

# Summer astronomy packet

- **well known summer constellations**
- **the phases of the moon**
- **the Perseid Meteor Showers (August 12-13, 2017)**
- **the difference between a solar and lunar eclipse**
- **Solar Eclipse - August 21, 2017**

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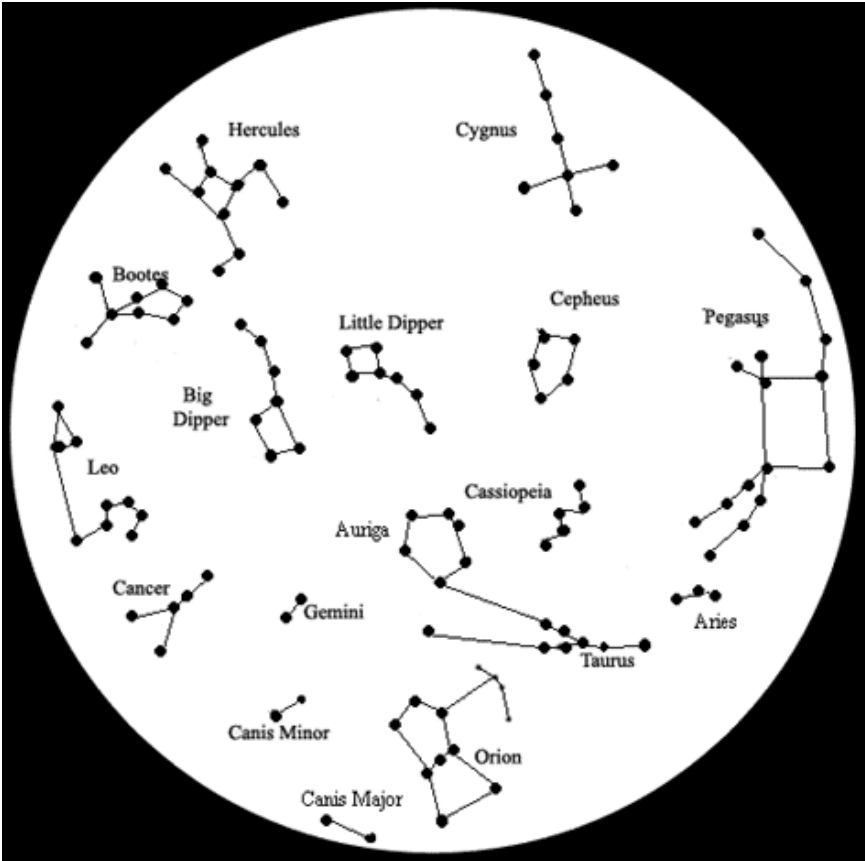
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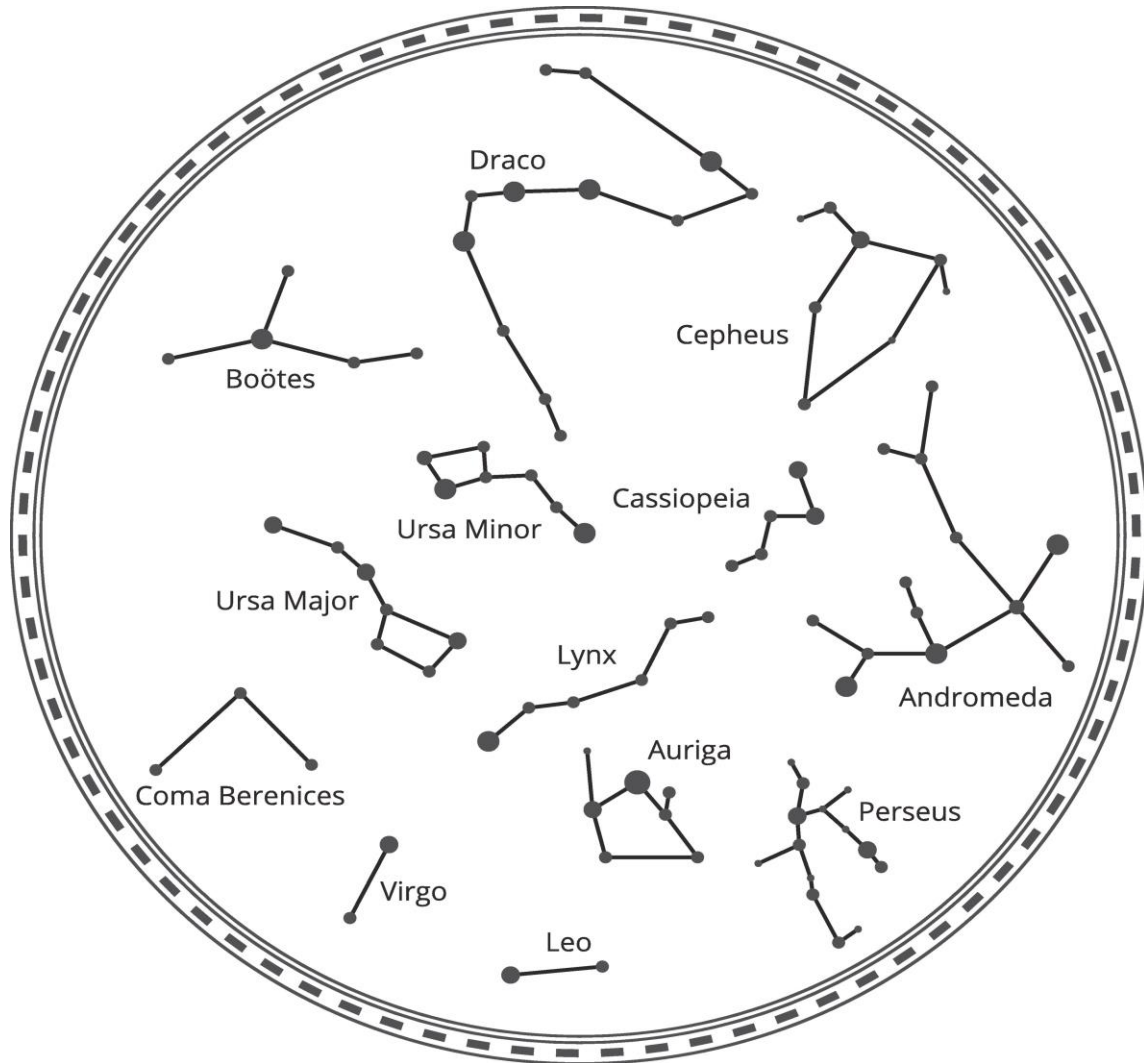
# Constellation Log

