

Topic: Astronomy

Days: 22

Subject(s): Science

Grade(s): 8th

Key Learning:

Astronomy is the study of the origins of the universe, motions of objects in the universe, and the characteristics of celestial bodies.



Unit Essential Question(s):

How do scientists describe the formation of the universe? What are the characteristics of the objects in our universe?



Concept:

Celestial Origins 1

3.4.10.D, 3.4.7.D, S11.D.3.1.3



Lesson Essential Question(s):

How does the Big Bang Theory depict the beginning of the universe? (A)

How does the Doppler Effect support the Big Bang Theory? (ET)



Vocabulary:

Big Bang Theory, red shift, blue shift, Doppler shift

Concept:

Our Solar System 4

3.4.10.D, 3.4.7.D, S8.D.3.1.1, S8.D.3.1.3, S8.D.3.1.2



Lesson Essential Question(s):

How have our concepts of the solar system changed over time? (A)

What are some characteristics of different objects in the solar system? (A)

How does the Nebula theory describe the formation of our solar system? (A)

What are the patterns of motion in the solar system? (A)

How do you differentiate among comets, asteroids, and meteoroids? (A)



Vocabulary:

axis, rotation, revolution, comet, meteoroid, asteroid, seasons, solstice, equinox, meteor, meteorite

Concept:

Stars 7

3.4.10.D, 3.4.7.D, S11.D.3.1.2, S11.C.2.1.1, S11.D.2.1.1



Lesson Essential Question(s):

What forms of radiation are emitted by stars? (A)

What is the relationship between light intensity and distance? (A)

What relationship exists between a star's color and temperature? (A)

How can you describe the evolution of large and small stars? (ET)

What occurs during nuclear fusion? (A)



Vocabulary:

electromagnetic spectrum, absolute magnitude, apparent magnitude, light year, binary system, main sequence, fusion, nebula, giant, white dwarf, black hole, pulsar, neutron star, supernova

Topic: Astronomy

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Subject(s): Science

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Concept:

Sun 13.4.10.D, 3.4.7.D, S11.D.3.1.2

Concept:

Moon 93.4.10.D, 3.4.7.D, S8.D.3.1.3, S8.D.3.1.1

Lesson Essential Question(s):

How would you describe the layers of the sun? (A)

How does solar activity influence Earth? (ET)

Lesson Essential Question(s):

What effect does the moon's rotation and revolution have on Earth? (A)

What causes the phases of the moon? (A)

What causes solar and lunar eclipses? (A)

What are other characteristics of the moon? (A)



Vocabulary:

core, radiative zone, convective zone, photosphere, chromosphere, corona, sunspots, prominences, solar flare, solar wind

Vocabulary:

moon phases, solar eclipse, lunar eclipse, maria, crater, tide

Additional Information:

A common assessment will be given during the "Our Solar System" concept: Seasons on Neptune article and compare/contrast question.

Attached Document(s):

Vocab Report for Topic: Astronomy

Subject(s): Science

Days: 22

Grade(s): 8th

Concept:

Celestial Origins 1

Big Bang Theory -

scientific theory for the formation of the universe; states that the universe began as a small area, rapidly expanded, and has been rapidly expanding ever since

red shift -

indicates that an object is moving away from the earth

blue shift -

indicates that an object is moving toward the earth

Doppler shift -

shift in wavelength due to movement

Concept:

Our Solar System 4

axis -

imaginary line through the center of the Earth upon which it rotates

rotation -

spinning of an object on its axis

revolution -

time it takes for an object to orbit another object

comet -

object of frozen gases and rock particles that orbits the sun

meteoroid -

small rock debris in the solar system

Vocab Report for Topic: Astronomy

Subject(s): Science

Days: 22

Grade(s): 8th

asteroid -

large rock fragment orbiting the sun

seasons -

short-term variations in climate due to the tilt of Earth's object

solstice -

period of time when one of the axes is tilted toward the sun and the other is tilted away from the sun

equinox -

period of time when neither axis is tilted toward the sun

meteor -

small piece of rock that is completely destroyed as it passes through the atmosphere

meteorite -

small piece of rock that survives its journey through the atmosphere and hits the Earth or another planet

Concept:

