

NAME: _____

SCHOOL: _____

TEACHER: _____

CABIN LEADER: _____

NATURALIST: _____



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CAMP LIFE – FIRST DAY

Welcome to Camp! This is your Three Oaks OSS Field Guide!
Please bring this on all the hikes so you can make observations, record data, and practice thinking like a scientist.

My cabin name is:

What are you most excited for this week?

What are you most fearful about this week? How might you overcome that fear?

What are three personal goals you would like to accomplish this week?

1.

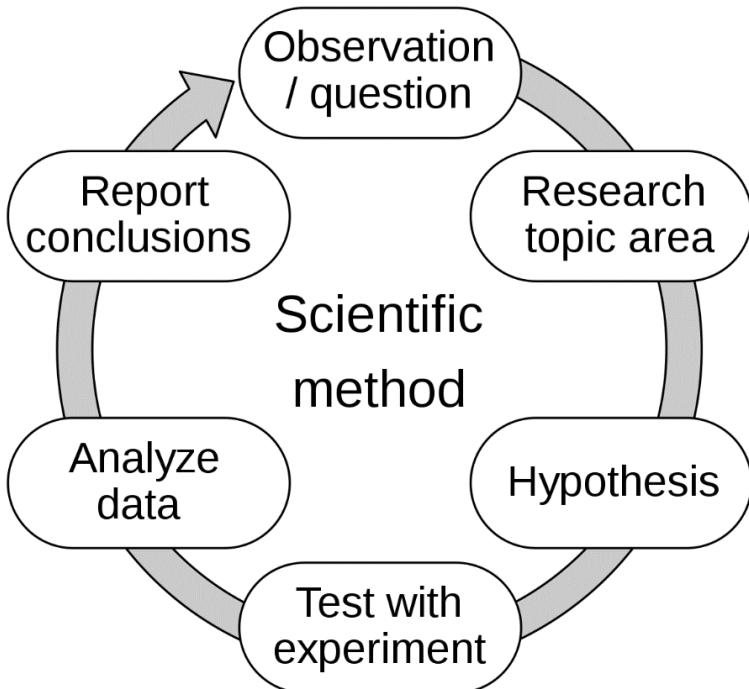
2.

3.

THE SCIENTIFIC METHOD

The scientific method is a way for scientists (or anyone!) to study and research a question or problem. By following the exact order of steps, scientists are able to get accurate answers to their questions. Fill in the blanks below to discover the steps of the scientific method.

1. Make an _____ and ask a _____.
2. _____ and find out about the topic area.
3. Develop a _____ and predict the outcome.
4. Test with _____. Develop a procedure to test your predictions.
5. _____ or examine the data you gather.
6. Report your _____ or findings from the experiment.



THE FIVE SENSES

A _____ is a specialized way the body helps us to perceive and understand the world around us.



Sight



Hearing



Smell



Taste



Touch

BIOTIC AND ABIOTIC FACTORS

Ecosystems are made of biotic (living) and abiotic (non-living) factors. Label each item below with either A for “abiotic” or B for “biotic”.

Rock _____

Squirrel _____

Coulter Pinecone _____

Water _____

Wind _____

Mushroom _____

Bobcat _____

Canyon Live Oak _____

Soil _____

Sunlight _____

BONUS:

Cotton T-Shirt _____

Glass _____

What is something **biotic** you can find at home/school?

What is something **abiotic** you can find at home/school?

ADAPTATIONS

Circle the correct scientific term for each definition below.

An area in which plants, animals, and microbes interact with each other and their environment.

- A. Adaptation B. Ecosystem C. Niche

A specialized physical or behavioral characteristic of an organism that helps it to survive more easily in its environment.

- A. Adaptation B. Ecosystem C. Niche

In ecology, the specific environmental conditions to which an organism has adapted.

- A. Adaptation B. Ecosystem C. Niche

What is one PLANT adaptation and one ANIMAL adaptation that you observed on your hike? Write your answers below.

Plant/Animal	Adaptation	Function	Structural OR Behavioral

REFLECTIONS

What was the most memorable part of your first hike at camp?

What did you learn on this hike that you want to share with others?

What are some questions that you still have about this topic?

BIOSPHERE

The regions of Earth occupied by living organisms is known as the _____.

A _____ is something that can be found in nature that can be used by living things.

RENEWABLE AND NON-RENEWABLE RESOURCES

Resources can be either renewable or non-renewable. Label each resource below with either R for “renewable” or N for “non-renewable”.

Solar Energy _____

Steel _____

Wind _____

Water _____

Oil _____

Natural Gas _____

Trees _____

Coal _____

There are 4 basic survival needs that all plants and animals (including humans) require to live. List them below.

1. _____ 2. _____ 3. _____ 4. _____

The environment in which an animal can exist, providing all things needed, is known as a(n):

- A. Habitat B. Campsite C. Ecosystem D. Biosphere

If an animal does not have the resources it needs, it must _____, _____, OR _____. (HINT: M.A.D.)

ANIMAL DIETS

Match each scientific term to the correct definition below.

- A. Herbivore _____ An animal that eats only meat.
- B. Omnivore _____ An animal that eats only plants.
- C. Carnivore _____ An animal that eats both meat and plants.

Think of all the wildlife that lives in the San Bernardino Mountains.

Give an example of a **carnivore**, an **herbivore**, and an **omnivore** that lives here. What might each animal eat?

- 1.
- 2.
- 3.

