

NAME: \_\_\_\_\_

SCHOOL: \_\_\_\_\_

TEACHER: \_\_\_\_\_

CABIN LEADER: \_\_\_\_\_

NATURALIST: \_\_\_\_\_

## Welcome to Camp!

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

This journal is divided into two sections. Section 1 is a field notebook, for you to take notes and make observations. Section 2 is a workbook, where you will answer questions about what you learned at camp.

## Camp Life

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.

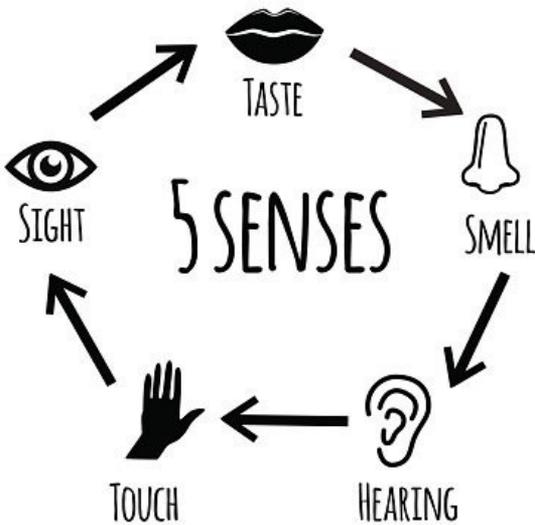
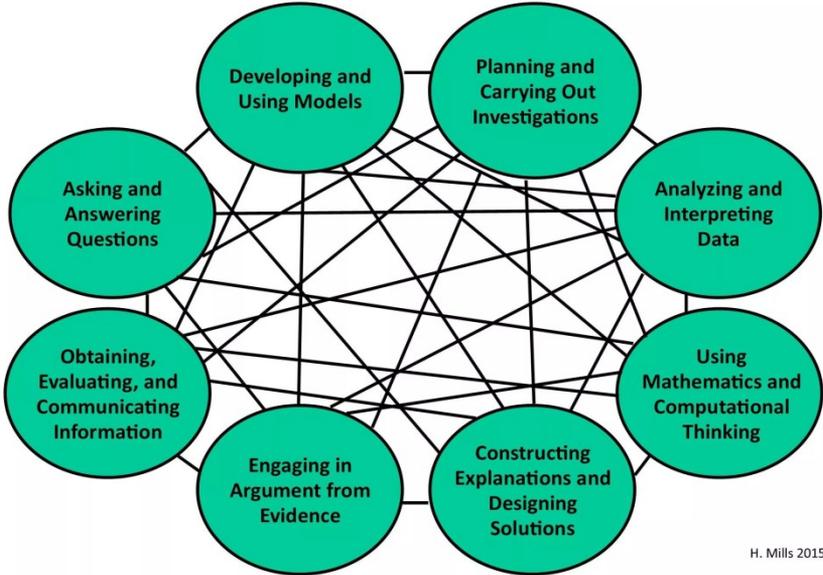
2.

3.

My cabin name is:

Our cabin mascot/ logo is:

## Science and Engineering Practices



Important Vocabulary- Use the space below to write down any new, important, or unfamiliar vocabulary words

Every ecosystem is made of both biotic and abiotic factors. Make a list of the ones you can see around you

Biotic

Abiotic

---

Every living thing has adapted to fill a specific niche in an ecosystem. What are some adaptations that you observed?

Adaptation

Function

Structural/Behavioral

---

Hike Topic: \_\_\_\_\_

Name of Trail: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

**Weather Conditions**

Temperature: \_\_\_\_\_ Cloud Cover: \_\_\_\_\_

Wind Speed: \_\_\_\_\_ Direction: \_\_\_\_\_

Air Pressure: \_\_\_\_\_ Humidity: \_\_\_\_\_

Precipitation: \_\_\_\_\_

What do you:

Notice:

Wonder:

What are you reminded of?

Did you observe any evidence of animals on this trail? Draw or describe your findings

Field Notes

---

## Tree Identification

Sketch the tree observed

What is a unique adaptation of this tree?

Sketch the leaf of this tree

Draw the cone/ flower

Sketch the bark of the tree

Tree Name:

## Reflections

What are some games or activities that you did on this hike that you don't want to forget?

What did you learn that you want to share with others?

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

What was the most memorable part of the hike?

Draw a picture or describe the best view from the trail

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## Engineering

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

Phase 3: Sketch your revised design, label the places where your 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?

Section 2  
Workbook

## Biosphere

Where does all the energy of our planet ultimately come from?