Stars 7

electromagnetic spectrum -

classification of energy in our universe based on wavelength

absolute magnitude -

the actual amount of light released by a star

apparent magnitude -

the amount of starlight visible on earth

light year -

distance light travels in one year

Vocab Report for Topic: Astronomy

Subject(s): Science

Days: 22

Grade(s): 8th

binary system -

two stars orbiting one another

main sequence -

time period in a star's life where it is fusing hydrogen to helium

fusion -

energy producing process in the core of a star when smaller atoms are fused together to form larger atoms

nebula -

large cloud of dust and gas in space

giant -

star that is fusing helium into carbon

white dwarf -

star is no longer undergoing fusion and is slowly cooling

black hole -

final stage of a large star's life where the mass of the core causes it to collapse to a point that its gravity is so strong that nothing can escape it

pulsar -

neutron star that is orbiting and sends out a radio signal in the process

neutron star -

remaining neutrons after a supernova explosion

supernova -

explosion of a large star

Concept:

Vocab Report for Topic: Astronomy

Subject(s): Science

Days: 22

Grade(s): 8th

Sun 1

core -

center of a star where nuclear fusion occurs

radiative zone -

layer above the core that transfers energy by radiation

convective zone -

layer above the radiative zone that transfers energy by convection

photosphere -

visible surface of the sun from which light and heat are given off

chromosphere -

layer above the photosphere

corona -

outer layer of the sun visible during a solar eclipse

sunspots -

dark, cooler areas on the surface of the Sun

prominences -

arches of gas that erupt out of sunspots

solar flare -

violent eruption of charged gas from the sun

solar wind -

charged particles that leave the sun

Concept:

Vocab Report for Topic: Astronomy

Subject(s): Science

Days: 22

Grade(s): 8th

Moon 9

moon phases -

changing appearance of the moon as seen on Earth due to the reflect of sunlight off of its surface

solar eclipse -

rare occurrence when the moon comes between the Sun and earth and casts a shadow on part of the earth

lunar eclipse -

more regular occurrence when the earth comes between the Sun and the moon and casts a shadow on the moon

maria -

dark areas on the moon that are the result of ancient lava flows

crater -

circular depression on moon's surface formed from meteorite impacts

tide -

daily rising and falling of sea level due to the moon's gravitational pull

Topic: Chemical and Physical Properties and Changes

Days: 9

Subject(s): Science

Grade(s): 8th

Key Learning:

Physical and chemical properties help to identify objects. Physical changes do not alter the identity of a substance; chemical changes do.



Unit Essential Question(s):

How do we identify objects? How do physical and chemical changes alter substances?



Concept:

Physical and Chemical Properties of Matter 2

S8.C.1.1.2, S8.C.1.1.1, S11.C.1.1.1, 3.4.10.A, 3.4.7.A

Concept:

Physical and Chemical Changes in Matter 2

3.4.7.A, 3.4.10.A, S8.C.1.1.2

Concept:

Substances and Mixtures 5

S8.C.1.1.1, 3.4.10.A, 3.4.7.A



Lesson Essential Question(s):

What are the physical and chemical properties of matter? (A)

What are the phase changes that occur in matter? (A)

How does the kinetic molecular theory explain changes in phase? (A)

What are examples of physical and chemical properties? (A)

What are examples of phase changes? (A)

Lesson Essential Question(s):

How are physical and chemical changes different? (A)

What are the indicators that a physical or chemical change has taken place? (A)

What are examples of physical and chemical changes that occur? (A)

Lesson Essential Question(s):

What are the characteristics of substances and mixtures? (A)

What are the different mixtures? (A)

How can physical properties be used to separate mixtures? (A)

How are substances and mixtures different? (ET)



Vocabulary:

physical property, chemical property, plasma, evaporation, condensation, sublimation, vaporization, state of matter

Vocabulary:

physical change, chemical change

Vocabulary:

element, mixture, homogenous mixture, heterogeneous mixture, solution, colloid, suspension

Additional Information:

Attached Document(s):

Vocab Report for Topic: Chemical and Physical Properties and Changes

Subject(s): Science

Days: 9

Grade(s): 8th

Concept:

Physical and Chemical Properties of Matter 2

physical property -

any characteristic of a material that can be observed or measured without changing the composition of the substances in the material

chemical property -

any property that produces a change in the composition of matter. Makes a new substance

plasma -

matter with charged particles, no shape, and no volume

evaporation -

liquid to gas

condensation -

gas to liquid

sublimation -

the phase change in which a solid changes directly to a gas or vapor without changing to a liquid first

vaporization -

changing of liquid to a gas at the boiling point.

state of matter -

the arrangement of the particles of a substance

Concept:

Physical and Chemical Changes in Matter 2

physical change -

a change that occurs when some properties of a material change, but the substances in the material stay the same

Vocab Report for Topic: Chemical and Physical Properties and Changes

Subject(s): Science

Days: 9

Grade(s): 8th

chemical change -

change that occurs when a substance reacts and forms one or more new substances

Concept:

Substances and Mixtures 5

element -

a substance that cannot be broken down into simpler substances

mixture -

a material made of two or more components only physically joined together

homogenous mixture -

two or more substances blended uniformly throughout

heterogeneous mixture -

material in which components can be distinguished easily

solution -

a homogenous mixture of extremely small particles that will never settle to the bottom.

colloid -

type of mixture with particles larger than those in solutions, but they still do not settle out.

suspension -

heterogeneous mixture contain a liquid in which large, visible particles settle out.

Topic: Chemistry in Action

Subject(s): Science

Days: 14

Grade(s): 8th

Key Learning:

Atoms combine to form compounds. Compounds react with one another to create different substances.



Unit Essential Question(s):

How do the properties of an atom determine its bonding ability?
How can we express the interactions of compounds?



Concept:

Chemical Bonding 9

[3.4.10.A](#), [S8.C.1.1.3](#), [S11.C.1.1.3](#), [3.4.7.A](#)



Concept:

Chemical Reactions 5

[3.4.7.A](#), [3.4.10.A](#), [S8.C.1.1.3](#)



Lesson Essential Question(s):

How are elements and compounds different? (A)

What are chemical bonds? What are the different types of chemical bonds? (A)

How can the different types of bonds be identified? (A)

How is chemical bonding modeled using electron dot diagrams? (A)

How can you determine the number of atoms in a compound? (A)

How can compounds be written and named? (A)



Lesson Essential Question(s):

How can the reactants and products in a chemical reaction be identified? (A)

Why must chemical equations be balanced? (Conservation of Mass) (ET)

What indicates that a chemical equation is balanced? (A)



Vocabulary:

bond, covalent, ionic, electron dot diagram (Lewis dot structures), ion, compound, oxidation number,

Vocabulary:

reactant, product, chemical equation, conservation of mass, balanced equation, coefficient, subscript, chemical reaction

Additional Information:

Attached Document(s):

Vocab Report for Topic: Chemistry in Action

Subject(s): Science

Days: 14

Grade(s): 8th

Concept:

Chemical Bonding 9

bond -

force that holds atoms or ions together as a unit

covalent -

atoms share electrons

ionic -

force of attraction between oppositely charged atoms

electron dot diagram (Lewis dot structures) -

represents the electrons in the outer energy level

ion -

atom that becomes charged by gaining or losing electrons

compound -

Group of atoms joined together chemically

oxidation number -

the number of valence electrons gained or lost by an element in a chemical reaction

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Concept:

Chemical Reactions 5

reactant -

substance that undergoes a change in a chemical reaction

product -

Vocab Report for Topic: Chemistry in Action

Subject(s): Science

Days: 14

Grade(s): 8th

the new substance produced in a chemical reaction

chemical equation -

Way to represent a chemical reaction using symbols

conservation of mass -

law that states mass can't be created or destroyed in a chemical reaction

balanced equation -

same number of atoms on both sides of a chemical equation

coefficient -

numbers placed in a chemical equation to balance it.

subscript -

number in a chemical formula to show how many atoms of each element are needed

chemical reaction -

change in which one or more substances are converted to new substances

Topic: Energy

Days: 16

Subject(s): Science

Grade(s): 8th

Key Learning:

Energy is found in many forms and may change from one form to another.



Unit Essential Question(s):

What are the different forms of energy and how does it change?



