

Topic: Cells to Systems

Days: 15

Subject(s): Science

Grade(s): 7th

Key Learning:

The parts of a cell have specific functions. Cells are the basic units of life.



Unit Essential Question(s):

What are the levels of organization and specific structures which underlie larger systems, enabling the system to function as a whole?



Concept:

Structure and Function3.1.7.A, 3.1.7.B, 3.3.7.B

Concept:

Levels of Organization3.1.7.A

Concept:

Cell Cycle3.1.7.B, 4.6.7.B

Lesson Essential Question(s):

Within a cell, what are the specialized parts and their specific functions? (A)

How do different types of cells carry out their life functions? (A)

What roles do osmosis and diffusion have within cells? (A)

Lesson Essential Question(s):

What are the five levels of organization? (A)

Lesson Essential Question(s):

What is mitosis and why do cells need it? (ET)



Vocabulary:

Homeostasis, Cell Membrane, Cell Wall, Chloroplast, Cytoplasm, Endoplasmic Reticulum, Golgi Body, Mitochondrion, Nucleus, Organelle, Ribosome, Active Transport, Passive transport, Osmosis, Diffusion, Enzyme, Equilibrium, Fermentation, Metabolism, Mixture, Photosynthesis, Respiration

Vocabulary:

Cell, Organism, Organ, Tissue

Vocabulary:

Topic: Cells to Systems

Subject(s): Science

Days: 15

Grade(s): 7th

Concept:

Cell Theory

3.3.7.B, 3.8.7.B



Lesson Essential Question(s):

What are the three parts of the cell theory? (A)



Vocabulary:

Cell Theory

Additional Information:

Attached Document(s):

Vocab Report for Topic: Cells to Systems

Subject(s): Science

Days: 15

Grade(s): 7th

Concept: Structure and Function

Homeostasis -

regulation of an organisms internal life-maintain conditions

Cell Membrane -

protective outer covering of all cells that regulates the interaction between the cell and the environment

Cell Wall -

rigid structure that encloses, supports, and protects the cells of plants, algae, fungi, and most bacteria

Chloroplast -

green chlorophyll containing plant cell organelle that uses light energy to produce sugar from carbon dioxide and water

Cytoplasm -

constantly moving gel-like mixture inside the cell membrane that contains heredity material and is the location of most of a cells life processes

Endoplasmic Reticulum -

cytoplasmic organelle that move materials around in a cell and is made up of a complex series of folded membranes; can be rough with attached ribosomes or smooth without attached ribosomes

Golgi Bodi -

organelles that package cellular materials and transport them within the cell or out of the cell

Mitochondrian -

cell organelle that breaks down food and releases energy

Nucleus -

organelle that controls all the activities of the cell and contains hereditary material made of proteins and DNA

Organelle -

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structure in the cytoplasm of a eukaryotic cell that can act as a storage site, process energy, move materials, or manufacture materials

Ribosome -

small cytoplasmic structure on which cells make their own proteins

Active Transport -

energy requiring process in which transport proteins bind with particles and move them through a cell membrane

Passive transport -

movement of substances through a cell membrane without the use of cellular energy, includes diffusion, osmosis, and facilitated diffusion

Osmosis -

a type of passive transport that occurs when water diffuses through a cell membrane

Diffusion -

a type of passive transport in cells in which molecules move from areas where there are more of them to areas where there are less of them

Enzyme -

a type of protein that regulates nearly all chemical reactions in cells

Equalibrium -

occurs when molecules of one substance are spread evenly throughout another substances

Fermentation -

process by which oxygen-lacking cells and some one-celled organisms release small amounts of energy from glucose molecules and produce wastes such as alcohol, carbon dioxide, and lactic acid

Metabolism -

the total of all chemical reactions in an organism

Mixture -

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Subject(s): Science

Days: 15

Grade(s): 7th

a combination of substances in which the individual substances do not change or combine chemically but instead retain their own individual properties; can be gases, solids, liquids, or any combination of them

Photosynthesis -

process by which plants and many other produce use light energy to produce a simple sugar from carbon dioxide and water and give off oxygen

Respiration -

process by which producers and consumers release stored energy from food molecules

Concept: Levels of Organization

Cell -

smallest unit of an organism that can carry on life functions

Organism -

any living thing

Organ -

structure, such as the heart, made up of different types of tissues that all work together

Tissue -

group of similar cells that work together to do one job

Concept:

Cell Theory

Cell Theory -

States that all organisms are made up of one or more cells, the cell is the basic unit of life, and all cells come from other cells

Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

Key Learning:

Biodiversity is dependent upon relationships among organisms and changes that occur in an environment over time.