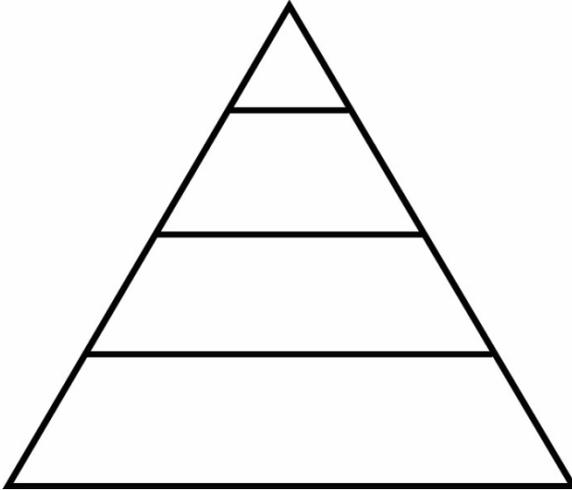
What types of organisms convert the sun's energy into a usable form?

Describe the process and products of photosynthesis.

Matter cycles and energy flows through an ecosystem. Create a model which supports this claim.

Label the trophic levels of the energy pyramid using the terms in the box below. You may use each term more than once.

Primary Consumer	Secondary Consumer	Tertiary Consumer	
Producer	Herbivore	Carnivore	Omnivore



Where do decomposers fit in this model? Use evidence to support your claim.

What amount of energy is lost at each trophic level? Where does the energy go?

What would happen to consumers if there were no producers?

What would happen if there were no decomposers?

Sketch a food web of an ecosystem found at Three Oaks OSS.

Examples: bobcat, Steller's jay, grey squirrel, California black oak, sugar pine, mountain lion, mule deer, hawk

From your food web, create a food chain.

How do human practices change or influence the food web?

Human Practice

Prediction

Hunting top level

Predators

Fire Suppression

Logging/ Developing land

Burning fossil fuels

Food Waste

## Ecosystems

Compare and contrast two different habitats you saw on the trails.

How are camp ecosystems the same or different from the ecosystems you experience at home?

## Changing Worlds

How does global climate change impact local ecosystems?

What can an animal or plant do if its habitat changes?

List 3 causes of habitat change

- 1.
- 2.
- 3.

What are 3 solutions for those causes?

- 1.
- 2.
- 3.

## Adaptations

What is an adaptation?

If one grey squirrel is born without a bushy tail, is that an adaptation? Why or why not?

If over time, all grey squirrels are born without bushy tails- is that an adaptation? Why or why not?

What might cause the grey squirrels tails to change over time?

Based on the trees you learned about, create a hybrid tree that is perfectly adapted to living in the San Bernardino Mountains. Label the adaptations, and explain their function.

## Geosphere

What parts of our planet are included in the geosphere?

### Shifting planet



225 million years ago



150 million years ago



100 million years ago



Earth today

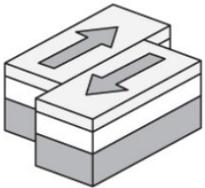
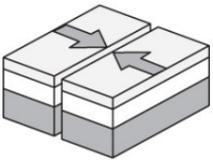
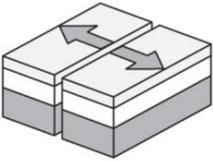
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Based on the trends in the diagram above, sketch your prediction of what our planet will look like in 150 million years.

What causes the continents to move over time?

Label and describe the plate movements using the terms below.

Divergent	Transform	Convergent
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What impact does plate tectonics have on the biosphere?

## Hydrosphere

What part of our planet makes up the hydrosphere?

Create a model of the water cycle, and explain each part

Percolation	Evaporation	Transpiration
Condensation	Transportation	Precipitation

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 below.



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

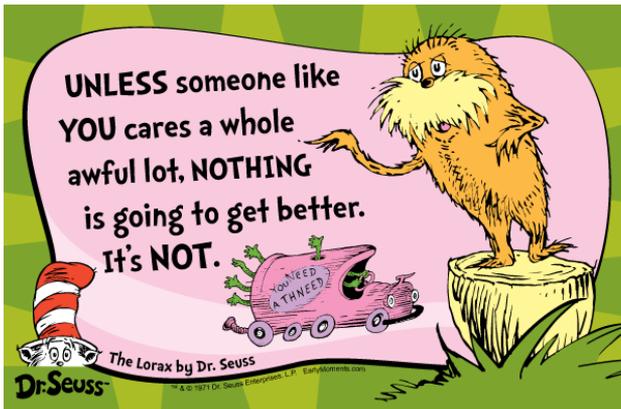
Draw a square on the major outflow point of the watershed.