Concept:

Kinetic and Potential Energy 43.4.7.C, 3.4.7.B, S8.C.3.1.2, S8.C.2.1.1

Concept:

Heat Transfer 43.4.7.C, 3.4.7.B, S8.C.2.1.3

Concept:

Energy Charges and Currents 83.1.10.A, 3.4.7.C, 3.4.7.B, S8.A.3.1.4, S11.A.3.1.3, S11.C.3.1.4

Lesson Essential Question(s):

What is the difference between kinetic and potential energy? (A)

What are some everyday examples of kinetic and potential energy? (A)

Lesson Essential Question(s):

What is heat and how is it transferred between objects? (A)

What is the relationship between temperature and heat? (A)

How is temperature measured? (A)

How are changes in thermal energy calculated? (A)

Lesson Essential Question(s):

What is electrical charge? (A)

How do electrical charges behave? (A)

How are current, voltage, and resistance related (Ohm's Law)? (ET)



Vocabulary:

kinetic energy, potential energy, law of conservation of energy

Vocabulary:

heat, temperature, conduction, convection, radiation, specific heat, thermal energy

Vocabulary:

electric field, static electricity, electric discharge, current, voltage, resistance, Ohm's Law

Additional Information:

Attached Document(s):

Vocab Report for Topic: Energy

Subject(s): Science

Days: 16

Grade(s): 8th

Concept:

Kinetic and Potential Energy 4

kinetic energy -

energy of motion

potential energy -

stored energy

law of conservation of energy -

energy can not be created or destroyed, it can only be destroyed

Concept:

Heat Transfer 4

heat -

movement of energy from an object with high temperature to one with low temperature

temperature -

measure of the average kinetic energy of a substances particles

conduction -

transfer of thermal energy between colliding particles

convection -

transfer of thermal energy in a fluid

radiation -

transfer of energy by electromagnetic waves

specific heat -

amount of energy need to raise the temperature of 1 kg of matter 1 C

Vocab Report for Topic: Energy

Subject(s): Science

Days: 16

Grade(s): 8th

thermal energy -

sum of the kinetic and potential energy of all the particles in an object

Concept:

Energy Charges and Currents 8

electric field -

region with an electric charge

static electricity -

accumulation of excess electric charges on an object

electric discharge -

sudden release of electric charges

current -

movement of electric charges in one direction

voltage -

difference in electrical potential energy between two places in a electric field

resistance -

tendency of a material to oppose the flow of electrons

Ohm's Law -

relationship between voltage, current and resistance

Topic: Forces and Motion
 Subject(s): Science

Days: 21
 Grade(s): 8th

Key Learning:

Speed, velocity, and acceleration describe the relationship between force and motion.



Unit Essential Question(s):

How are forces related to motion? How can we explain these relationships using the terms speed, velocity, and acceleration?



Concept:

Motion 8

[3.4.10.C](#), [3.4.7.C](#), [S11.C.3.1.1](#), [S11.C.3.1.3](#)

Concept:

Forces 8

[3.4.7.C](#), [S8.C.3.1.1](#), [S11.C.3.1.1](#)

Concept:

Simple Machines 5

[3.4.10.C](#), [S8.C.3.1.3](#), [S11.C.3.1.2](#), [S11.C.3.1.5](#), [S11.C.3.1.6](#)



Lesson Essential Question(s):

What are the differences between speed and velocity? (A)

How are speed and velocity calculated? (A)

What is acceleration? How is it calculated? (A)

What is momentum? How is it calculated? (A)

Lesson Essential Question(s):

How do balanced and unbalanced forces affect motion? (ET)

What is the effect of friction on an object? (A)

How do Newton's Laws explain force and motion? (ET)

What is the effect of gravity on objects? (A)

Lesson Essential Question(s):

What factors affect the efficiency and mechanical advantage of a machine? (compact 1st lesson) (A)

What are the properties of the six simple machines? How do simple machines make work easier? (compact 1st lesson) (ET)

What is the difference between a simple and compound machine? (compact 1st lesson) (A)

How do you know when work has been done? (A)

What is the difference between work and power? How are they calculated? (A)