An organism that makes its own energy from non-living substances in its environment is called a(n):

AUTOTROPH

HETEROTROPH

An organism that obtains energy by consuming other organisms (such as plants and animals) is called a(n):

AUTOTROPH

HETEROTROPH

PLANT LIFE

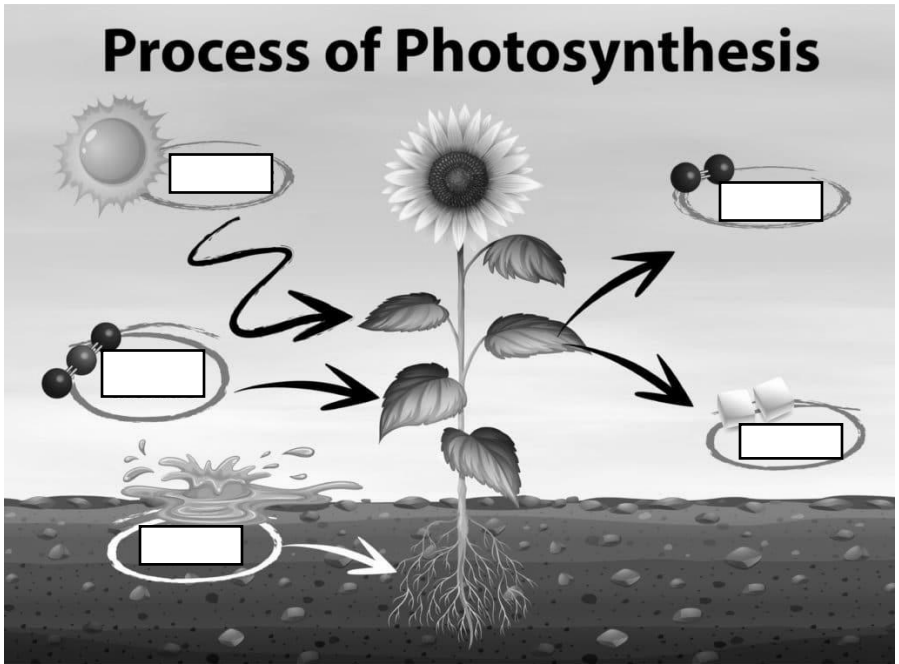
The process by which green plants produce food is known as _____.

The green pigment in plants used in absorbing light energy required for photosynthesis is called:

- A. Chlorine B. Clorox C. Chlorophyll

Use the word bank below to fill in the inputs and outputs of photosynthesis.

Oxygen (O ₂)	Water (H ₂ O)	Carbon Dioxide (CO ₂)
Sunlight	Glucose (C ₆ H ₁₂ O ₆)	

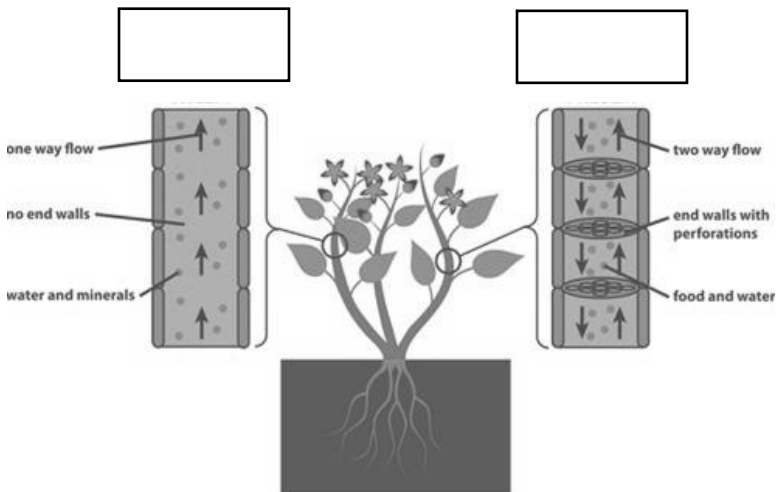


PLANT LIFE

Xylem is the strong tissue in plant roots and stems made of tiny tubes that carries _____ and nutrients from the roots (PICK ONE: up/down) to the stems and leaves.

Phloem is a special tissue made of tubes and fibers in the stems and roots of plants. It carries _____ substances (PICK ONE: up/down) the stem from the leaves to the other parts to the plant.

Correctly label each structure as either XYLEM or PHLOEM.



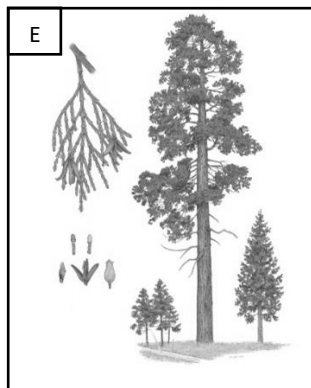
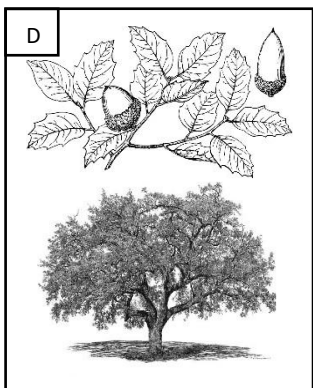
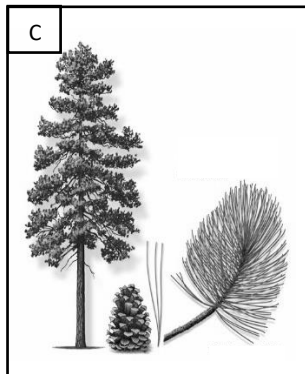
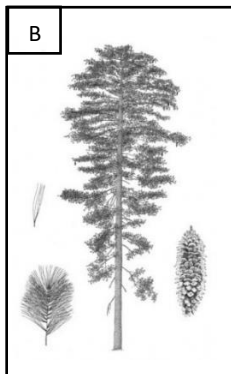
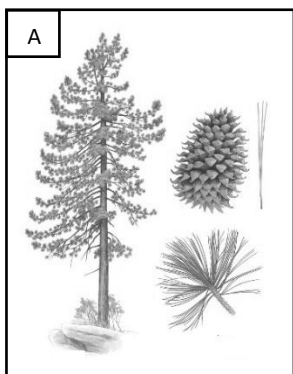
_____ is the process of evaporation or loss of water in plants.

