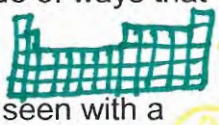
First & Last Name _____

Unit A - Matter, Properties and Change

6.P.2.1 *Recognize that all matter is made up of atoms and atoms of the same element are all alike, but are different from the atoms of other elements.*

- There are more than 100 elements that combine in a multitude of ways that make up all of the living and nonliving things that we encounter.
- Matter is composed of extremely small particles, too small to be seen with a classroom microscope, called atoms.
- Atoms have all of the properties of matter. Meaning that ALL atoms have mass and occupy space (volume).
- Atoms are the smallest part of an element that has the same chemical & physical properties of the element.
- All atoms of the same element have the same properties. This means that all iron atoms have the same mass and occupy the same amount of space.
- Also, all iron atoms are different from carbon atoms or from any other element.



Periodic Table of Elements

Same element = same properties

Atoms

- An atom is the smallest particle in matter that has all the properties of that material.
- Atoms are the building blocks of all matter.
- One grain of sand on a typical beach contains more atoms than there are grains of sand on the entire beach.
- Atoms can not be broken into smaller pieces.

Building Blocks

Put me together, I can't be broken apart! -says the atom

Elements

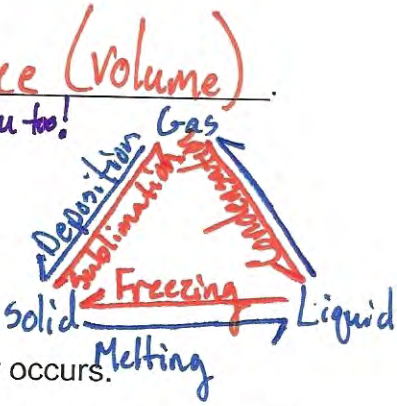
- All the different kinds of matter in the universe are made from approximately 100 different types of atoms called elements.
- An element is a substance that cannot be broken down into other substances by chemical or physical means.
- In any element, all of the atoms are exactly the same.
- Each element can be identified by its specific chemical and physical properties.
- An element is a pure substance represented by a chemical symbol.
- The elements oxygen, carbon, hydrogen and nitrogen make up 96% of all living matter.
- Elements can be represented through graphics. Because elements are pure, they will be represented by one shape or two or more of the same shape.

ALL ATOMS ARE THE SAME

6.P.2.2 *Explain the effect of heat on the motion of atoms through a description of what happens to particles during a change in phase.*

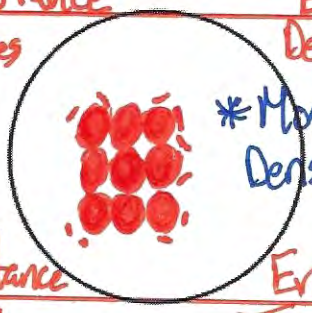
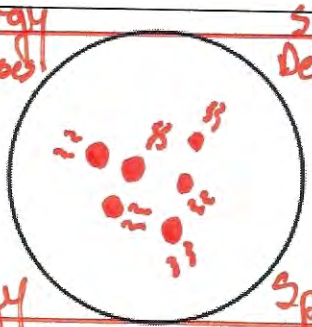
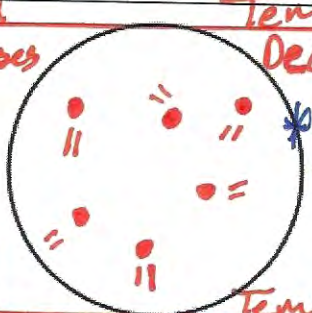
1. Matter and Energy

- Matter is anything that has Mass and takes up space (volume).
- Matter makes up everything in the universe. That means you too!
- Energy is the ability to do work or cause change.
- Energy can move matter from one place to another (motion).
- Change can also be a change in state / phase (solid to liquid).
- Temperature / Heat is always involved when a change in matter occurs.
- Energy appears in different forms. Kinetic energy is in the motion of molecules. Atoms and molecules are in constant motion.
- Increased temperature means greater energy of motion so most substances expand when heated and contracted when cooled.



2. States of Matter

- Particles of matter move more quickly when heated.
- This change in particle speed/temp. is what causes the change in state of matter.
- The three states of matter are solid, liquid, and gas.

State of Matter	Solid	Liquid	Gas
	The particles in a solid are packed tightly together and have the least energy. They vibrate but stay where they are.	The particles in a liquid move more freely, enough to slide past one another.	The particles in a gas are the farthest apart and have the most energy.
Example	 * Most Dense		 * Least Dense
Facts	has a definite shape & volume	has no definite shape but has definite volume	has no definite shape and no definite volumes
	Examples * Answers will vary. Ice, wood, metal	Examples * Answer will vary. Soda, shampoo, Bojangles Sweet Tea	Examples * Answers will vary. Oxygen, Air, Carbon Dioxide

Thermal Contraction (Smaller)

Particle: Distance Decreases — Energy Decreases — Speed Decreases — Temp. Decreases

Particle: Distance Increases — Energy Increases — Speed Increases — Temp. Increases

Thermal Expansion (Bigger)

6.P.2.3 Compare the physical properties of pure substances that are independent of the amount of matter present including density, melting point, boiling point, and solubility to properties that are dependent on the amount of matter present to include volume, mass and weight.

1. Mass

- Mass is the amount of matter in an object. It is also a physical property of matter.
- A pebble has less mass than a boulder of the same type rock.
- The mass of a specific object never changes.
- An object on Earth would have the same mass on the Moon or on Jupiter.

*Mass by grams

2. Weight (Note: Be very careful not to confuse weight with mass)

- Weight measures the force of gravity on an object.
- Weight for a specific object changes whenever gravity changes. Jupiter has stronger gravity than Earth. Therefore, you or any object would weigh more on Jupiter than Earth. The Moon has weaker gravity than Earth. Therefore, you or any object would weigh less on the Moon than on Earth.
- Use this chant to remember the difference between mass and weight.

The mass of an object always stays the same.
Weight depends on gravity and it can change.