Unit Essential Question(s):

How do relationships among organisms and changes in the environment lead to biodiversity?



Topic: Diversity of Life

Days: 75

Subject(s): Science

Grade(s): 7th

Concept: Animals <u>3.3.7.A, 4.3.7.C, 4.7.7.B</u>	Concept: Protists <u>3.3.7.A, 4.3.7.C, 4.7.7.B</u>	Concept: Fungi <u>4.7.7.B, 4.3.7.C, 3.3.7.A</u>
		
Lesson Essential Question(s): What major characteristics do all animals share? (A) How do biologists classify animals and what are the characteristics of each of the major groups? (A) Explain the levels of organization and how specific parts enable the animal to function as a whole. (A) Describe how adaptations and characteristics of animals help them function affectively in the natural world. (ET) Compare the similarities and differences in both internal and external structures of animals. (A)	Lesson Essential Question(s): What characteristics do all protists share? (A) How do scientists group protists? (A)	Lesson Essential Question(s): What characteristics do all fungi share? (A) How do fungi obtain food? (A) What roles do fungi play in the living world? (A) How does fungi reproduce? (A)
		
Vocabulary: vertebrae, invertebrate, bilateral symmetry, assymetrical, carnivore, Free-living organism, *Herbivore, Medusa, *Omnivore, Polyp, Radial Symmetry, Sessile, Stinging cells, Tentacles, Appendage, Closed circulatory system, *Crop, Exoskeleton, Gill, Mantle, *Gizzard, Metamorphosis, Molting, Open circulatory system, Radula, Setae, Tube-feed, Water vascular system, *Amniotic egg, Cartilage, *Chordate, *Ectotherm, Endotherm, *Endoskeleton, Estivation, Fin, *Hibernation, Nerve chord, Notochord, *Scale, Vertebrae, Contour feather, Down feather, Gestation period, *Mammal, Mammary Gland, Marsupial, Monotreme, *Placenta, Placental, Preening, *Umbilical chord, *Aggression, Behavior, Conditioning, Cyclic behavior, Imprinting, Innate behavior, Insight, *Instinct, Migration, Pheromone, Reflex, Social behavior, Society	Vocabulary: protozoan, pseudopod, cilia, algae, Protists	Vocabulary: hyphae, budding, lichen, spore

Topic: Diversity of Life

Days: 75

Subject(s): Science

Grade(s): 7th

Concept: Plants 3.3.7.A , 3.3.7.B , 4.3.7.C , 4.7.7.B , 4.7.7.A	Concept: Living and Nonliving Things 4.3.7.C , 3.3.7.A	Concept: Classification 4.3.7.C , 4.7.7.A
Lesson Essential Question(s): What are the basic characteristics of plants? (A) How do vascular and nonvascular plants differ? (A) What occurs during the process of photosynthesis? (A) What characteristics and adaptations of plants allow them to be successful in the natural world? (A)	Lesson Essential Question(s): What characteristics do all living things share? (A) What are the basic needs for all living things? (A) Why is it important to know the difference between living and nonliving things? (ET) Why is it important for living and nonliving things to coexist? (ET)	Lesson Essential Question(s): Why do scientists organize living things into groups? (A) What is biodiversity? (A) What are the seven levels of classification used by all scientists from the broadest to the most specific? (A) What are the six kingdoms into which all organisms are grouped? (A)
Vocabulary: Dicots, Guard Cell, Monocot, Pioneer Species, Rhizoid, Frond, Gametophyte stage, Germination, Ovary, Ovule, Pistol, Pollen Grain, Pollenation, Rhizome, Sporophyte stage, Stamen, *Cellular Respiration	Vocabulary: *Spontaneous Generation, Host Cell, Inorganic Compound, Organic Compound	Vocabulary: kingdom, genus, Binomial Nomenclature