Plants that have broad leaves that shed seasonally (usually in autumn) and use flowers to reproduce are called _____.

Plants that have needles or scales, stay green all year-round, and use cones to reproduce are called _____.

TREE IDENTIFICATION

Correctly identify each tree you might find at Three Oaks OSS.



Sugar Pine Incense Cedar Ponderosa Pine
 Canyon Live Oak Coulter Pine

Which plant (found in the San Bernardino Mountains) is fire-resistant and will commonly begin to grow after a wildfire?

SYMBIOTIC RELATIONSHIPS

Match each scientific term to the correct definition below.

- A. Parasitism _____ A symbiotic relationship in which one species lives off of another species and benefits from causing it harm.
- B. Mutualism _____ A symbiotic relationship in which one species benefits while the other is neither helped nor harmed by the association.
- C. Commensalism _____ A symbiotic relationship in which both species benefit from the association.

Give an example of **parasitism** found in nature.

Give an example of **mutualism** found in nature.

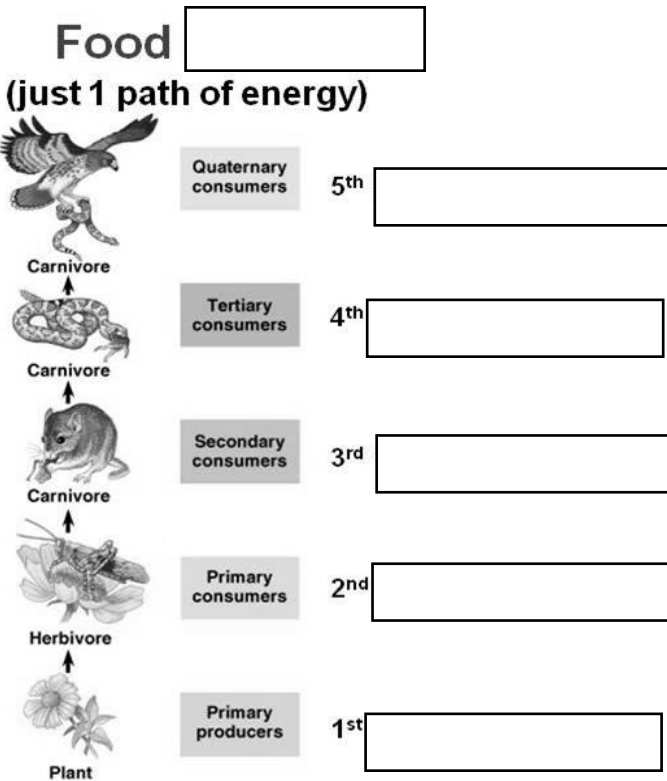
Give an example of **commensalism** found in nature.

FOOD CHAIN VS. FOOD WEB

_____ : A sequence of transfers of matter and energy in the form of food from organism to organism.

Use the word bank below to fill in the correct terms. You may use each term more than once.

Chain	Energy	Web	Trophic Level
-------	--------	-----	---------------



The *arrow* points to the eater and shows the transfer of

FOOD CHAIN VS. FOOD WEB

_____ : A diagram that depicts how all the organisms in an ecosystem are interconnected.

Use the word bank below to fill in the correct terms. You may use each term more than once.