*Remember: Gravity is always a pull — never a push!

I have the same MASS on the moon & earth! 30 True

3. Volume

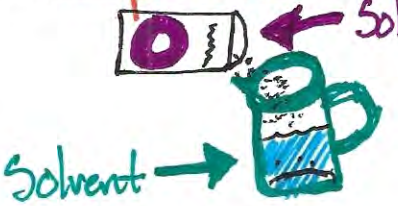
- Volume is the amount of space that something takes up.
- Scientists use a centimeter ruler to measure the volume of a solid rectangular object.
- The formula is volume = length x width x height and the volume is recorded in cm^3.

4. Freezing, Melting, and Boiling Points

- Liquids change to solids at their freezing point.
- Solids change to liquids at their melting point.
- Liquids change to gases at their boiling point. This is called evaporation (boiling)
- Condensation is the process of a gas (like water vapor) changing to a liquid
- Different substances have different freezing and boiling points.

5. Solubility

- Solubility means the amount of solute that can be dissolved in a specific volume of solvent under certain conditions.
- A solute's solubility depends on the chemical nature of the solvent.
- Another important factor that influences solubility is the temperature of the system (the solute and the solvent).
- The most common solvent is water (H_2O).



→ What you can observe using your 5 senses (taste, smell, see, touch, hear)

6. Physical Properties

- A physical property is a characteristic of a substance that can be observed without changing the substance into something else. *Remember - Phase changes are physical changes

7. Physical Changes

- A change that alters the appearance or texture/shape of a material but does not make the material into a new substance is a physical change.
- Give 3 examples of physical changes: (Answers will vary.)
  1. tearing paper 2. phase changes (ie. solid → liquid) 3. breaking a window

8. Chemical Properties

- A chemical property describes matter based on its ability to change into a new kind of matter with different properties.

C.C. Chemical Creates

9. Chemical Changes

- A change in matter that produces a new substance is a chemical change.
- Unlike a physical change, a chemical change produces new substances with properties different from the original substances

Unit B - Energy: Conservation and Transfer

6.P.3.1 *Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation and convection and the effects that may result.*

1. Energy can be transferred from one system to another (or from a system to its environment) in different ways:

A. Thermal when a warmer object is in contact with a cooler one

B. Mechanical when two objects push or pull on each other over a distance

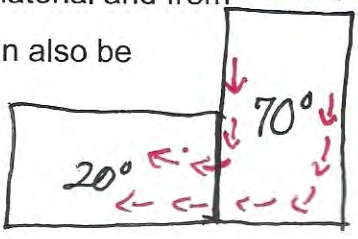
C. Electrical when an electrical source such as a battery or generator is connected in a complete circuit to an electrical device

D. Or by its most common form which is Electromagnetic waves.

2. Thermal energy is transferred through a material by the collisions of atoms within the material. *Heat **flows through materials or across space from** warm **objects to** cooler **objects**, until both objects are at equilibrium. Heat travels through solids, primarily by conduction. Heat is circulated in fluids, both liquids and gases, through the process of convection. Radiation is energy that travels across distances in the form of electromagnetic waves. Over time, thermal energy tends to spread out through a material and from one material to another if they are in contact (conduction). Thermal energy can also be transferred by means of currents in air, water, or other fluids (convection).

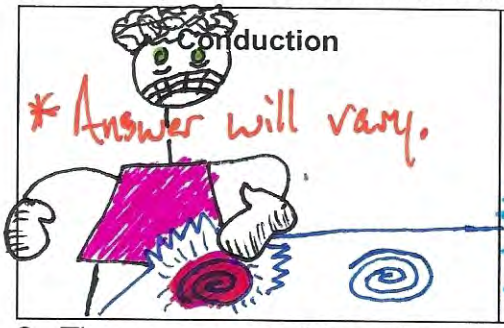
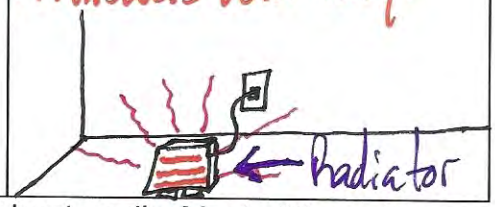
Pavement gets warm due to Radiation

Heat Flow is From HOT to COLD



6.P.3.3 *Explain the suitability of materials for use in technological design based on a response to heat (to include conduction, expansion, and contraction) and electrical energy (conductors and insulators).*

1. Draw a picture which illustrates the three ways of heat transfer in matter.

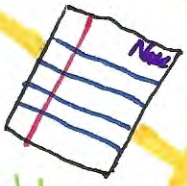
Conduction	Convection	Radiation
* Answer will vary. 	* Answers will vary. 	* Answers will vary. 

2. There are some things that we use daily that we want to conduct heat easily. Most of these items are made of materials that conduct heat readily: aluminum, steel, copper. We call these materials thermal conductors. Similarly, there are things that we do not want to conduct heat (pot handles, spatula, cooking utensils) and these items are generally made of materials that limit heat transfer. We call such materials thermal insulators. For example, expansion joint strips in bridges allow for the bridge to expand in hot weather and not break. These same joint strips allow for the bridge to contract in cold weather and not break.

3. Electrical energy also passes through conductors. An electrical conductor is a material through which an electrical current can flow easily. An electrical conductor is a material through which electrical current does not readily flow. Electrical conductors include most metals, while most nonmetallic solids (rubber, glass, porcelain, ceramic) are insulators.