Concept: Bacteria 4.7.7.B , 4.3.7.C	Concept: Virus 4.7.7.B , 4.3.7.C
Lesson Essential Question(s): What are the two kingdoms of bacteria? (A) How do bacteria reproduce and survive? (A) What are the harmful and helpful impacts of bacteria on humans? (ET)	Lesson Essential Question(s): How does a virus make a copy of itself? (A) How can vaccines be used to prevent disease? (A)
Vocabulary: Aerobe, Anaerobe, Antibiotics, Endospore, Fission, Flagellum, Nitrogen-Fixing Bacteria, Pathogen, Toxin, *Vaccine	Vocabulary: vaccine, virus, host cell

Additional Information:

Attached Document(s):

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

Concept:

Animals

vertebrae -

animals that have a backbone.

invertebrate -

an animal without a backbone

bilateral symmetry -

body parts arranged in a similar way on both sides of the body with each half being nearly a mirror image of the other half.

assymetrical -

an organism with no lines of symmetry

carnivore -

an animal that eats other animals

Free-living organism -

an organism that does not depend on another organism for food or a place to live

*Herbivore -

an animal that eats only plants or parts of plants

Medusa -

cnidarian body type that is bell shaped and free swimming.

*Omnivore -

an animal that eats both plants and animals

Polyp -

cnidarian body type that is vase shaped and usually stays in one place

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

Radial Symmetry -

body parts arranged in a circle around a central point

Sessile -

describes an organism that remains attached to one place during most its lifetime.

Stinging cells -

capsules with coiled trigger-like structures that help cnidarians capture food.

Tentacles -

arm like structures that have stinging cells and surround the mouths of most cnidarians

Appendage -

jointed structure of arthropods such as legs, wings, or antennae

Closed circulatory system -

blood circulation system in which blood moves through the body in enclosed vessels

*Crop -

digestive system sac that stores ingested materials

Exoskeleton -

thick hard outer covering that protects arthropod bodies

Gill -

organs that exchange carbon-dioxide for oxygen in the water

Mantle -

Thin layer of tissue that covers a mollusk's body organ

*Gizzard -

muscular digestive organ which grinds soil and organic matter

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

Metamorphosis -

the body changes that insects go through in their life cycle

Molting -

shedding and replacing of an arthropods exoskeleton

Open circulatory system -

a blood circulation system in which blood moves through vessels and into open spaces around the body organs

Radula -

in gastropods, the tongue-like organ with rows of teeth used to scrape and tear food.

Setae -

bristle like structures on the outside of each body segment that help segmented worms move.

Tube-feed -

hydraulic hollow thin walled tubes that end in suction cups and enable echinoderms to move.

Water vascular system -

a network of water filled canals that allows echinoderms to move, capture food, give off wastes, and exchange carbon dioxide and oxygen

*Amniotic egg -

egg covered with a shell that provides for the embryo's development

Cartilage -

tough, flexible tissue that joins vertebrae and makes up all or part of vertebrate endoskeleton.

*Chordate -

animal that has a notochord and nervechord at some point in its development.

*Ectotherm -

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

a vertebrate animal whose internal temperate is regulated by its surroundings

Endotherm -

a vertebrate animal with a nearly constant internal temperate

*Endoskeleton -

an internal framework for bone and/or cartilage

Estivation -

inactivity in hot, dry months

Fin -

structure used by fish for steering, balancing, and movement.

*Hibernation -

inactivity in cold months

Nerve chord -

tubelike structure above the notochord that in most chordates develops into the brain and spinal chord

Notochord -

firm but flexible structure that extends along the upper part of a chordates body

*Scale -

thin, hard plates that cover and protect the bodies of fish and other animals

Vertebrae -

backbones that are joined by flexible cartilage and protect a vertebrates spinal nerve chord

Contour feather -

strong lightweight feather that gives birds their coloring and shape and that are used for flight

Down feather -

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

soft fluffy feathers that provide an insulating layer next to the skin of adult birds and that cover the bodies of young birds

Gestation period -

period during which an embryo develops in the uterus

*Mammal -

endothermic vertebrates that have hair and produce milk for feeding their young

Mammary Gland -

milk-producing glands of female mammals used to feed their young

Marsupial -

mammal with an external pouch for the development of its immature young

Monotreme -

a mammal that lays eggs with tough leathery eggs

*Placenta -

an organ used for the development of an embryo in the uterus that exchanges materials with the mother only found in mammals