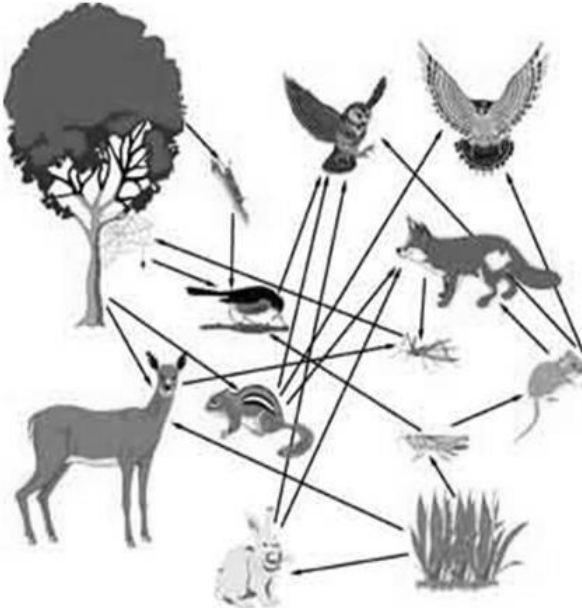
Chain

Energy

Web

Trophic Level

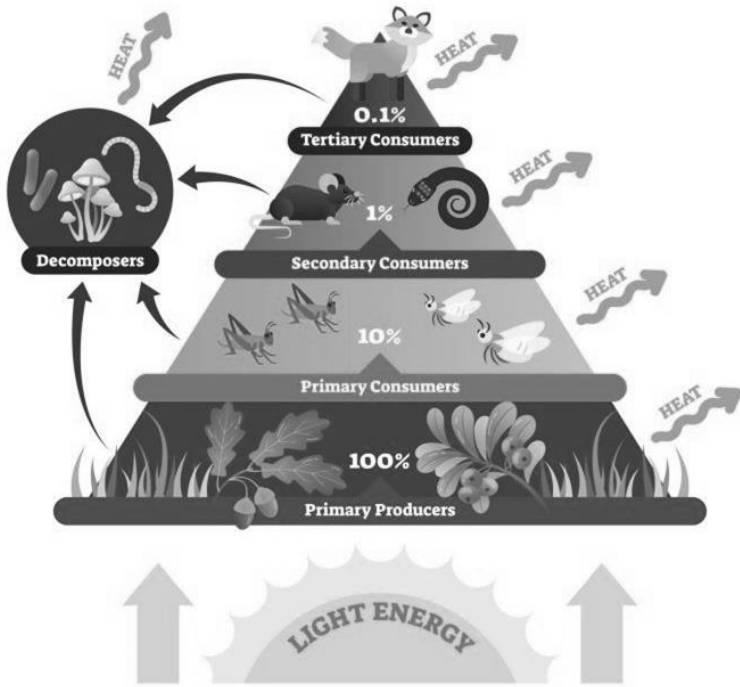
Food
(all possible energy paths)



The *arrow* points to the eater and shows the transfer of

ENERGY PYRAMID

Using the image on this page, answer the following questions.



1. Where does all the energy on our planet originally come from?
2. What types of organisms convert the Sun's energy into a usable form?

3. What would happen to consumers if there were no producers?

4. What percent of energy is lost at each **trophic level**? Where does that energy go?

5. What would happen if there were no decomposers?

A factor which limits the growth or reproduction of an organism or population is called a(n) _____.

The management of resources that provides for the future is known as:

- A. Conservation B. Reservation C. Moderation

GEOSPHERE

The portion of Earth's systems that relates to the structure and formation of the planet's landforms, interior, rocks, and minerals is known as the _____.

What is the scientific study of the Earth, its structure, history, and the forces that affect it called?

Circle the correct scientific term for each definition below.

A type of rock that forms when molten rock (such as magma or lava) cools and solidifies.

- A. Igneous B. Sedimentary C. Metamorphic

A type of rock that forms when particles settle out of water or air and accumulates in layers.

- A. Igneous B. Sedimentary C. Metamorphic

A type of rock that forms when existing rocks are changed by environmental factors, such as heat, pressure, or reactive liquids.

- A. Igneous B. Sedimentary C. Metamorphic

_____ is molten rock that is trapped beneath Earth's crust.

_____ is molten rock that reaches the surface and breaks free of Earth's crust, usually through a volcano.

GEOSPHERE

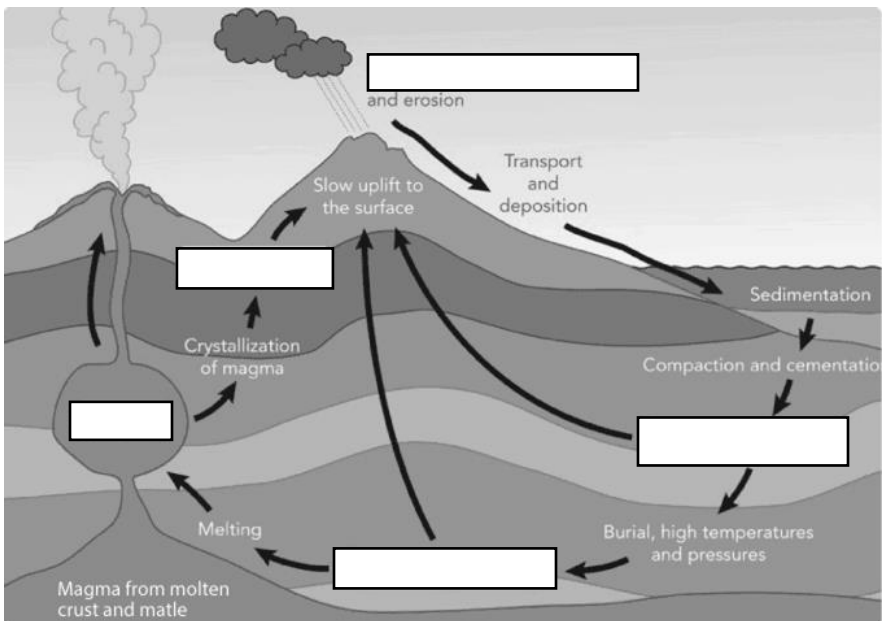
_____ is the natural process that slowly breaks apart or changes rock. It can be caused by heat, water, wind, living things, or other natural forces.

_____ is the movement of sediment from one place to another. This can be caused by wind, water, temperature, etc.

_____ are inorganic chemical compounds that occur naturally. They are the building blocks of rocks.

Use the word bank below to fill in the correct terms.

Magma	Weathering	
Igneous Rock	Sedimentary Rock	Metamorphic Rock



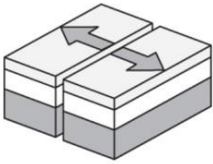
TECTONIC PLATES

Tectonic plates are massive, irregularly shaped slabs of solid rock that move or shift because of the intense heat in the Earth's interior.