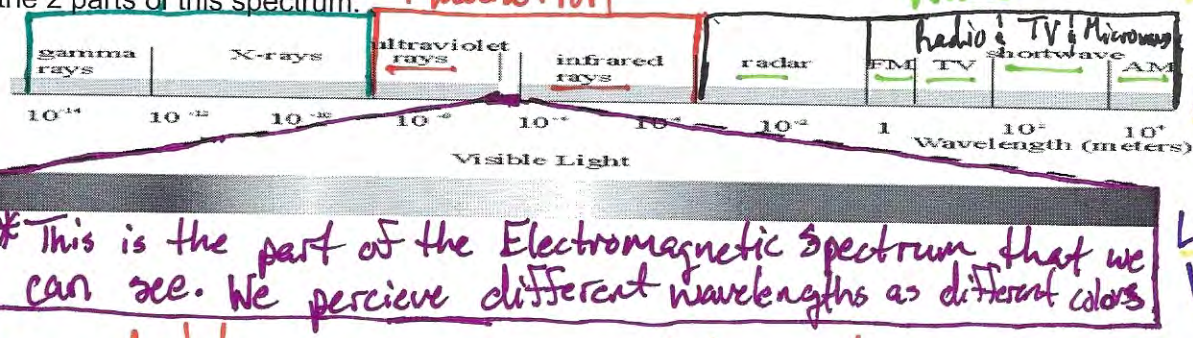
4. Light and other electromagnetic waves can warm objects. How much an object's temperature increases depends on how intense the light striking its surface is, how long the light shines on the object, and how much of the light is absorbed. When light interacts with matter it is either absorbed, transmitted, refracted and/or reflected (scattered).

Draw an example of each type of light interaction.

Absorption	Transmission	Refraction	Reflection
 * Block starts to heat up. Temp ↑	 * Light passes through the paper!	 * Light bends when it hits a medium.	 * Light bounces off of an object

6.P.3.2 Explain the effects of electromagnetic waves on various materials to include absorption, scattering, and change in temperature

1. Identify the 2 parts of this spectrum.



Rays Radiation Waves

High Energy — Low Energy

High Frequency — Low Frequency

Short Wavelength — Long Wavelength

*This is the part of the Electromagnetic spectrum that we can see. We percieve different wavelengths as different colors

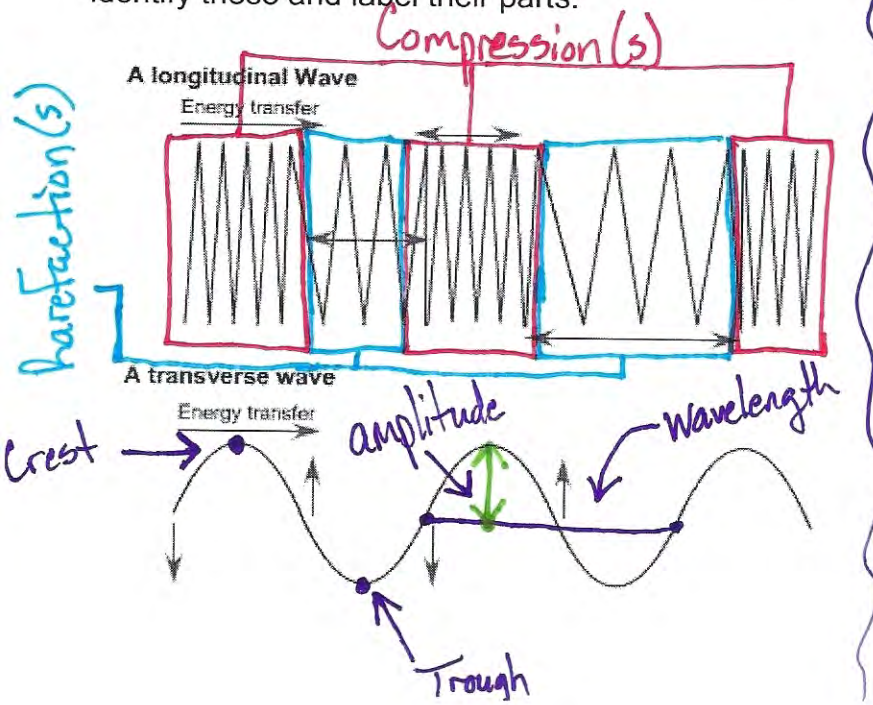
2. Visible Light is the portion of the Electromagnetic spectrum that is visible to (can be detected by) human eyes. Infrared light has a longer wavelength than visible light and is detected most often by its heating effect. Infrared imaging has applications in space exploration and with satellite imaging. Ultraviolet light has shorter wavelengths than visible light. These wavelengths are responsible for causing our sunburns. Most of these waves are blocked from entering Earth's atmosphere by the ozone. Scientists have developed a UV index to help people protect themselves from these harmful ultraviolet waves.

Unit C: Waves

6.P.1 Understand the properties of waves to wavelike property of energy in earthquakes, light and sounds waves.

1. **All waves transmit** ENERGY **not matter**. Waves are a disturbance that transmits ENERGY in matter or space. Nearly all waves travel through matter. Waves are created when a source (force) creates a vibration. **Provide 3 examples of waves.**

There are 2 main types of waves. Below you will see examples of both. You will need to be able to identify these and label their parts.



Compression(s)

Rarefaction(s)

Mechanical Waves (Medium)