Vocabulary:

speed, velocity, acceleration, momentum

Vocabulary:

force, balanced force, unbalanced force, friction, inertia, gravity, weight

Vocabulary:

work, power, efficiency, mechanical advantage, machine, simple machine, compound machine

Additional Information:

Attached Document(s):

Vocab Report for Topic: Forces and Motion

Subject(s): Science

Days: 21

Grade(s): 8th

Concept:

Motion 8

speed -

distance traveled per unit of time

velocity -

speed in a given direction

acceleration -

rate at which velocity changes

momentum -

property all moving objects have

Concept:

Forces 8

force -

push or pull by one object on another

balanced force -

no change in motion

unbalanced force -

causes a change in motion

friction -

force that opposes motion between two objects in contact with each other

inertia -

tendency of an object to resist a change in its motion

Vocab Report for Topic: Forces and Motion

Subject(s): Science

Days: 21

Grade(s): 8th

gravity -

attractive force between any two objects

weight -

measurement of the force of gravity

Concept:

Simple Machines 5

work -

energy transferred when a force makes an object moves.

power -

work done in a certain unit of time

efficiency -

how much of the work put into a machine is change into useful output.

mechanical advantage -

number of times a machine multiplies the output force

machine -

device that makes doing work easier

simple machine -

does work in a single movement

compound machine -

combinations of simple machines.

Topic: Geology

Days: 47

Subject(s): Science

Grade(s): 8th

Key Learning:

Geology is the study of geologic processes, Earth's resources, and Earth's history.

Unit Essential Question(s):

What processes, present and past, have changed Earth? How do humans utilize Earth's materials?



Concept:

Rocks and Minerals 113.5.10.A, S8.D.1.1.4, S11.D.1.1.1

Concept:

Plate Tectonics 123.5.10.A, S11.D.1.1.2

Concept:

Earthquakes and Volcanoes 83.5.10.A, S8.D.1.1.2, S11.D.1.1.2

Lesson Essential Question(s):

How do rocks and minerals form and change? (A)

How are rocks classified as igneous, sedimentary, and metamorphic? (A)

What characteristics do all minerals share? (A)

How are minerals identified? (A)

Lesson Essential Question(s):

How does the Theory of Plate Tectonics merge continental drift and seafloor-spreading? (A)

How does convection explain plate movement? (A)

What features result from plate boundaries? (A)

Lesson Essential Question(s):

How does faulting produce earthquakes? (A)

What are the characteristics of the three types of seismic waves? (A)

How have seismic waves aided in mapping Earth's interior? (A)

What conditions are necessary for volcanic formation and eruption? (ET)

Where are volcanoes likely to occur? (A)



Vocabulary:

rock cycle, igneous, sedimentary, metamorphic, lava, magma, mineral, crystal, inorganic, streak, hardness, luster, cleavage, fracture

Vocabulary:

continental drift, seafloor spreading, plate tectonics, plate, lithosphere, asthenosphere, divergent, convergent, subduction, convection current, transform fault, mid-ocean ridge, trench, rift valley

Vocabulary:

fault, earthquake, seismic waves, focus, epicenter, magnitude, volcano, vent, crater, hot spot, tephra, primary wave, secondary wave, surface wave, inner core, outer core, mantle, crust, moho

Topic: Geology

Subject(s): Science

Days: 47

Grade(s): 8th

Concept:

Environmental Concerns 63.4.10.B, 3.5.10.A, S11.D.1.1.2, S8.D.1.1.2

Concept:

Earth History 103.4.10.B, 3.5.10.A, S11.C.2.2.2, S11.C.2.2.3

Lesson Essential Question(s):

What types of energy are used by humans? (A)

What are the pros and cons of the different types of energy? (ET)

Lesson Essential Question(s):

How are fossils formed? (A)

How are index fossils used to date rocks? (A)

How is relative age determined? (A)

How is absolute age determined? (A)

Vocabulary:
fossil fuel

Vocabulary:

index fossil, superposition, unconformity,
absolute dating, radioactive decay, half-life,
fossil**Additional Information:**

Common assessment should be given in the Earth History concept: Radioactive Decay lab

Common assessment should be given in the Plate Tectonics concept: Continental Drift article and open-ended response questions

Attached Document(s):

