperature of the substance, its mass, and the state of matter

tissue (n)

a group of cells that work together to perform a specific function

trait (n)

a specific characteristic of an organism

translucent (adj)

describes an object or substance that allows only some light to pass through; objects behind are visible but not clear

transmitted (v)

passes through matter

transparent (adj)

describes an object or substance that allows light to pass through; objects behind are clearly visible

transpiration (n)

the release of water vapor into the atmosphere by plants

transverse wave (n)

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

trophic level (n)

a step in a food chain

trough (n)

the valley, or lowest part, of a wave

ultrasonic sound (n)

a very high-frequency sound; a sound that has a higher frequency than humans can hear

vacuole (n)

a cell part that stores food, water, and waste

vacuum (n)

a space with no particles or matter

vascular tissue (n)

tissue that transports water and nutrients throughout a plant

vesicle (n)

a sac inside a cell, formed from a membrane; carries proteins or lipids inside the cell or away from the cell

water cycle (n)

the continual process of water changing from one state to another and moving from place to place

wave (n)

a disturbance that transfers energy from one place to another

wavelength (n)

the distance from crest to crest or trough to trough of a wave

weight (n)

the force acting on an object due to gravity

Index

A

absorbed 80
acoustics 84
active transport 148
aerobic respiration 184
allele 204
amino acid 136
amplitude 74
anaerobic respiration 184
analog 114
aquifer 234
asexual reproduction 198
atom 44

B

binary code 120
biofuel 58

C

carbohydrate 136
carbon cycle 194
cell cycle 158
cell membrane 140
cell theory 138
cellular respiration 180, 194
cell wall 140
cement 60
cementation 224
chemical bond 44
chemical change 46
chemical reaction 46, 48
chloroplast 154
chromosome 150
circuit 8
combustion 194
compaction 224
compound 45
current electricity 8
compression 70
compression wave 70
concave 108
concrete 60
condensation 236
conduction 36
connective tissue 166
contact force 4
convection 36
convex 108
crest 70
crystal 44, 220
crystallization 220
current electricity 8
cytokinesis 158

cytoplasm 140
cytoskeleton 140

D

decibel 78
decomposer 188
decomposition 194, 238
denitrification 196
dermal tissue 168
differentiate 160
diffusion 144
digestion 194
digital 114
discrete 114
DNA 150
dominant allele 204

E

electric current 8
electromagnet 14
electromagnetic force 6
electromagnetic wave 68
element 44
endocytosis 148
endoplasmic reticulum 154
endothermic 54
energy 20
energy pyramid 190
epithelial tissue 166
eukaryote 150
evaporation 236
exocytosis 148
extensive property 49
exothermic 54
extrusive igneous rock 228

F

fermentation 184
field 4
food chain 188
food web 189
force 4
freezing 236
frequency 74

G

gene 150, 204
generator 10
genotype 206
Golgi apparatus 156
gravitational field 16
gravity 16
ground tissue 168

H

heat 35
heat capacity 59
heredity 200
hydrosphere 234

I

igneous rock 228
infrasonic sound 86
inorganic 220
insoluble 47
interphase 158
intensive property 49
intrusive igneous rock 228

K

kinetic energy 20

L

law of conservation of energy 24
law of conservation of mass 48
light wave 68
lipid 137
lysosome 156

M

macromolecule 136
magma 228
magnetic field 6
magnetism 6
mechanical wave 68
medium 76
meristem cell 164
metamorphic rock 226
micronutrient 186
mineral 220
mitochondria 154
mitosis 158
molecule 44
monomer 136
monosaccharide 136
muscle tissue 166

N

nervous tissue 166
newton 4
nitrogen cycle 196
nitrogen fixation 196
noise 116
noncontact force 4
nucleic acid 136

nucleotide 136
nucleus 150, 154

O

opaque 98
organ 170
organelle 154
organ system 170
oscillate 68
osmosis 146

P

passive transport 146
percolation 236
petroleum 66
phenotype 206
phospholipid bilayer 140
photosynthesis 178
physical change 46
pitch 76
polyester 66
polymer 136
polysaccharide 136
potential energy 20
precipitation 236
product 48
prokaryote 150
protein 136
pump 148

R

radiation 36
rarefaction 70
reactant 48
recessive allele 204
reflected 80
refraction 104
replication 158
reservoir 234
resting position 74
ribosome 154
rock 220
rock cycle 230
runoff 236

S

sampling 118
sediment 224
sedimentary rock 224
sexual reproduction 198
solute 47
solvent 47
spring 236
static electricity 8
stem cell 160
sublimation 238
sublime 238

sugar 136
synthetic 58

T

taxol 64
temperature 34
thermal conductor 37
thermal insulator 37
thermal energy 34
tissue 166
trait 200
translucent 98
transmitted 80
transparent 98
transpiration 238
transverse wave 70
trophic level 188
trough 70

U

ultrasonic sound 86

V

vacuole 156
vacuum 38
vascular tissue 168
vesicle 156

W

water cycle 236
wave 68
wavelength 74
weight 18