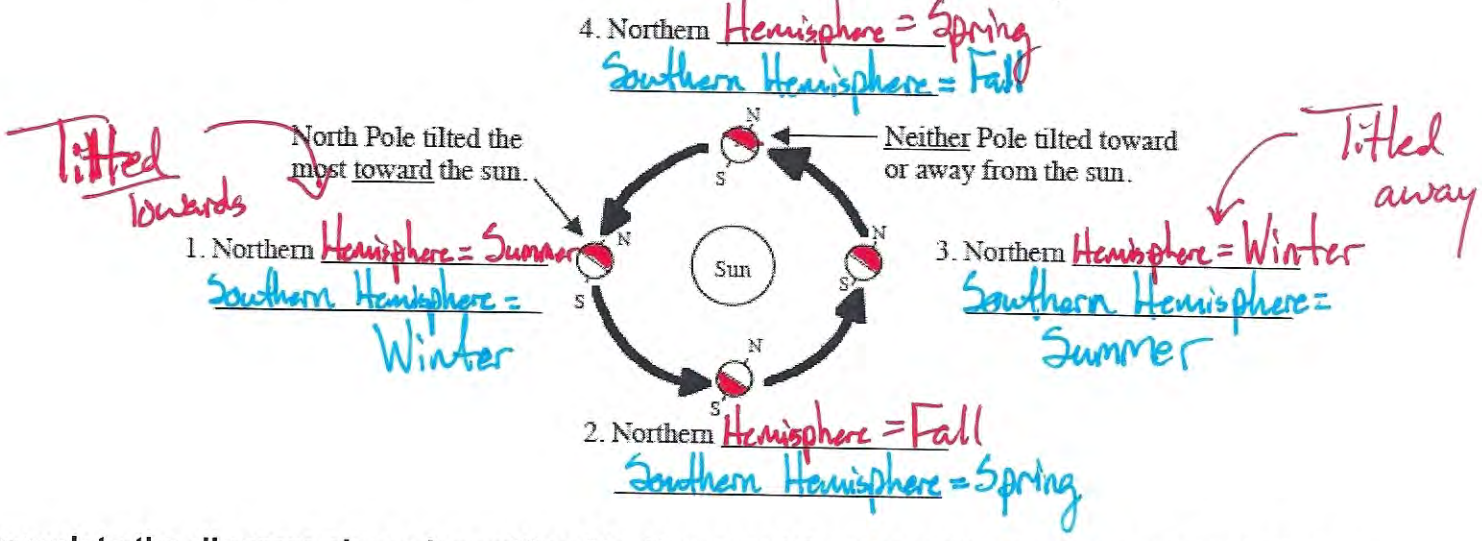
- Require/Need a Medium (solid, Liquid or gas)
- Example(s):
  - Sound Waves

Electromagnetic Waves (Exempt)

- Does not need, but can use
- Can travel in a vacuum (like space)
- Example(s):
  - Light Waves
  - Radio Waves
  - X-Rays

degrees) of the Earth around the Sun on its axis **along with its daily** rotation **causes varying lengths of daylight on the Earth's surface** as well as changes in the directness and intensity of sunlight. **How long does it take Earth to complete this?** Rotation = 24 hours

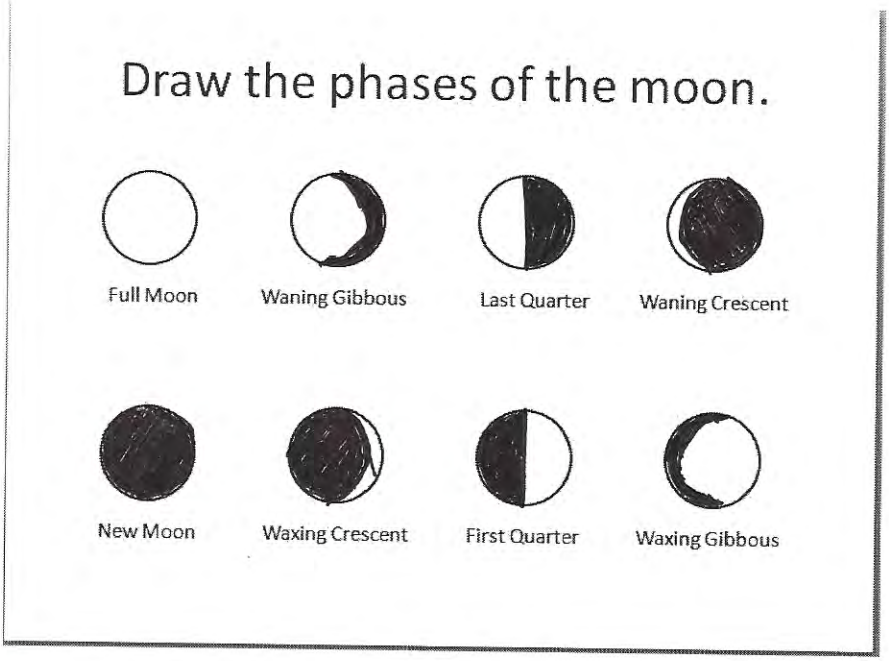
4. **The Earth's** revolution **around the sun in the path of an ellipse results in a yearly cycle of** seasons for much of the Earth's surface. **The** tilt **of the Earth's axis also results in the** seasons **being 'reversed'** in the Northern and Southern hemispheres. (e.g.: winter in North America corresponds to summer in South America.) **How long does it take Earth to complete this?** Revolution = 365 ¼ days



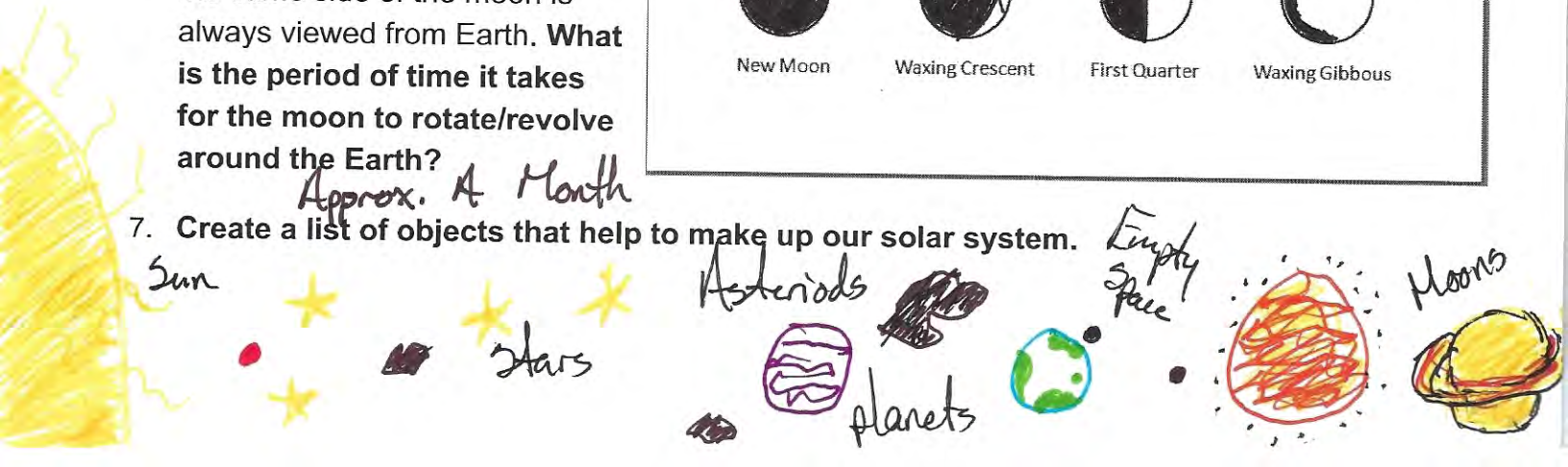
Complete the diagram above by writing Northern and Southern Hemisphere on each line. Indicate in each, what season the Northern and Southern hemispheres would be in.