Vocab Report for Topic: Geology

Subject(s): Science

Days: 47

Grade(s): 8th

Concept:

Rocks and Minerals 11

rock cycle -

diagram outlining how rocks form and change

igneous -

rock formed by the cooling of magma or lava

sedimentary -

rock formed on Earth's surface from small fragments of rock or organic matter

metamorphic -

any rock changed by heat and pressure

lava -

melted rock on Earth's surface

magma -

Melted rock deep inside the earth

mineral -

An inorganic, naturally solid with a specific chemical composition and crystal structure

crystal -

a solid with an orderly, repeating pattern of atoms

inorganic -

any substance made from non-living material

streak -

Color of a mineral's powder when rubbed on an unglazed ceramic tile

Vocab Report for Topic: Geology

Subject(s): Science

Days: 47

Grade(s): 8th

hardness -

a material's ability to resist scratching

luster -

description of how a material reflects light, either metallic or nonmetallic

cleavage -

Pattern of breaking along geometric planes

fracture -

Random pattern of breaking

Concept:

Plate Tectonics 12

continental drift -

theory that states the continents moved horizontally to their current positions and will continue to move

seafloor spreading -

theory that explains plate movement; magma rises to the surface at mid-ocean ridges and forces the plates on either side to move apart

plate tectonics -

combines continental drift and seafloor spreading into a unified theory

plate -

solid piece of lithosphere

lithosphere -

Rigid layer comprised of Earth's crust and upper mantle that floats on the asthenosphere

asthenosphere -

Plastic-like layer under the lithosphere

Vocab Report for Topic: Geology

Subject(s): Science

Days: 47

Grade(s): 8th

divergent -

boundary formed where two plates are moving apart

convergent -

boundary formed where two plates are coming together

subduction -

bending of an oceanic plate under another plate

convection current -

cycle of heating, rising, cooling and sinking of fluids.

transform fault -

boundary formed where two plates are coming together

mid-ocean ridge -

divergent plate boundary; place where new plate material is being created

trench -

convergent plate boundary; place where old plate material is being destroyed

rift valley -

point at the mid-ocean ridge where plates have separated and new plate material is coming out of the mantle

Concept:

Earthquakes and Volcanoes 8

fault -

a break in rock where movement occurs

earthquake -

vibrations caused by the energy released when rocks break

Vocab Report for Topic: Geology

Subject(s): Science

Days: 47

Grade(s): 8th

seismic waves -

any generated by an earthquake

focus -

point deep in the earth where rocks break and earthquake energy is released

epicenter -

point on earth's surface directly above the focus

magnitude -

measurement of earthquake intensity

volcano -

mountain formed when magma in the mantle comes to the surface

vent -

opening of a volcano where magma is released

crater -

depression in earth's surface formed when a cinder cone volcano explodes

hot spot -

weak area, not at a plate boundary, in Earth's crust where magma is released

tephra -

solid particles released during a volcanic eruption

primary wave -

rock particles move in the same direction as the earthquake energy; fastest moving

secondary wave -

rock particles move perpendicularly to the earthquake energy

Vocab Report for Topic: Geology

Subject(s): Science

Days: 47

Grade(s): 8th

surface wave -

earthquake waves that travel outward from the epicenter and cause all earthquake damage

inner core -

solid, iron & nickel; Earth's innermost layer

outer core -

liquid iron & nickel; above the inner core

mantle -

plastic-like layer above the outer core

crust -

earth's outermost layer

moho -

boundary between the mantle and the crust

Concept:

Environmental Concerns 6

fossil fuel -

any energy source obtained from once-living, organic substances; nonrenewable

Concept:

Earth History 10

index fossil -

fossil that is abundant in the rock record for a short period of time that is used to date rocks

superposition -

states that in an undisturbed rock layer, the oldest layers are on the bottom and the youngest rocks are on the top

Vocab Report for Topic: Geology

Subject(s): Science

Days: 47

Grade(s): 8th

unconformity -

gaps in rock sequences due to erosion or removal of rock

absolute dating -

age in years of a rock using the properties of radioactive atoms to date rocks

radioactive decay -

process by which radioactive elements change into a non-radioactive element

half-life -

time it takes for half of the parent material to decompose to the daughter material

fossil -

any evidence of past organic life

Topic: Meteorology

Days: 8

Subject(s): Science

Grade(s): 8th

Key Learning:

Meteorology is the study of compounds of weather, energy transfer within the atmosphere, and analysis of weather data and climate changes.