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

The average American uses 80-100 gallons of water per day. What can you do to cut down on daily water consumption-besides taking shorter showers and turning the water off when you brush your teeth?

What can we do as a community to cut back on water usage?

What will happen if we don't reduce our water consumption?



## Atmosphere

What part of our earth is included in the atmosphere?

### Three Oaks OSS Daily Weather Tracker

Use the data you have collected through the week to record the averages for each day

Day	Monday	Tuesday	Wednesday	Thursday	Weekly
Temperature					
Air Pressure					
Humidity					
Precipitation					
Wind Speed and Direction					
Clouds					

What tools did you use to collect this data?

Based on the data you collected, make a prediction for the weather next week.

Compare the data you have collected to the data from your home for the week. Why might the data be alike or different?

What is the difference between weather and climate?

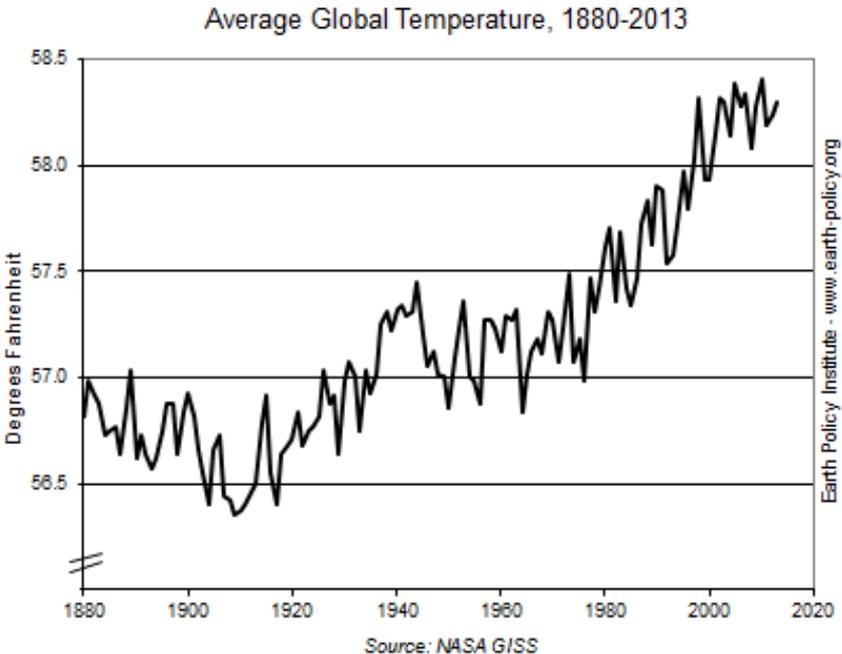
What causes climates to change?

What are three things you can do to help prevent climate change?

- 1.
- 2.
- 3.

What are three things we as a global community can do to prevent climate change?

- 1.
- 2.
- 3.



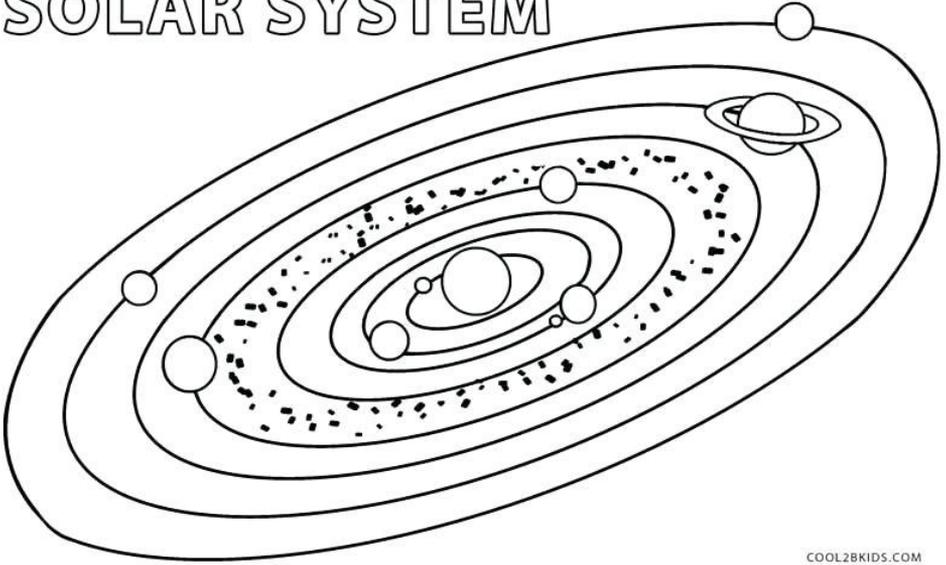
Based on the graph, what predictions can you make if no changes are made?