TRUE

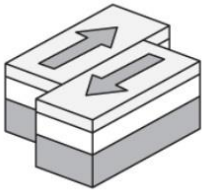
FALSE

Match each image to its correct term and definition.



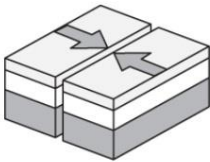
CONVERGENT

When crust is neither formed nor destroyed as two tectonic plates SLIDE PAST one another.



DIVERGENT

When crust is destroyed as two tectonic plates move TOWARD one another (creating mountains).



TRANSFORM

When new crust is formed as two tectonic plates move AWAY from one another (creating valleys).

What is it called when one convergent plate moves beneath another?

TECTONIC PLATES

The edges of tectonic plates are called **fault lines**. As tectonic plates move, sometimes the fault lines can get stuck and build pressure. When the plates suddenly break free, a(n) _____ occurs.

In Southern California, we live near the _____ Fault.



225 million years ago



150 million years ago



100 million years ago



Earth today

Based on the trends in the diagram above, sketch your prediction of what our planet will look like in 150 million years.

HYDROSPHERE

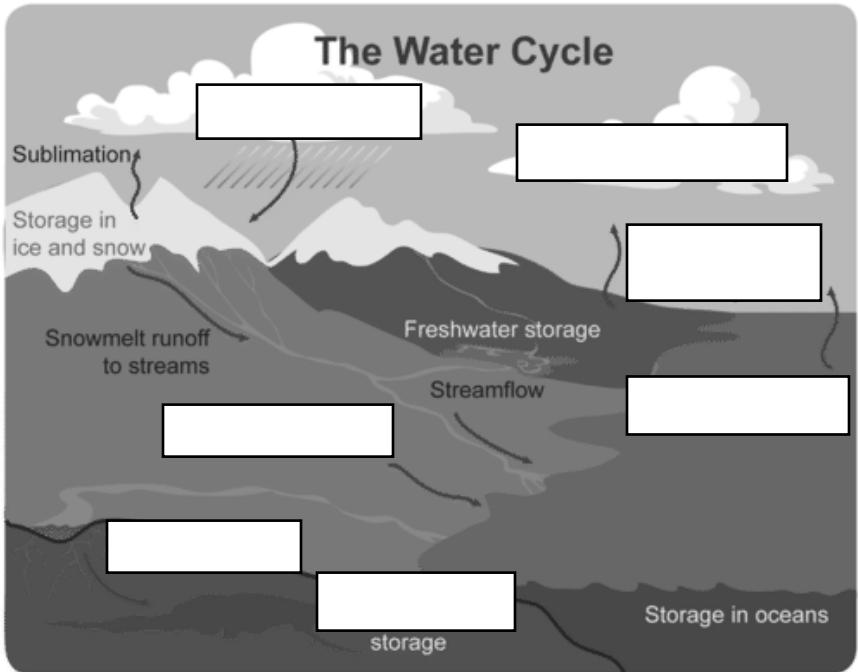
All the water on and/or surrounding the surface of the globe, including the oceans and the water in the atmosphere is known as the _____.

The filtration or passing of water through the soil and rocks to become underground water is known as:

- A. Percolation
- B. Phasing
- C. Preparation

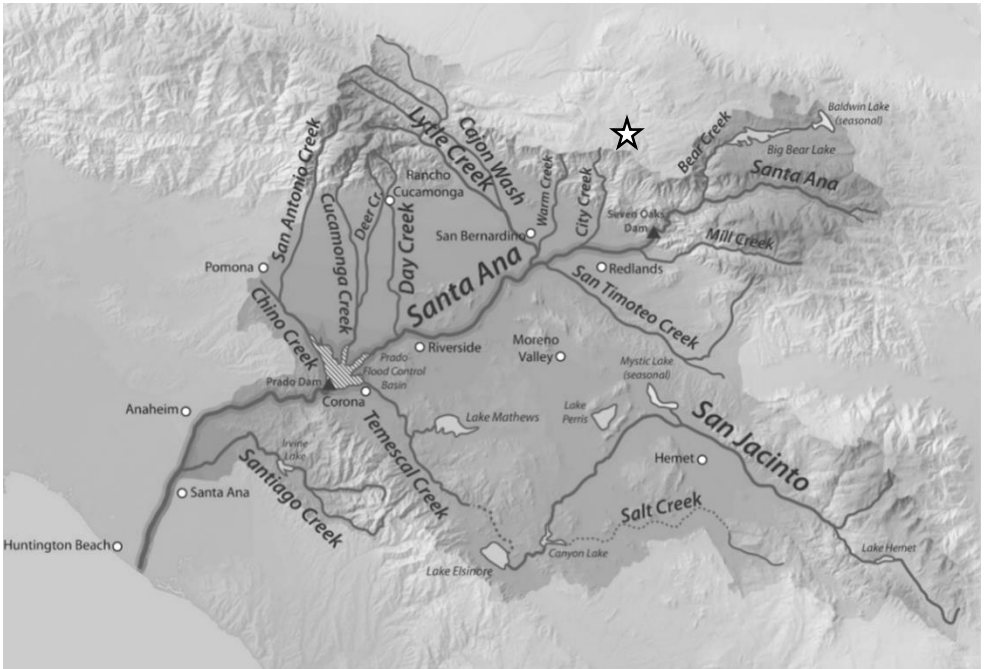
Use the word bank below to fill in the correct terms.

Condensation	Evaporation	Groundwater	Percolation
Precipitation	Surface Runoff	Transpiration (from plants)	



HYDROSPHERE

Three Oaks OSS is part of the Santa Ana Watershed. It's marked by a star.