Placental -

a mammal whose offspring develop inside the female's uterus

Preening -

process in which a bird rubs oil from an oil gland over its feathers to condition them

*Umbilical chord -

connects the embryo to the placenta

*Aggression -

forceful fighting to control or dominate another animal

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

Behavior -

the way in which an organism interacts with other organisms and its environment

Conditioning -

occurs when the response to a stimulus becomes associated with another stimulus

Cyclic behavior -

behavior that occurs in repeated behavior

Imprinting -

occurs when an animal forms a social attachment to another organism during a specific period following birth or hatching

Innate behavior -

behavior that an organism is born with and doesn't have to be learned

Insight -

form of reasoning that allows animals to use past experiences to solve new problems

*Instinct -

complex pattern of innate behavior

Migration -

instinctive seasonal movement of animals to find food or to reproduce in better conditions

Pheromone -

powerful chemical produced by an animal to influence the behavior of another animal of the same species

Reflex -

simple innate behavior that is an automatic response and does not involve a message to the brain

Social behavior -

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

interactions among members of the same species

Society -

a group of animals of the same species that live and work together in an organized way, which each member doing a specific job

Concept: Protists

protozoan -

one celled animal like protist that can live in water, soil, and living in dead organisms

pseudopod -

temporary extension of the cytoplasm to move and trap food

cilia -

short, threadlike structures that extend from the cell membrane for movement

algae -

chlorophyll containing plant like protists that produce oxygen as a result of photosynthesis

Protists -

one or many celled eukaryotic organism that can be plant like, animal like or fungus like.

Concept: Fungi

hyphae -

mass of many celled threadlike tubes forming the body of a fungus

budding -

form of asexual reproduction in which a new genetically identical organism forms on the side of its parent

lichen -

organism made up of a fungus and a green alga

spore -

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

reproductive cell of a fungus that can grow into a new organism

Concept: Plants

Dicots -

angiosperm with two cotyledons inside its seed, flower parts in multiples of four or five, and vascular bundles in rings

Guard Cell -

pairs of cells that surround stomata and control their opening and closing

Monocot -

angiosperm with one cotyledon inside its seed, flower parts in multiples of three, and vascular bundles scattered throughout the stem

Pioneer Species -

first organisms to grow in new or disturbed areas

Rhizoid -

threadlike structures that anchor nonvascular plants to the ground

Frond -

leaf of a fern that grows from a rhizome

Gametophyte stage -

plant life cycle stage that begins in meiosis and produces spores

Germination -

series of events that results in the growth of a plant from a seed

Ovary -

swollen base of an angiosperms pistil

Ovule -

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

in seed plants, the female reproductive part that produces eggs

Pistil -

female reproductive structure in an angiosperm

Pollen Grain -

small structure produced by the male reproductive structures of a seed plant

Pollination -

transfer of pollen grains to the female part of a seed plant

Rhizome -

underground stem

Sporophyte stage -

plant life cycle stage that begins when an egg is fertilized by a sperm

Stamen -

male reproductive structure inside the flower of an angiosperm

*Cellular Respiration -

series of chemical reactions used to release energy stored in food molecules

Concept: Living and Nonliving Things

*Spontaneous Generation -

idea that life comes from non-living things

Host Cell -

living cell in which a virus can actively multiply or hide until activated

Inorganic Compound -

compound that is made from elements other than carbon and whose atoms usually can be arranged in only one structure

Vocab Report for Topic: Diversity of Life

Subject(s): Science

Days: 75

Grade(s): 7th

Organic Compound -

compound that always contain hydrogen and carbon

Concept: Classification

kingdom -

first and largest category used to classify organism

genus -

First word of the two word scientific name used to identify a group of similar species

Binomial Nomenclature -

two word naming system that gives all organisms their scientific name

Concept:

Bacteria

Aerobe -

any organism that used oxygen for respiration

Anaerobe -

any organism that is able to live without oxygen

Antibiotics -

chemicals produced by some bacteria that are used to limit the growth of other bacteria

Endospore -

thick-walled protective structure produced by some bacteria when conditions are unfavorable for survival

Fission -

simplest form of asexual reproduction, in which two new cells are produced with genetic material that is identical to each other and identical to the previous cell

Flagellum -

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Subject(s): Science

Days: 75

Grade(s): 7th

long thin whip like structure that helps organisms move through moist or wet surroundings

Nitrogen-Fixing Bacteria -

bacteria that convert nitrogen in the air into forms that can be used by plants and animals

Pathogen -

disease producing organism

Toxin -

poisonous substance produced by some pathogens

*Vaccine -

preparation made from killed bacteria, damaged particles from bacterial cell walls or viruses; that can prevent some bacterial and viral diseases

Concept:

Virus

vaccine -

virus -

host cell -

Topic: Ecology

Days: 40

Subject(s): Science

Grade(s): 7th

Key Learning:

Organisms interact with living and nonliving factors in their environment.