How do you predict the trend will change if we as a global community change our behaviors and actions?

## Astronomy

Label the parts of our solar system.

# SOLAR SYSTEM



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Write a fact about another planet which you did not know before.

What planets (if any) did you see at camp? Why were they visible?

If you had to move to another part of the solar system, where would it be and why?

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

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_

Why do some stars appear brighter in the night sky than others?

Describe the night sky at camp.

Compare and contrast the sky at camp to the sky at home. Why do you think they look the same or different?

Why does the night sky look different at different times of the year, and at different times at night?

What causes the Earth to have seasons?

What causes the Earth to have tides?

What is a constellation?

In your own words, tell your favorite constellation story, and draw a picture of the constellation.

## Night Hike

What are 3 adaptations specific to nocturnal animals?

Describe something you saw on your night hike.

Describe something you heard on your night hike.

Did you experience any animals on your night hike? Describe the evidence of the animal, and what they were doing.

Compare your night vision to that of a mountain lion. What adaptation does the mountain lion have that you might not?

Describe the Sparkle Party Experiment.

What was the name of the phenomena you experienced in the Sparkle Party?

Write a paragraph about your night hike experience. How did you feel before, during and after?

## My Week At Camp

My skit name was:

In the skit my role was:

My favorite camp song was:

My favorite moment of camp was:

## Reflections

What questions do you still have leaving camp?

What resources do you need to answer these questions?

What accomplishment are you most proud of this week?

What was your biggest challenge this week? Did you overcome it?

How can you continue to work on the things that challenged you at camp?

## Glossary

Abiotic: The non-living components of an ecosystem.

Adaptation: A change in structure or function that enables an organism to adjust better to its environment.

Apparent Magnitude: The size of a celestial object (like a star or planet) as measured from Earth.

Astronomy: The scientific study of outer space.

Atmosphere: The layer, or set of layers, of gasses surrounding a planet.

Biosphere: The regions of Earth occupied by living organisms, such as the surfaces or atmosphere.

Biotic: Living components of an ecosystem.

Botany: The scientific study of plants.

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

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

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

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

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

Consumer: A living organism that feeds on living material. They cannot make their own food.

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

Deciduous: Used to describe plants which shed all their leaves seasonally, usually in the fall.

Decomposer: Organisms that break down dead material into simpler forms.

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

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.

Erosion: The movement of sediment from one place to another. Caused by many factors such as wind, water, wear, temperature.

Food Chain: A series of living organisms that depend on each other for food or energy.

Food Web: A model 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 structure and process of the Earth's landforms, interior, rocks, and minerals.

Granite: An igneous rock composed mostly of feldspar, quartz, and mica. Most continental crust is made of granite.

Habitat: The environment in which an animal can exist, providing all things it needs; food, water, shelter, space.

Herbivore: An animal that eats only plants.

Hydrosphere: All the water on the Earth's surface, such as lakes and seas, and sometimes including water over the Earth's surface, such as clouds

Igneous Rock: Intrusive igneous rock is formed as magma cools slowly below the earth's surface. Extrusive igneous rock is formed as lava cools quickly on the earth's surface resulting in a small crystalline structure.

Light year: The distance light travels in a year at a speed of 186,000 miles per second.

Limiting Factor: A factor which limits the growth or reproduction of an organism or population. (temperature, lack of food, lack of water, etc.)

Metamorphic: Rocks formed from igneous and sedimentary rocks through heat and pressure (e.g. marble, schist).

Mica: A black mineral with flat, thin scales. Found in some granites and schist.

Mineral: An inorganic chemical compound occurring naturally. They are the building blocks of rocks.

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

Natural Resources: Material found in the natural state, such as water, soil, and minerals that are used by humans.

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

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

Non-renewable resource: A resource that cannot be recycled into their original form within a reasonable period of time.

Omnivore: An animal that eats both plants and meat.

Parasitism: A symbiotic relationship where one organism attaches itself to another organism and feeds on it over a period of time, harming the other organism.

Percolation: 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.

Producer: A green plant that makes food through the process of photosynthesis.

Quartz: An abundant crystal that is a primary ingredient of granite and beach sand in southern California.

Renewable resources: Resources that can reproduce or renew themselves.

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

Sedimentary rock: Rock formed by the cementing and hardening of many layers of fine materials, usually deposited by water.

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

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

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

Trophic: related to food or nourishment; e.g. trophic level or trophic pyramid.

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

Weather: The current state of the atmosphere at a given time and place.

Weathering: The physical and chemical breaking down of rocks.

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

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