Draw an arrow to where your school is located on the map above.

Draw a circle on the source of the Santa Ana Watershed.

Draw a square on the major outflow point of the watershed.

Will all the water from the source make it to the major outflow? Why or why not?

ATMOSPHERE

The layer of gases that surrounds Earth is known as the _____.

Three Oaks OSS Weather Report

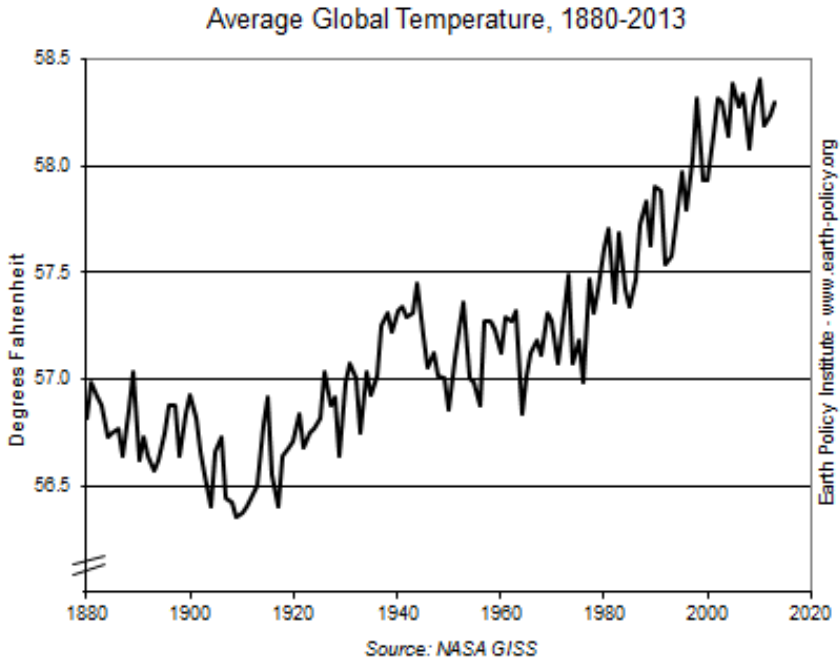
Record the weather conditions at Three Oaks Outdoor Science School.

TODAY		
DATE: _____	TIME: _____	
TEMPERATURE		
CURRENT: _____	HIGH: _____	LOW: _____
WIND		
SPEED: _____	DIRECTION: _____	
ATMOSPHERE		
AIR PRESSURE: _____	HUMIDITY: _____	
CLOUD COVER: _____	PRECIPITATION: _____	

What is the difference between weather and climate?

ATMOSPHERE

_____ are certain gases in the atmosphere that trap energy from the Sun, which warms the planet.



Based on the graph above, what predictions can you make for the future if no changes are made?

What is something YOU can do to help prevent climate change?

ASTRONOMY

Astronomy is the scientific study of _____.

Our solar system is made up of the Sun, dozens of moons, millions of asteroids/comets/meteoroids, and how many planets?

- A. 7 B. 8 C. 9 D. 10

Our solar system is located in an outer spiral arm of which galaxy?

- A. Snickers B. Twix C. Milky Way

All planets in the solar system move two different ways:

1. _____ is a planet's movement around its own axis.
2. _____ is a planet's orbital motion around the Sun.

About how long does it take the Earth to make one complete rotation?

About how long does it take the Earth to make one full revolution?

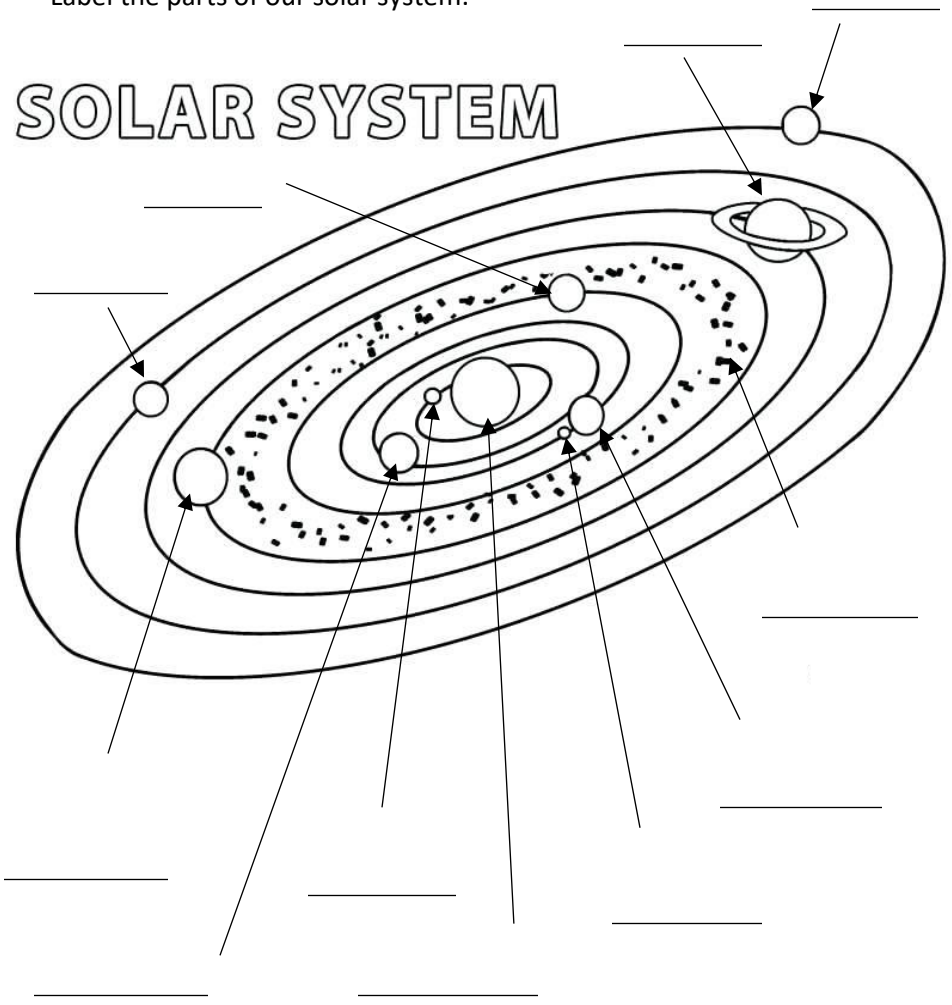
The _____ of the Earth, which is about 23.5 degrees, is what causes the seasons (spring, summer, autumn, and winter).