5. **The Earth's** Moon **revolves around the Earth** as both go through space and revolve around the Sun. From Earth, **it appears in a series of** phases that repeat in a regular cycle.

6. Since the rotational period of the moon is the same as its period of revolution around the Earth, the same side of the moon is always viewed from Earth. **What is the period of time it takes for the moon to rotate/revolve around the Earth?** Approx. A Month



7. **Create a list of objects that help to make up our solar system.**



Mnemonic to help you remember: My Very Energetic Malamute Just Swam Until Nighttime

8. Planets are the largest objects in the solar system and due to the Sun's gravitational pull, they revolve around the sun with known frequencies. Eight planets of very different size, composition, and surface features move around the sun in nearly circular orbits. Some planets have a variety of moons and even flat rings of rock and ice particles orbiting around them. Some of these planets and moon show evidence of geologic activity. **Fill in the following chart listing the planets (in the correct order from the sun) and their defining characteristics.**

Planet	Outer or Inner Planet	Defining Characteristics
1. Mercury	Inner Planet	Closest Planet to the Sun & terrestrial (rocky)
2. Venus	Inner Planet	Very thick atmosphere with a surface temperature about 460°C; Earth's twin in size
3. Earth	Inner Planet	Breathable Atmosphere and water in all three states
4. Mars	Inner Planet	Known as a red plant and is of interest for ongoing exploration
5. Jupiter	Outer Planet	The most massive planet; a gas giant with a Great Red Spot in its atmosphere
6. Saturn	Outer Planet	The second largest planet in our solar system; has rings made of chunks of ice and rock
7. Uranus	Outer Planet	Looks bluish because of methane in its atmosphere; extreme cold as it is twice as far from the Sun as Saturn
8. Neptune	Outer Planet	This planet's largest moon is Triton; it is 30 times Earth's distance from the Sun
9. Pluto	The Debate continues. *I would strongly suggest to continue watching/reading about Pluto!	This planet is not a gas giant; it is small and has a solid surface; it also is debated to be a planet

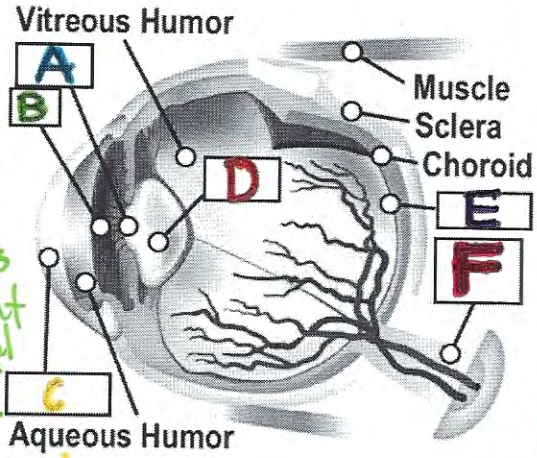
9. The planet Earth formed in just the right place with just the right ingredients for life to flourish. **What are these "ingredients" that allow for Earth to be the only planet in our Solar System to sustain life?** - Liquid Water - Suitable (Good Amount) of Sunshine - Breathable Atmosphere

10. Space Exploration **has allowed humans to learn much about the workings of the solar system**, the composition of planets and moons, and the effects of many types of solar radiation on the Earth and its inhabitants. **In preparing for the challenges of** Space Exploration **, people have developed tools and products that have become very important in enriching our lives. List some of those tools and products which were developed to help this effort.**

*Sorry Pluto

3. **Light travels in** transverse **waves.** Something can be "seen" when light waves are emitted or reflected. Human eyes respond to only a narrow range of wavelengths in the electromagnetic spectrum. Differences of wavelength within that range are perceived as different colors of light.

4. Use the diagram below to **identify the different parts of the human eye.** You will need to **know the locations and functions** of the following parts.



A. Pupil - Hole in the eye that allows light to pass through. Controlled by the iris.

B. Iris - Expands & Contracts to regulate the amount of light that enters the eye. * Colorful part of the eye.

C. Cornea - Protects the pupil (the rest of the inner eye from things getting in)

D. Lens - Bend (refract) & focus light onto the retina.

E. Retina - Transmits info (changes light into signals)
- Cones -
- Rods -

F. Optic Nerve - Carries info to the brain.

6. **Identify the order in which light travels the human eye.**

1) Cornea 2) Pupil 3) Lens 4) Retina

7. **Create a list of conditions which can affect the human eye.**
- Nearsightedness - Farsightedness - Color Blindness

8. **Sound travels in** longitudinal **waves.** Something can be "heard" when waves enter the ear. Sound is a form of energy that is caused when vibrating materials produce waves that move through matter. These waves have different characteristics such as frequency and amplitude, which will determine the properties of sound such as pitch and loudness. **Provide a brief definition for each of the characteristics and properties of sound.** * Sound is caused by vibrations.