Unit Essential Question(s):

How does the sun and human interaction influence Earth's weather?
How is weather forecasted?



Concept:

Energy 2

S11.D.1.3.1, S8.C.2.1.2, S8.D.2.1.2, 3.4.7.B



Concept:

Climate Change 2

3.5.10.C, 3.5.10.D, S11.D.2.1.1



Concept:

Weather 4

3.5.10.C, 3.5.10.D, S8.D.2.1.3, S8.D.2.1.2



Lesson Essential Question(s):

What is the role of the sun in heating the Earth? (A)

How do the processes of conduction, convection, and radiation heat all parts of the Earth? (A)

What are the components of the Water Cycle? (A)

What is the impact of Earth's uneven heating? (ET)



Lesson Essential Question(s):

How can you differentiate between the Greenhouse Effect and Global Warming? (A)

What are the consequences of Global Warming? (ET)



Lesson Essential Question(s):

How are clouds formed and classified? (A)

How does the interaction between air masses create fronts? (A)

What types of weather are associated with fronts? (A)



Vocabulary:

Coriolis effect, precipitation, runoff, groundwater, transpiration, land breeze, sea breeze

Vocabulary:

Greenhouse effect, Global Warming, climate, pollution, ozone, Ultraviolet radiation (UV), CFC, Pollution,



Vocabulary:

weather, air mass, front, saturated, cloud, tornado, hurricane, relative humidity

Additional Information:

A common assessment will be given during the Climate Change concept: Earth's Poles in Peril article and open-ended response

Attached Document(s):

Vocab Report for Topic: Meteorology

Subject(s): Science

Days: 8

Grade(s): 8th

Concept:

Energy 2

Coriolis effect -

Deflection of fluids on Earth due to Earth's rotation

precipitation -

moisture falling to Earth from clouds

runoff -

water flowing across Earth's surface

groundwater -

water stored below Earth's surface

transpiration -

Giving off of water through green leaves

land breeze -

cool breeze moving from land to water in the evening

sea breeze -

cool breeze moving from water to land in the daytime

Concept:

Climate Change 2

Greenhouse effect -

natural process where energy is trapped inside the atmosphere to keep Earth warm

Global Warming -

environmental problem caused by the trapping of too much heat in Earth's atmosphere

Vocab Report for Topic: Meteorology

Subject(s): Science

Days: 8

Grade(s): 8th

climate -

average weather pattern for an area over a long period of time

pollution -

any harmful substance added to the environment

ozone -

oxygen compound found in our atmosphere that absorbs ultraviolet (UV) radiation

Ultraviolet radiation (UV) -

harmful energy from our sun that causes skin cancer; blocked by the ozone layer

CFC -

chlorofluorocarbon; chemicals found in everyday objects that when released into the atmosphere destroy ozone molecules

Pollution -

any harmful substance added to the environment

-

Concept:

Weather 4

weather -

the current state of the atmosphere

air mass -

body of air that has the same properties as the land below it

front -

boundary between two air masses where weather occurs

Vocab Report for Topic: Meteorology

Subject(s): Science

Days: 8

Grade(s): 8th

saturated -

air is holding the maximum amount of moisture

cloud -

condensed moisture in the atmosphere

tornado -

whirling low pressure system over land produced by severe thunderstorms

hurricane -

huge low pressure system that forms over tropical oceans

relative humidity -

measure of the amount of moisture in the air

Topic: The Nature of Science

Subject(s): Science

Days: 6

Grade(s): 8th

Key Learning:

The scientific method is used by all scientists to conduct experiments and investigations.