The _____ and its gravitational pull is what causes high and low tides.

ASTRONOMY

Label the parts of our solar system.

SOLAR SYSTEM



WORD BANK:

Asteroid Belt
Earth
Jupiter
Mars

Mercury
The Moon
Neptune
Saturn

The Sun
Uranus
Venus

ASTRONOMY

Apparent Magnitude is a measure of the _____ of a celestial object (like a star or planet) as observed from _____.

A star's apparent magnitude is mainly determined by its relative distance from Earth.

TRUE

FALSE

The length and direction of shadows (as well as day and night) is determined by the rotation of the Earth.

TRUE

FALSE

In California, we can see the same stars and constellations all year-round.

TRUE

FALSE

Put the stars in order from hottest to coldest (Red, White, Blue, Yellow)

1. _____ 2. _____ 3. _____ 4. _____

Does the night sky at camp look the same as where you live? Why do you think that is?

ASTRONOMY

A(n) _____ is a group of stars that form a recognizable pattern that is traditionally named after its appearance or a mythological figure.

A constellation will always look the same no matter where you are in the universe.

TRUE

FALSE

Why or why not?

What is your favorite constellation story from camp? Draw a picture of the constellation.

NIGHT SENSORY HIKE

_____ is a biological sonar that allows some animals to determine the distance, size, and location of objects without seeing them.

Circle the animals that use echolocation.



Circle the correct scientific term for each definition below.

Animals that are most active at dusk and dawn are:

- A. Nocturnal B. Diurnal C. Crepuscular

Animals that are active during the day and sleep at night are:

- A. Nocturnal B. Diurnal C. Crepuscular

Animals that are active at night and rest during the day are:

- A. Nocturnal B. Diurnal C. Crepuscular

Rhodopsin is a light-sensitive protein that enables vision in extremely bright conditions.

TRUE

FALSE

NIGHT SENSORY HIKE

What are 3 adaptations specific to nocturnal animals?

1.

2.

3.

Describe the Sparkle Party Experiment.

The emission of light caused by breaking chemical bonds through friction is known as:

A. Bioluminescence B. Triboluminescence C. Expecto Patronum

ENGINEERING

_____ is the process of creating and building something by using math and science.

Answer the following questions based on the Engineering Station you attended with your group.

Phase 1: Make a sketch of your initial design. Label the parts describe their functions.

Phase 2: What happened after initial testing? Was your design successful? Describe what happened to your design during testing

ENGINEERING

Phase 3: Sketch your revised design, label the places where you made change, and explain why you made those changes.

Phase 4: How did your revised design do in the testing process? Would you make any additional changes? Why or why not?

CAMP LIFE – LAST DAY

My skit name was:

My role in the skit was:

My favorite camp song was:

My favorite moment of camp was:

Did you accomplish your three personal goals that you listed on Day 1?

FINAL THOUGHTS

What questions do you still have leaving camp?

What resources can you use to answer these questions?

When did you feel the bravest this week?

How can you continue practicing conservation when you leave camp?

GLOSSARY

Abiotic: The non-living components of an ecosystem.

Adaptation: A specialized physical or behavioral characteristic of an organism that helps it to survive more easily in its environment.

Apparent Magnitude: The measure of the brightness of a celestial object (like a star or planet) as observed from Earth.

Asteroid: A rocky or metal object, larger than a meteoroid, that orbits the Sun.

Astronomy: The scientific study of outer space.

Atmosphere: The layer(s) of gas(es) surrounding a planet.

Autotroph: An organism that makes its own energy from non-living substances in its environment.

Biosphere: The regions of Earth occupied by living organisms.

Biotic: Living components of an ecosystem.

Botany: The scientific study of plants.

Carnivore: An animal that eats only meat.

Chlorophyll: The green pigment in plants used in absorbing light energy required for photosynthesis.

Climate Change: A change in the long-term weather patterns of an area. It can be regional or global.

Climate: The long-term weather patterns of an area.

Comet: A body of ice, rock, and dust that can be several miles in diameter and orbits the Sun.

Commensalism: A symbiotic relationship in which one species benefits while the other is neither helped nor harmed by the association.

Condensation: The process in which gas changes into a liquid.

Coniferous: Plants that have needles or scales, stay green all year-round, and use cones to reproduce.

Conservation: The management of resources that provides for the future.

Constellation: A group of stars that form a recognizable pattern that is traditionally named after its appearance or a mythological figure.