Unit Essential Question(s):

In what ways do organisms interact with living and nonliving factors
in their environment?



Concept:

Organization

3.1.7.E, 3.5.7.B, 4.2.7.A, 4.5.7.C, 4.6.7.C, 4.6.7.A, 4.7.7.C

Concept:

Biotic and Abiotic Factors

3.1.7.E, 3.5.7.B, 4.5.7.C, 4.6.7.C, 4.6.7.A, 4.7.7.C

Concept:

Relationships

3.1.7.E, 4.6.7.C, 4.6.7.B, 4.6.7.A, 4.7.7.C



Lesson Essential Question(s):

How do the levels of ecological organization form different biomes? (A)

Lesson Essential Question(s):

How are the components of an ecosystem classified? (A)

Lesson Essential Question(s):

How does energy flow through an ecosystem? (A)

What is the carbon oxygen cycle? (A)

What role does the nitrogen cycle play in an ecosystem? (A)

How do populations interact in an ecosystem? (A)

How do limiting factors affect carrying capacity? (ET)



Vocabulary:

Population, Community, Biosphere, Ecosystem, Biome, Coral Reef, Estuary, Grassland, Intertidal Zone, Tiaga, Temperate Deciduous, Temperate Rainforest, Tundra, Wetland

Vocabulary:

Abiotic, Biotic, Soil

Vocabulary:

Food Web, Energy Pyramid, niche, Producer, Mutualism, Parasitism, Symbiosis, Limiting Factor, Consumer, Commensalism, Habitat, Carrying Capacity

Topic: Ecology

Days: 40

Subject(s): Science

Grade(s): 7th

Concept: Ecological Succession <u>3.1.7.E</u> , <u>4.6.7.C</u> , <u>4.6.7.B</u> , <u>4.7.7.C</u>	Concept: Human Impact and Inquiry <u>3.1.7.E</u> , <u>3.5.7.B</u> , <u>3.2.7.B</u> , <u>3.7.7.B</u> , <u>4.2.7.A</u> , <u>4.3.7.B</u> , <u>4.5.7.C</u> , <u>4.6.7.C</u> , <u>4.6.7.B</u> , <u>4.6.7.A</u> , <u>4.7.7.C</u>	Concept: Cycles <u>3.1.7.E</u> , <u>4.6.7.B</u> , <u>4.6.7.A</u> , <u>4.6.7.C</u> , <u>4.7.7.C</u>
↓	↓	↓
Lesson Essential Question(s): How do communities change through ecological succession? (A)	Lesson Essential Question(s): How could human actions affect parts of ecosystems? (A)	Lesson Essential Question(s): How do ecosystems recycle? (ET)
↓	↓	↓
Vocabulary: Pioneer Species, Succession	Vocabulary: Erosion, Fossil Fuels, Geothermal Energy, Greenhouse Effect, Hazardous Waste, Hydroelectric Power, Natural Resource, Acid Rain, Captive Population, Endangered Species, Threatened Species, Reintroduction Program, Native Species, Habitat Restoration, Introduced Species, Nonrenewable Resource, Nuclear Energy, Ozone Depletion, Petroleum, Pollutant, Recycling, Renewable Resource, Biodiversity, Conservation Biology, Extinct Species	Vocabulary: Atmosphere, Carbon Cycle, Chemosynthesis, Evaporation, Climate, Condensation, Water Cycle, Nitrogen Cycle, Nitrogen Fixation

Additional Information:

Attached Document(s):

Vocab Report for Topic: Ecology

Subject(s): Science

Days: 40

Grade(s): 7th

Concept:

Organization

Population -

all the organisms that belong to the same species living in an area

Community -

all the populations of different species in an area

Biosphere -

part of Earth that supports life including the top portion of earth's crust, the atmosphere, and all the water on earth's surface