Property/ Characteristic	Definition
1. Frequency 	The # of waves that pass a fixed point in time
2. Amplitude 	Distance from the resting position to crest/trough
3. Pitch	Determined by Frequency: how high/low the sound is.
4. Loudness	Determined by amplitude (Ex. music amplifiers)

9. The form of the human ear can receive sound waves as vibrations and convert them to signals that are processed by the brain. **Identify the order in which sound travels through the ear.**

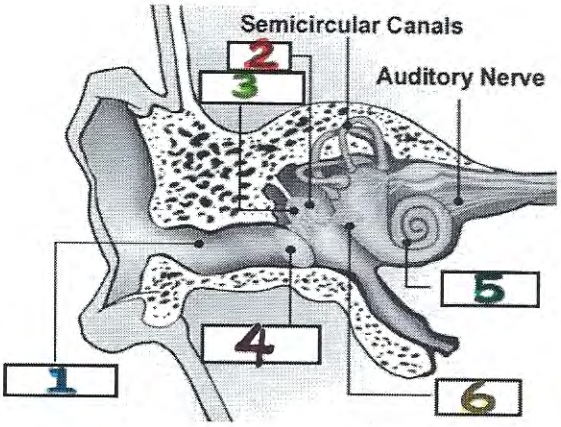
1) Outer Ear - Pinna - Ear Canal - Ear Drum 2) Middle Ear - Hammer, Anvil, Stirrup 3) Inner Ear - Cochlea - Auditory Nerve 4) Brain

↳ Captures Sound ↳ Amplify the sound ↳ Transmits signals to the Brain

10 . Use the diagram below to **identify the different parts of the human ear.** You will need to **know the locations and functions** of the following parts.

1) Ear Canal

4) Ear Drum



2) Anvil

5) Cochlea

3) Hammer

6) Stirrup

11. **Create a list of conditions which can affect the human ear.**

Answers will vary.

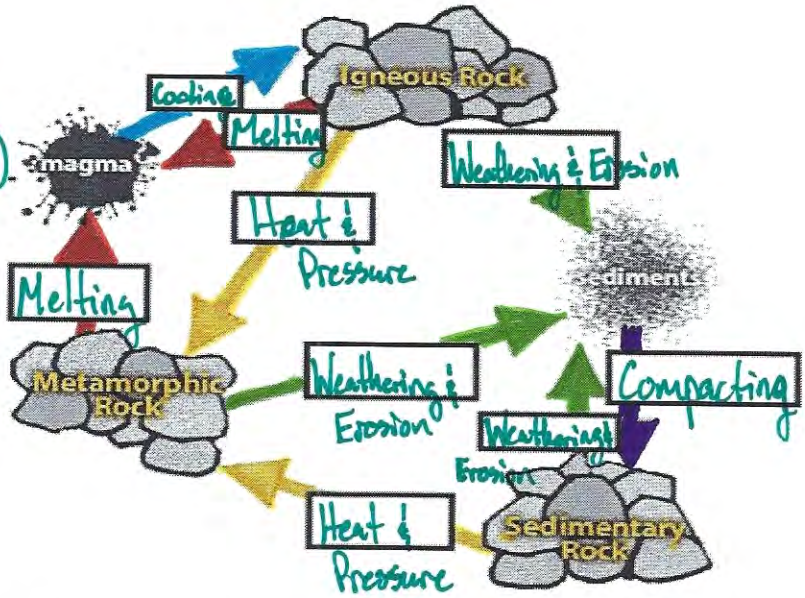
Unit D: Rock Cycle/Soil Formation/Soil Conservation

6.E.2.3 Explain how the formation of soil is related to the parent rock type and the environment in which it develops.

1. Forces deep inside Earth and at the surface produce a **slow cycle that builds, destroys, and changes the rocks** in the crust. Plate movements start the rock cycle by **helping to form magma, the source of igneous** rocks. Plate movements also cause **faulting, folding and other motions of the crust that help to form sedimentary and metamorphic rock.** You will need to know how each type of rock is **formed**. Correctly label the diagram of the rock cycle.

2. List the **5** components that soil is mixture of:

1. Rock Particles (Parent Rock)
2. Minerals
3. Decayed Organic Matter (Humus)
4. Water
5. Air



3. The composition and texture of soil and its fertility and resistance to erosion are greatly influenced by **plant roots and debris, bacteria, fungi, worms, insects, rodents, and other organisms.** Which of the following listed adds air and breaks down organic matter in soil?

4. Different soils have many properties such as **texture, particle size, pH, fertility and ability to hold moisture.** Soil particle size affects a soil's ability to hold moisture. Sand has the largest particle size and allows water to drain at a fast pace. *Silt* has a medium particle size and drains *water at a steady rate*. **Clay** has the smallest size and **drains slowly**. Humus creates a loose structure that simultaneously holds moisture and drains well. What conclusion can you make about particle size and the ability to hold moisture?

The bigger the soil particles the more/faster the water drains.

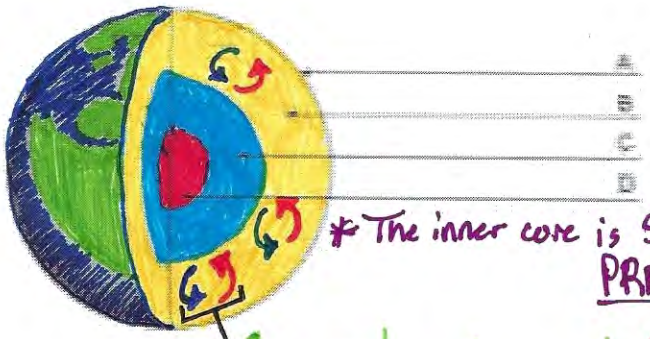
5. What type of soil has equal parts of sand, silt, and clay? Loam

6. Technology, such as remote sensing, has allowed humans to better study the human impact on soil quality and erosional processes so that the soil can be protected and preserved. Over time, remote sensing information can tell us how humans are constantly changing the surface of the Earth and what impact these changes are likely to produce.

7. How does crop rotation impact the soil?

Unit E: Earth's Layer/Plates

1. Use the following diagram to label the layers of the Earth:



A. Crust (Least Dense)
B. Mantle
C. Outer Core
D. Inner Core (Most Dense)

* The inner core is SOLID because of the extreme PRESSURE!

As Altitude ↓:
Pressure ↑
Density ↑
Temperature ↑

Convection Current → Hot (less dense molten rock rises) ↓ Cold (more dense molten rock sinks)

2. The Earth has a solid inner core that is surrounded by a liquid outer core. Both the inner core and outer core contains both iron and nickel metals. The mantle surrounds the core and is thick, hot and **convective**. The crust consists of many continental and oceanic plates that have slowly moved and changed positions over time. Scientists call Earth's crust and upper mantle the lithosphere.