Consumer: A living organism that cannot make its own food and feeds on living material.

Convergent: A plate boundary that occurs when crust is destroyed as two tectonic plates move toward one another.

Crepuscular: Animals that are most active at dusk and dawn.

Deciduous: Plants that have broad leaves that shed seasonally (usually in autumn) and use flowers to reproduce.

Decomposer: A living organism that gets energy by breaking down dead plants and animals.

Deposition: The process in which a gas changes into a solid.

Diurnal: Animals that are active during the day and sleep at night.

Divergent: A plate boundary that occurs when new crust is formed as two tectonic plates move away from one another.

Echolocation: A biological sonar that allows some animals to determine the distance, size, and location of objects without seeing them.

Ecology: The scientific study of relationships between living organisms, non-living organisms and their environment.

Ecosystem: An area in which plants, animals, and microbes interact with each other and their environment.

Engineering: The process of creating and building something by using math and science.

Erosion: The movement of sediment from one place to another.

Evaporation: The process in which liquid changes into a gas.

Fault Lines: The edges of tectonic plates.

Food Chain: A sequence of transfers of matter and energy in the form of food from organism to organism.

Food Web: A diagram that depicts how all the organisms in an ecosystem are interconnected.

Geology: The scientific study of the Earth, its structure, history, and the forces that affect it.

Geosphere: The portion of Earth's systems that relates to the structure and formation of the planet's landforms, interior, rocks, and minerals.

Greenhouse Gases: Certain gases in the atmosphere that trap energy from the Sun, which warms the planet.

Groundwater: The water that is found beneath the surface of the Earth between soil particles and in cracks of rocks.

Habitat: The environment in which an animal can exist, providing all things needed.

Herbivore: An animal that eats only plants.

Heterotroph: An organism that obtains energy by consuming other organisms (such as plants and animals).

Hydrosphere: All the water on and/or surrounding the surface of the globe, including the oceans and the water in the atmosphere.

Igneous: A type of rock that forms when molten rock (such as magma or lava) cools and solidifies.

Lava: Molten rock that reaches the surface and breaks free of Earth's crust, usually through a volcano.

Limiting Factor: A factor which limits the growth or reproduction of an organism or population.

Magma: Molten rock that is trapped beneath Earth's crust.

Melt: The process in which a solid changes into a liquid.

Metamorphic: A type of rock that forms when existing rocks are changed by environmental factors, such as heat, pressure, or reactive liquids.

Meteor: A meteoroid that enters Earth's atmosphere and vaporizes.

Meteorite: A meteor that hits Earth without burning up in the atmosphere.

Meteoroid: A small rocky or metal object, usually between the size of a grain of sand or a boulder, that orbits that Sun. It originates from a comet or asteroid.

Minerals: Inorganic chemical compounds that occur naturally. They are the building blocks of rocks.

Mutualism: The symbiotic relationship in which both species benefit from the association.

Natural Resource: Something that can be found in nature that can be used by living things.

Niche: In ecology, the specific environmental conditions to which an organism has adapted.

Nocturnal: Animals that are active at night and rest during the day.

Non-renewable Resource: A resource that cannot be replaced within a human life span.

Omnivore: An animal that eats both meat and plants.

Parasitism: A symbiotic relationship in which one species lives off of another species and benefits from causing it harm.

Percolation: The filtration or passing of water through the soil and rocks to become underground water.

Phloem: A special tissue made of tubes and fibers in the stems and roots of plants. It carries food substances down the stem from the leaves to the other parts to the plant.

Photosynthesis: The process by which green plants produce food.

Plate Tectonics: The theory outlining the structure and process of the Earth's crust and how it moves.

Precipitation: Water that falls to Earth as rain, snow, sleet, hail, or mist.

Producer: A living organism that makes its own energy through the process of photosynthesis.

Renewable Resource: A resource that cycles or can be replaced within a human life span.

Revolution: A planet's orbital motion around the Sun.

Rhodopsin: A light-sensitive protein that enables vision in low-light conditions.

Rotation: A planet's movement around its own axis.

Sedimentary: A type of rock that forms when particles settle out of water or air and accumulates in layers.

Sense: A specialized way the body helps us to perceive and understand the world around us.

Solidification: The process in which a liquid changes into a solid.

Subduction: The term for when one convergent plate is pushed beneath another.

Sublimation: The process in which a solid changes into a gas.

Surface Runoff: The flow of water that occurs when excess rainwater or snowmelt can no longer penetrate saturated soil.

Symbiotic Relationship: A close physical association between two different species.

Tapetum Lucidum: A layer of tissue in the eye of many animals that reflects light causing the eyes to appear shiny.

Tectonic Plates: Massive, irregularly shaped slabs of solid rock that move or shift because of the intense heat in the Earth's interior.

Transform: A plate boundary that occurs when crust is neither formed nor destroyed as two tectonic plates slide past one another.

Transpiration: The process of evaporation or loss of water in plants.

Triboluminescence: The emission of light caused by breaking chemical bonds through friction.

Trophic Level: Any class of organisms that occupy the same position in a food chain.

Trophic: Relating to food, nutrition, or nourishment.

Watershed: An area of land, sectioned off by changes in elevation, where all water flows to the same spot.

Weather: The short-term weather patterns of an area.

Weathering: The natural process that slowly breaks apart or changes rock.

Xylem: The strong tissue in plant roots and stems made of tiny tubes that carries water and nutrients from the roots up to the stems and leaves.

Zoology: The scientific study of all forms of animal life.