Ecosystem -

all the living organisms that live in an area and the non-living features of their environment

Biome -

Large geographic areas with similar climates and ecosystems

Coral Reef -

diverse ecosystem formed from the calcium carbonate shells secreted from corals

Estuary -

extremely fertile area where a river meets an ocean; contains a mixture of fresh and salt water

Grassland -

Temperate and tropic region with 25 cm - 75 cm of precipitation per year

Intertidal Zone -

part of the shore line that is under water at high tide and exposed to the air at low tide

Tiaga -

Vocab Report for Topic: Ecology

Subject(s): Science

Days: 40

Grade(s): 7th

worlds largest biome, located south of the tundra, between 50 and 60 degrees north latitude, has long cold winters, precipitation 35-100 cm per year, cone bearing evergreen trees and dense forests

Temperate Deciduous -

biome usually having four distinct seasons. Annual precipitation between 75-150 cm per year

Temperate Rainforest -

a biome with 200-400 cm of precipitation per year, average temperate between 9C and 12C, and forests dominated by trees with needle like leaves

Tundra -

cold dry treeless biome with less than 25 cm of precipitation per year, permafrost and winters that can be 6-9 months long

Wetland -

a land region that is wet most or all of the year

Concept: Biotic and Abiotic Factors

Abiotic -

non-living physical features of the environment, including air, water, sunlight, soil, temperature, and climate

Biotic -

features of the environment that are alive and were alive

Soil -

mixture of mineral and rock particles, the remains of dead organisms, air and water that forms the topmost layer of Earth's crust and supports plant growth

Concept: Relationships

Food Web -

model that shows the complex feeding relationships among organisms in a community

Energy Pyramid -

Vocab Report for Topic: Ecology

Subject(s): Science

Days: 40

Grade(s): 7th

model that shows the amount of energy available at each feeding level in an ecosystem

niche -

in an ecosystem, refers to the unique ways an organism survives, obtains food and shelter, and avoids danger

Producer -

organism, such as a green plant or alga, that uses an outside source of energy like the Sun to create energy-rich food molecules

Mutualism -

a type of symbiotic relationship in which both organisms benefit

Parasitism -

a type of symbiotic relationship in which one organism benefits and the other organism is harmed

Symbiosis -

any close relationship between species, including mutualism, commensalisms, and parasitism

Limiting Factor -

anything that can restrict the size of a population, including living and nonliving features of an ecosystem, such as predators or drought

Consumer -

organism that cannot create energy-rich molecules but obtains its food by eating other organisms

Commensalism -

a type of symbiotic relationship in which one organism benefits and the other organism is not affected

Habitat -

place where an organism live and that provides the types of food, shelter, moisture, and temperature needed for survival

Carrying Capacity -

Vocab Report for Topic: Ecology

Subject(s): Science

Days: 40

Grade(s): 7th

largest number of individuals of a particular species that an ecosystem can support over time

Concept: Ecological Succession

Pioneer Species -

first organisms to grow in new or disturbed areas

Succession -

natural, gradual changes in the types of species that live in an area

Concept: Human Impact and Inquiry

Erosion -

movement of soil from one place to another

Fossil Fuels -

nonrenewable energy resources - coal, oil, and natural gas - that formed in Earth's crust over hundreds of millions of years

Geothermal Energy -

heat energy within Earth's crust

Greenhouse Effect -

heat-trapping feature of the atmosphere that keeps Earth warm enough to support life

Hazardous Waste -

waste materials, such as pesticides and leftover paints, that are harmful to human health or poisonous to living organisms

Hydroelectric Power -

electricity produced when the energy of falling water turns the blades of a generator turbine

Natural Resource -

parts of Earth's environment that supply materials useful or necessary for the survival of living organisms

Vocab Report for Topic: Ecology

Subject(s): Science

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Acid Rain -

forms when sulfur dioxide and nitrogen oxide from industries and car exhausts combine with water vapor in the air

Captive Population -

population of organisms that is cared for by humans

Endangered Species -

species that is in danger of becoming extinct

Threatened Species -

species that is likely to become endangered in the near future

Reintroduction Program -

conservation strategy that returns organisms to an area where the species once lived and may involve seed banks, captive populations, and relocation