Unit Essential Question(s):

**What are the essential steps to the scientific method? How do they
aide scientists in conducting experiments?**



Concept:

The Scientific Method 1.5

S8.A.1.1.1, S8.A.1.1.2, S8.A.1.1.3, S8.A.1.1.4, S8.A.2.1.4, 3.1.7.C, 3.1.7.D, 3.2.7.A, 3.2.7.B,
3.2.7.D



Lesson Essential Question(s):

What are the steps of the scientific method? (A)

How would you describe a variable? (ET)

How can we distinguish between hypotheses, theories, and laws? (ET)



Vocabulary:

scientific method, hypothesis, variable, control, theory, law, independent variable, dependent variable, constants

Concept:

Measurement 5.5

S8.A.2.1.1, 3.2.7.B, 3.2.7.D



Lesson Essential Question(s):

What is the SI system of measurement? (A)

How are length, mass, volume, density, and temperature measured in the SI system? (A)

How can you convert between SI units of measurement? (A)

How can you use dimensional analysis to convert between SI and customary units? (ET)



Vocabulary:

mass, volume, density

Additional Information:

Attached Document(s):

Vocab Report for Topic: The Nature of Science

Subject(s): Science

Days: 6

Grade(s): 8th

Concept:

The Scientific Method 1.5

scientific method -

a series of planned steps used by scientists to solve problems

hypothesis -

an educated guess

variable -

changeable factor in an experiment

control -

the standard for comparison in an experiment

theory -

an explanation of things or events based on knowledge gained from many observations and investigations

law -

a well-tested statement about what happens in nature

independent variable -

the variable changed by researcher. See how it affects dependent variable

dependent variable -

changes according to independent variable. What is being measured.

constants -

factors that do not change in an experiment, but are needed

Concept:

Measurement 5.5

Vocab Report for Topic: The Nature of Science

Subject(s): Science

Days: 6

Grade(s): 8th

mass -

measurement of the amount of the amount of matter in an object

volume -

measurement of the amount of space taken up by an object

density -

mass per unit volume of an object

Topic: The Periodic Table
Subject(s): Science

Days: 10
Grade(s): 8th

Key Learning:

Matter is made of tiny particles called atoms. The properties of atoms can be determined by looking at the periodic table.



Unit Essential Question(s):

What is matter made of? How can we determine the properties of atoms using the periodic table?



Concept:

Elements and Atomic Structure 4

3.4.7.A, S11.C.1.1.1

Concept:

Properties of the Periodic Table 6

3.4.7.A, S11.C.1.1.4



Lesson Essential Question(s):

What are the differences between the subatomic particles? (A)

How can atomic structure be determined from the periodic table? (ET)

How does atomic structure determine elemental properties? (ET)

Lesson Essential Question(s):

How is the modern periodic table arranged? (A)

How can a periodic table be used to determine the physical and chemical properties of elements? (ET)



Vocabulary:

electron cloud, nucleus, atomic mass, atomic number, mass number, atom, proton, neutron, electron, valence, quark, element

Vocabulary:

periodic table, period, group, metal, nonmetal, metalloid, transition element

Additional Information:

Attached Document(s):

Vocab Report for Topic: The Periodic Table

Subject(s): Science

Days: 10

Grade(s): 8th

Concept:

Elements and Atomic Structure 4

electron cloud -

area around the nucleus of an atom where its electrons are most likely located

nucleus -

the positively charged center of an atom

atomic mass -

weighted mass of an element including all isotopes

atomic number -

number of protons in an atom.

mass number -

sum of the protons and neutrons in the nucleus of an atom

atom -

smallest particle of an element

proton -

positively charged particle in the nucleus of an atom

neutron -

particle in the nucleus of an atom with no charge

electron -

negatively charged particle found in the region outside the nucleus of an atom

valence -

the total electrons in the outer energy level of an atom

Vocab Report for Topic: The Periodic Table

Subject(s): Science

Days: 10

Grade(s): 8th

quark -

the smaller particles that make up protons and neutrons

element -

substance that can't be broken into simpler substances

Concept:

Properties of the Periodic Table 6

periodic table -

an arrangement of elements in columns, based on a set of properties that repeat from row to row

period -

horizontal rows of elements in the periodic table

group -

the vertical columns on the periodic table

metal -

elements that are good conductors of heat and electricity. Located on the left side and center of the periodic table

nonmetal -

elements that are poor conductors of heat and electricity. Located on the right side of the periodic table

metalloid -

elements with properties of metals and nonmetals.

transition element -

groups 3-12 on the periodic table. Can have variable oxidation numbers