3. What type of heat transfer takes place in the mantle to allow tectonic plates to move? convection

Reminder: Convection is heat transfer through fluids/air.
→ The mantle is fluid molten rock.

4. Tectonic Plate movement led to the breaking apart of what supercontinent?
Pangaea

5. Give an example of a type of geological event that can occur at each of the following plate boundaries:

Plate Subduction: Volcanoes ~ Subduction Zone

(Two plates collide & the plate that is most dense will sink & go under the plate that is least dense.)

Convergent Plates: Mountains ~ Subduction

(Collide)

Divergent Plates: Rift Valley ~ Mid-Ocean Ridge ~ Trench ~ Sea Floor Spreading

(Divide)

Transform Plates: Earthquakes ~ Faults ~ Tsunamis

(Slide)

6. You will need to know that during an earthquake, energy is released into the Earth as **Body and Surface Waves.** What is the difference between how body and surface waves **travel** on Earth?

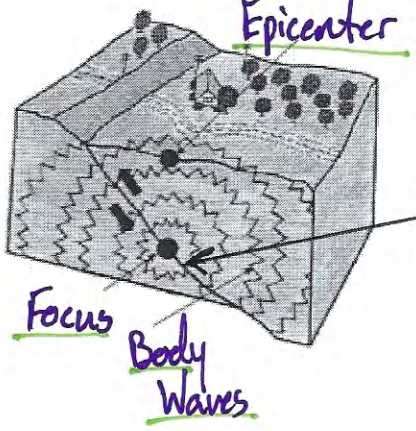
Primary AND Secondary Waves are both considered **Body Waves. Primary Waves can travel through **solids and liquids**, while Secondary Waves travel through **solids**.

* Body Waves (P & S) - travel through the earth's interior.
* Surface Waves - Slow-moving, large & destructive waves that travel on earth's surface.

Match the following type of wave with its description:

Primary Waves	Waves that are the slowest, largest, and cause the most destruction
Secondary Waves	Waves that travel the fastest and cause rock material to move back and forth
Surface Waves	Waves cause rock particles to vibrate at right angles

8. Label the following diagram of an earthquake:

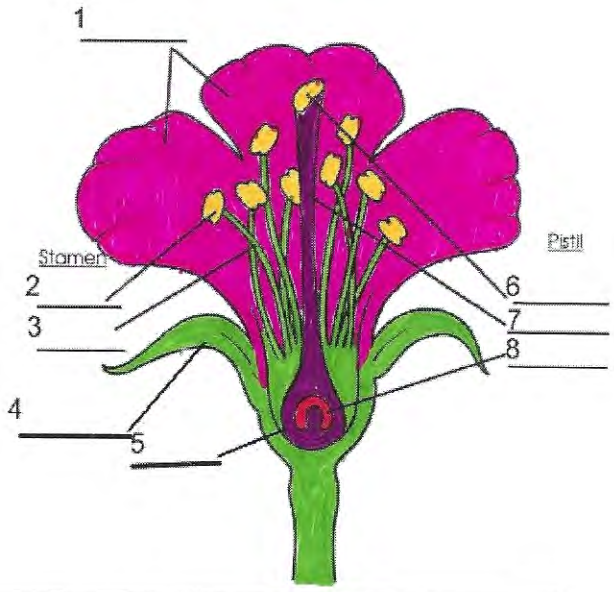


Structures directly closest to the epicenter would have the most damage.

What is a **fault**?

Fractures in rocks caused by plates sliding past each other!

Unit F: Structures & Functions of Flowering Plants & Plant Processes



1. Animals and plants have a great variety of body plans and internal structures that contribute to their being able to make or find food and reproduce. The process of reproduction in flowering plants takes place in the flower, which is a complex structure made up of several parts. Some parts of the flower are directly involved in fertilization and seed production. Other flower parts have functions in pollination. A flower is made up of eight parts. **In the diagram below you will need to identify the parts of a flowering plant. You will also need to be able to identify not only the parts, but functions of those parts as well.**

Part of the Flower	Function
1. Petals	Color attracts birds & insects
2. Anther	Produces Pollen (plant male sex cells/sperm)
3. Filament	Holds up & supports the anther
4. Sepals	Protects flower before it opens
5. Ovary	Becomes the fruit
6. Stigma	Sticky catches pollen
7. Style	Passage For pollen tube
8. Ovule	Seeds develop here

2. One of the most general distinctions among organisms is between plants, which use sunlight to make their own food (photosynthesis) and animals, which consume energy-rich foods. Photosynthesis and cellular respiration are complementary processes. Plants carry on photosynthesis and cellular respiration where food is broken down into energy. The requirements of one process are the products of the other. **So that you know these processes, you will need to complete the following table.**

Photosynthesis	Cellular Respiration
Food is accumulated.	Food is broken down.
Water is **required**.	Water is produced.
Carbon dioxide is taken in.	Carbon dioxide is **produced**.
Oxygen is **released.**.	Oxygen is taken in.
Produces glucose.	Produces **carbon dioxide and water.**

Energy from the SUN (Light) helps to create glucose.	Energy of the glucose is then broken down and released as ENERGY
Happens only in plants, in the presence of chlorophyll.	Occurs in all living things.

3. Leaves have an epidermis with a waxy cuticle and stomata that help prevent water loss. Guard cells that surround and control the size of the opening in stomata. **The loss of water through the stomata is called** transpiration. The opening and closing of guard cells regulate this plant process.

Yup! That's Right It's Part of the Water Cycle!

Remember: Guard Cells Guard!

Go to sleep Little Baby!