Native Species -

original organisms in an ecosystem

Habitat Restoration -

process of bringing a damaged habitat back to a healthy condition

Introduced Species -

species that moves into an ecosystem as a result of human actions

Nonrenewable Resource -

natural resources, such as petroleum, minerals, and metals, that are being used more quickly than they can be replaced by natural processes

Nuclear Energy -

energy produced from the splitting apart of billions of uranium nuclei by a nuclear fission reaction

Vocab Report for Topic: Ecology

Subject(s): Science

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Grade(s): 7th

Ozone Depletion -

thinning of Earth's ozone layer caused by chlorofluorocarbons (CFCs) leaking into the air and reacting chemically with ozone, breaking the ozone molecules apart

Petroleum -

nonrenewable resource formed over hundreds of millions of years mostly from the remains of microscopic marine organisms buried in Earth's crust

Pollutant -

substance that contaminates any part of the environment

Recycling -

conservation method that is a form of reuse and requires changing or reprocessing an item or natural resource

Renewable Resource -

natural resource, such as water, sunlight, and crops, that are constantly being recycled or replaced by nature

Biodiversity -

variety of life in an ecosystem, most commonly measured by the number of species that live in a given area

Conservation Biology -

study of methods for protecting Earth's biodiversity; uses strategies such as reintroduction programs and habitat restoration and works to preserve threatened and endangered species

Extinct Species -

species that was once present on Earth but has died out

Concept: Cycles

Atmosphere -

air surrounding Earth; is made up of gases, including 78% nitrogen, 21% oxygen, and 0.03% carbon dioxide

Vocab Report for Topic: Ecology

Subject(s): Science

Days: 40

Grade(s): 7th

Carbon Cycle -

model describing how carbon molecules move between the living and nonliving world

Chemosynthesis -

process in which producers make energy-rich nutrient molecules from chemicals

Evaporation -

process that takes place when a liquid changes to a gas

Climate -

average weather conditions of an area over time, including wind, temperature, and rainfall or other types of precipitation such as snow or sleet

Condensation -

process that takes place when a gas changes to a liquid

Water Cycle -

model describing how water moves from Earth's surface to the atmosphere and back to the surface again through evaporation, condensation, and precipitation

Nitrogen Cycle -

model describing how nitrogen moves from the atmosphere to the soil, to living organisms, and then back to the atmosphere

Nitrogen Fixation -

process in which some types of bacteria in the soil change nitrogen gas into a form of nitrogen that plants can use

Topic: Heredity

Days: 10

Subject(s): Science

Grade(s): 7th

Key Learning:

A set of genetic instructions determines inherited traits of organisms.



Unit Essential Question(s):

How are traits passed from one generation to another?



Concept:

DNA3.3.7.C, 4.7.7.A

Concept:

Mendel's Experiments3.3.7.C, 4.7.7.A, 4.7.7.B

Concept:

Human Inheritance

Lesson Essential Question(s):

How is information stored in DNA? (A)

Lesson Essential Question(s):

How did Mendel predict the probability of genetic outcomes? (A)

Lesson Essential Question(s):

How are humans able to have a large number of possibilities for certain traits? (A)



Vocabulary:

Vocabulary:

Vocabulary:

Additional Information:

Attached Document(s):

Topic: Nature of Science

Days: 10

Subject(s): Science

Grade(s): 7th

Key Learning:

Scientific skills, processes, and methods of inquiry are applied with the intent to solve real-world problems.



Unit Essential Question(s):

How can we use the basic processing skills to solve scientific problems?



Concept:

Microscopes

3.7.7.B, 3.7.7.A



Concept:

Scientific Method

3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D, 3.1.7.B, 3.1.7.D, 3.1.7.E, 3.8.7.B, 3.8.7.C



Lesson Essential Question(s):

Why do scientists use microscopes? (A)

How do microscopes work? (A)

What are the parts of the microscope? (A)

What safety protocol must be used in a lab setting? (A)



Lesson Essential Question(s):

What procedure do scientists use to do their job? (A)

Why do all scientists use the same method? (ET)

Why should we follow the scientific method that the scientists use? (ET)



Vocabulary:

arm, eyepiece, body tube, nosepiece, objective lenses, stage clips, stage, diaphragm, mirror, base, coarse adjustment knob, , fine adjustment knob, compound microscope, simple microscope, convex, concave

Vocabulary:

Scientific Method, Law, Theory, Variable, Independent Variable, Dependent Variable, Control, Hypothesis

Additional Information:

Attached Document(s):

Vocab Report for Topic: Nature of Science

Subject(s): Science

Days: 10

Grade(s): 7th

Concept:

Microscopes

arm -

supports the body tube.

eyepiece -

contains the magnifying lens that you look through

body tube -

maintains the proper distance between the eyepiece and objective lenses

nosepiece -

holds high and low power objective lenses and can be rotated to change the magnification

objective lenses -

low power lenses which usually provide 5X and 10X magnification, and a high power lens, which usually provides 40X magnification

stage clips -

holds the slide in place

stage -

supports the slide

diaphragm -

regulates the amount of light let into the body tube

mirror -

reflects light upward through the diaphragm, specimen, and lenses

base -

Vocab Report for Topic: Nature of Science

Subject(s): Science

Days: 10

Grade(s): 7th

supports the microscope

coarse adjustment knob -

moves the body tube up and down for focusing

-

fine adjustment knob -

moves the body tube slightly to sharpen the image

compound microscope -

any microscope that has two or more lenses

simple microscope -

a single lens magnifier

convex -

a lens that is thicker in the middle than on the edges

concave -

a lens that is thinner in the middle than on the edges

Concept: Scientific Method

Scientific Method -

procedures used to solve problems and answer questions

Law -

statement of how things work in nature that is generally accepted as true

Theory -

explanation of things or events based on scientific knowledge resulting from many observations and experiments.

Variable -

Vocab Report for Topic: Nature of Science

Subject(s): Science

Days: 10

Grade(s): 7th

something in an experiment that can change

Independent Variable -

the variable that you are controlling or changing in an experiment

Dependent Variable -

something that changes in an experiment based on what you changed

Control -

a standard to which the outcome of a test is compared

Hypothesis -

prediction that can be tested

Topic: Watersheds and Wetlands

Subject(s): Science

Days: 10

Grade(s): 7th

Key Learning:

Watersheds and wetlands are natural resources which need to be preserved to ensure the survival of living things.



Unit Essential Question(s):

How are watersheds and wetlands affected by humans?



Concept:

Watersheds

4.1.7.A, 4.1.7.B, 4.1.7.C



Concept:

Wetlands

4.1.7.B, 4.1.7.D, 4.1.7.E, 4.3.7.B, 4.3.7.A



Lesson Essential Question(s):

How does water enter and exit a watershed? (A)

What role(s) does a watershed play in our environment? (A)

What are the effects of water on the life of organisms in a watershed? (A)

How do watersheds impact people? (ET)



Vocabulary:

watershed, drainage basin, divide, runoff

Lesson Essential Question(s):

What are the basic characteristics of a wetland? (A)

How do wetlands help control flooding? (A)

What are some examples of aquatic life found in a wetland? (A)

What features of wetlands make them good habitats for living things? (A)

Why should wetlands be protected? (ET)

How do wetlands impact people? (ET)



Vocabulary:

wetland, flood plain, riparian zone, ecosystem, habitat, freshwater, saltwater, biodiversity,

Additional Information:

Attached Document(s):

Vocab Report for Topic: Watersheds and Wetlands

Subject(s): Science

Days: 10

Grade(s): 7th

Concept:

Watersheds

watershed -

area of land on which water falls and runs in the same direction

drainage basin -

divide -

area of land which precipitation on one side runs off in one direction, and precipitation that falls on the other, runs off the other direction

runoff -

all the water that sheds off an area of land

Concept: Wetlands

wetland -

Land that is wet for most or all of the year

flood plain -

low area of land near a body of water that can be covered with water in a time of high precipitation

riparian zone -

area of plants along a body of water that help to reduce runoff from the surrounding soil

ecosystem -

all the living organisms that live in an area and the non-living features of their environment

habitat -

place where an organism live and that provides the types of food, shelter, moisture, and temperature needed for survival

freshwater -

water that contains less than 1ppm of salt

Vocab Report for Topic: Watersheds and Wetlands

Subject(s): Science

Days: 10

Grade(s): 7th

saltwater -

water that contains more than 5ppm of salt

biodiversity -

variety of life in an ecosystem, most commonly measured by the number of species that live in a given area

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