4. Changes in environmental conditions can affect the survival of individual organisms and entire species, this includes plants. Dormancy **is a period of inactivity in a mature seed prior to germination; seed remains dormant until conditions are favorable for growth and development of the new plant. Provide an example of this plant response.**

5. Plants have mechanisms that enable them to respond to their environment. Plants grow, reproduce, and shift the position of their roots, stems and leaves in response to environmental conditions such as gravity, sunlight, temperature and day length. A tropism **is a plant's turning or bending movement of an organism toward or away from an external stimulus. If it is** positive**, the plant grows toward the stimulus. If it is** negative**, the plant grows away from the stimulus.** This enhances the survival rate for that plant in a given environment. **Provide an example of each type.** Phototropism - Plants bending toward the light source!

Unit G: Ecosystems

6.L.2 *Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environmenet.*

Photosynthesis

1. A(n) ECOSYSTEM is all the living organisms that live in an area and all the nonliving features of their environment. Food provides molecules that serve as fuel and building material for all organisms. Plants use the energy from light to make sugars from carbon dioxide and water. Green plants are the producers of food that is used directly or indirectly by consumers. Energy flows through ecosystems in one direction, explain how energy flows in an ecosystem.

We are consumers!

1) Sun 2) Producers 3) Consumers 4) Decomposers

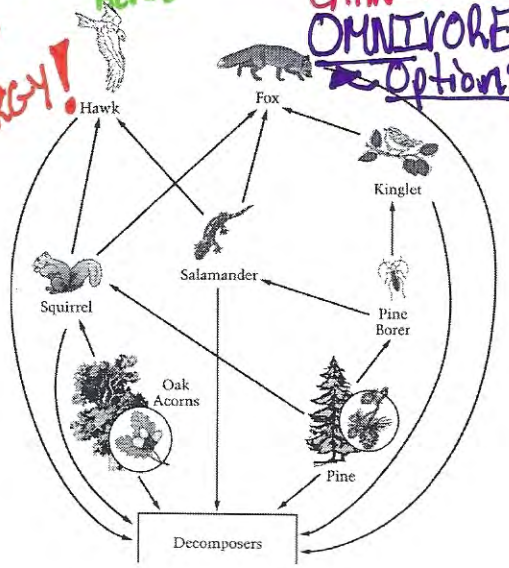
Plants & Herbs

HERBivores
CARNIVORES
OMNIVORE Options

2. What type of diagram shows a linear connection between producers, consumers and decomposers? Create an illustration that shows this flow of energy in an ecosystem.

Food chain: Oak Acorns → Squirrel → Fox

* Arrows show the flow of ENERGY!



3. The following question refers to the diagram below, showing a food web. Explain how food webs show the flow of energy in an ecosystem, and the roles of these organisms in the ecosystem.

4. **What type of diagram shows the amount of "biomass" available at each energy level in the food chain or food web? Create an illustration** that shows this flow of energy in an ecosystem.

Food Pyramid:

5. Matter is transferred from one organism to another and between organisms and their environments. Water, nitrogen, carbon dioxide, and oxygen are substances cycled between the living and non-living environments.

Biomes

6. The world contains a wide diversity of physical conditions, which creates a wide variety of environments: freshwater, marine, forest, desert, grasslands, mountain, and others. In any particular environment, the growth and survival of organisms depend on the physical conditions.

Environmental factors that affect an organism's ability to survive in its environment, such as food availability, predators, and temperature, are LIMITNG **factors.**

A LIMITNG **factor is any biotic or abiotic factor that restricts the existence, number, reproduction, or distribution of organisms. Using the environments above, create a specific list of factors that can limit the size of a population in an ecosystem.**

Limiting Factors: Extremely Hot & Cold Temps., lack of food, disease

For example, at high elevations, temperatures are too low, winds too strong and the soil too thin to support the growth of large trees.

7. Another factor for survive is the ability of an organism to withstand fluctuations in biotic and abiotic environmental factors. The limits of an organism's tolerance are reached when the organism receives too much or too little of some environmental factor. Organisms become fewer as conditions move toward either extreme of the range of tolerance (too much or too little). **Create a list of 5 biotic and 5 abiotic environmental factors that can affect the survival of a species in a particular ecosystem.**

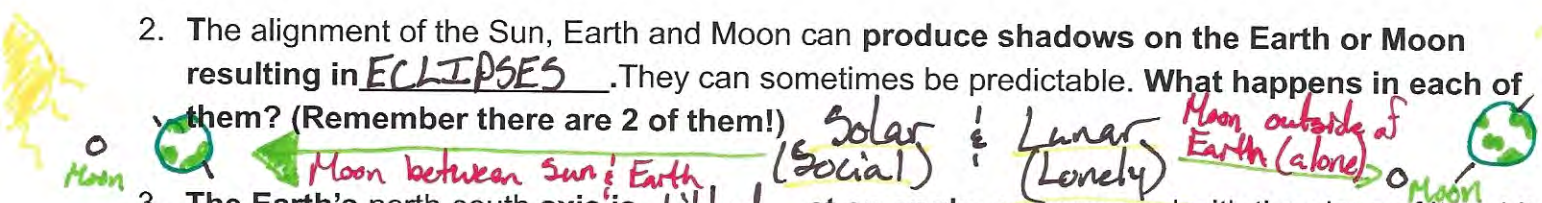
Answers will vary! Be Creative

Unit H: Earth in the Universe

6.E.1.1 *Explain how the relative motion and relative position of the sun, Earth and moon affect seasons, tides, phases of the moon, and eclipses.*

1. **The moon and the Sun each exert a** gravitational **pull** on the Earth. These forces can be aligned or in opposition to one another. The gravity (Sun) is the force which **keeps our universe in alignment and the planets in their orbit,** it is also the major source of heat and light. The Moon is the force which **has a major impact on the Earth's ocean tides.**

2. The alignment of the Sun, Earth and Moon can **produce shadows on the Earth or Moon resulting in** ECLIPSES **.** They can sometimes be predictable. **What happens in each of them? (Remember there are 2 of them!)**



3. **The Earth's** north-south **axis is** tilted **at an angle,** as compared with the plane of its orbit around the Sun. **The** rotation **(23.5 degrees) of the Earth causes all parts of the Earth to experience periods of daylight and darkness. The** revolution **(23.5**