**Night Time Observations:** Try to find the constellations below:

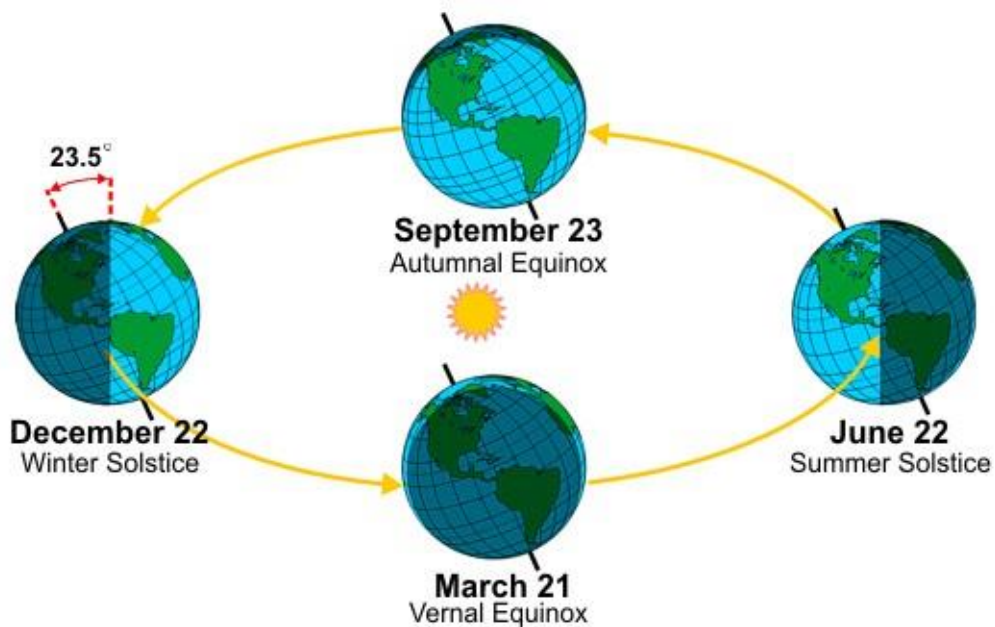


- \_\_\_\_\_ Hercules
- \_\_\_\_\_ Boötes
- \_\_\_\_\_ Leo
- \_\_\_\_\_ Cancer
- \_\_\_\_\_ Big Dipper
- \_\_\_\_\_ Little Dipper
- \_\_\_\_\_ Gemini
- \_\_\_\_\_ Canis Minor
- \_\_\_\_\_ Canis Major
- \_\_\_\_\_ Cygnus
- \_\_\_\_\_ Cassiopeia
- \_\_\_\_\_ Taurus
- \_\_\_\_\_ Orion
- \_\_\_\_\_ Cepheus
- \_\_\_\_\_ Pegasus
- \_\_\_\_\_ Aries
- \_\_\_\_\_ Draco
- \_\_\_\_\_ Andromeda
- \_\_\_\_\_ Perseus
- \_\_\_\_\_ Auriga
- \_\_\_\_\_ Lynx
- \_\_\_\_\_ Coma Berenices

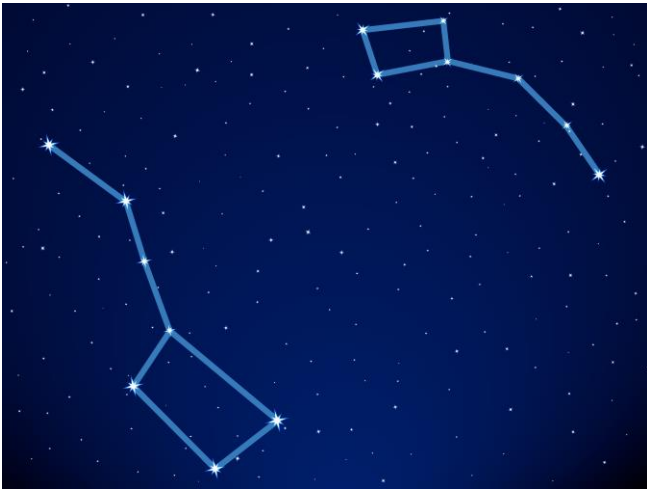
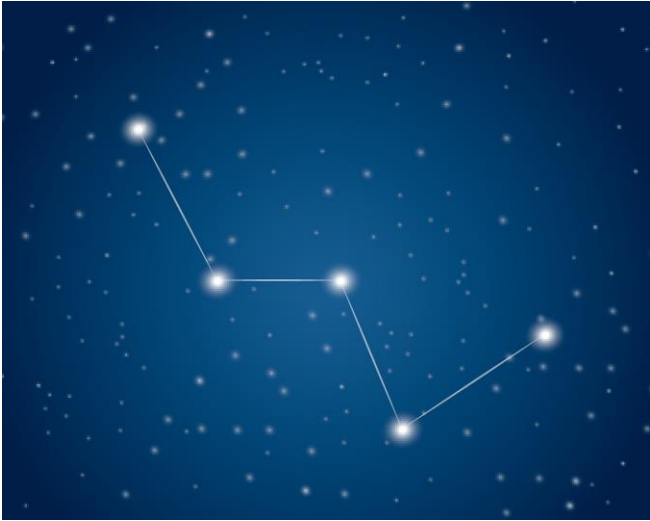
# Constellations:



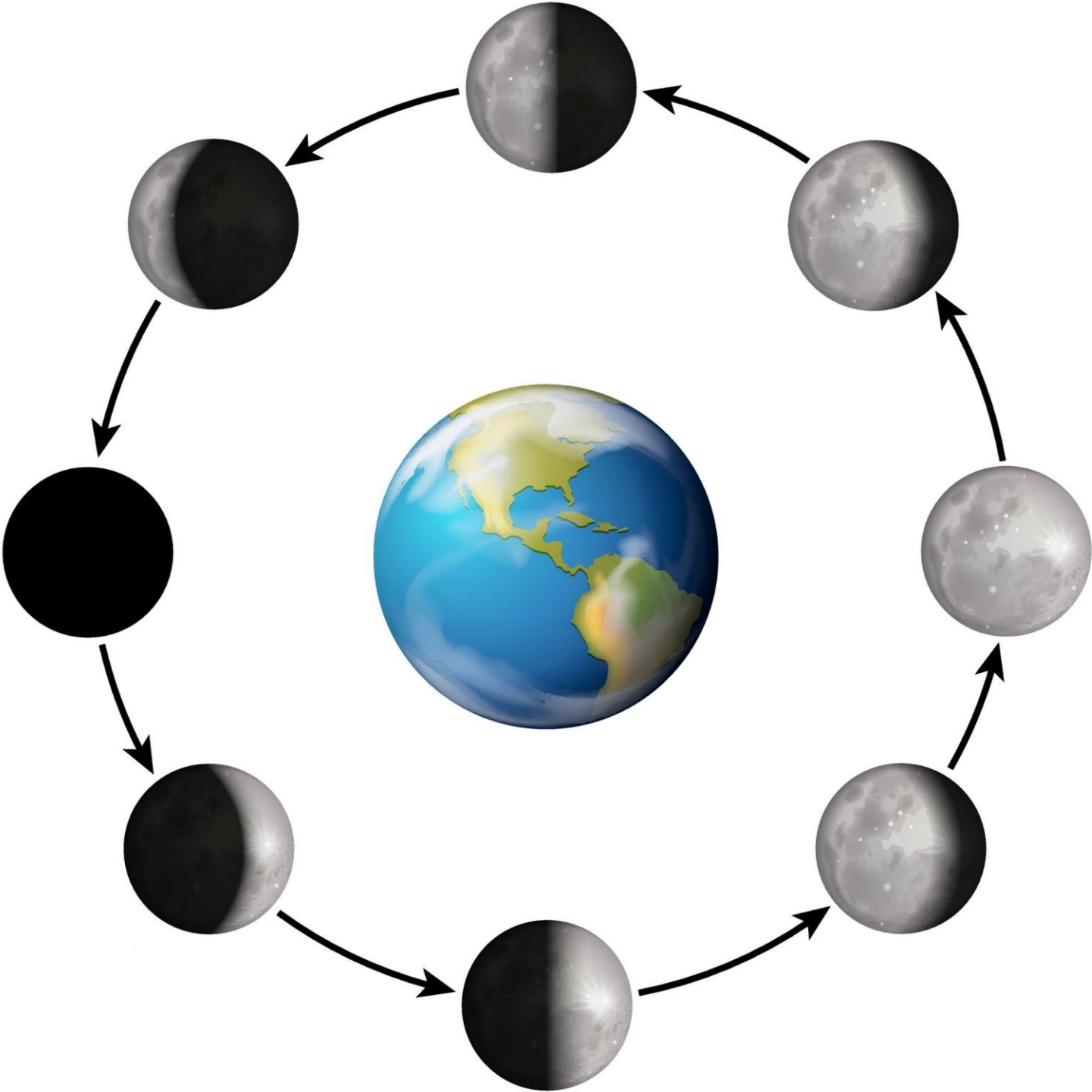
What does this diagram show us?



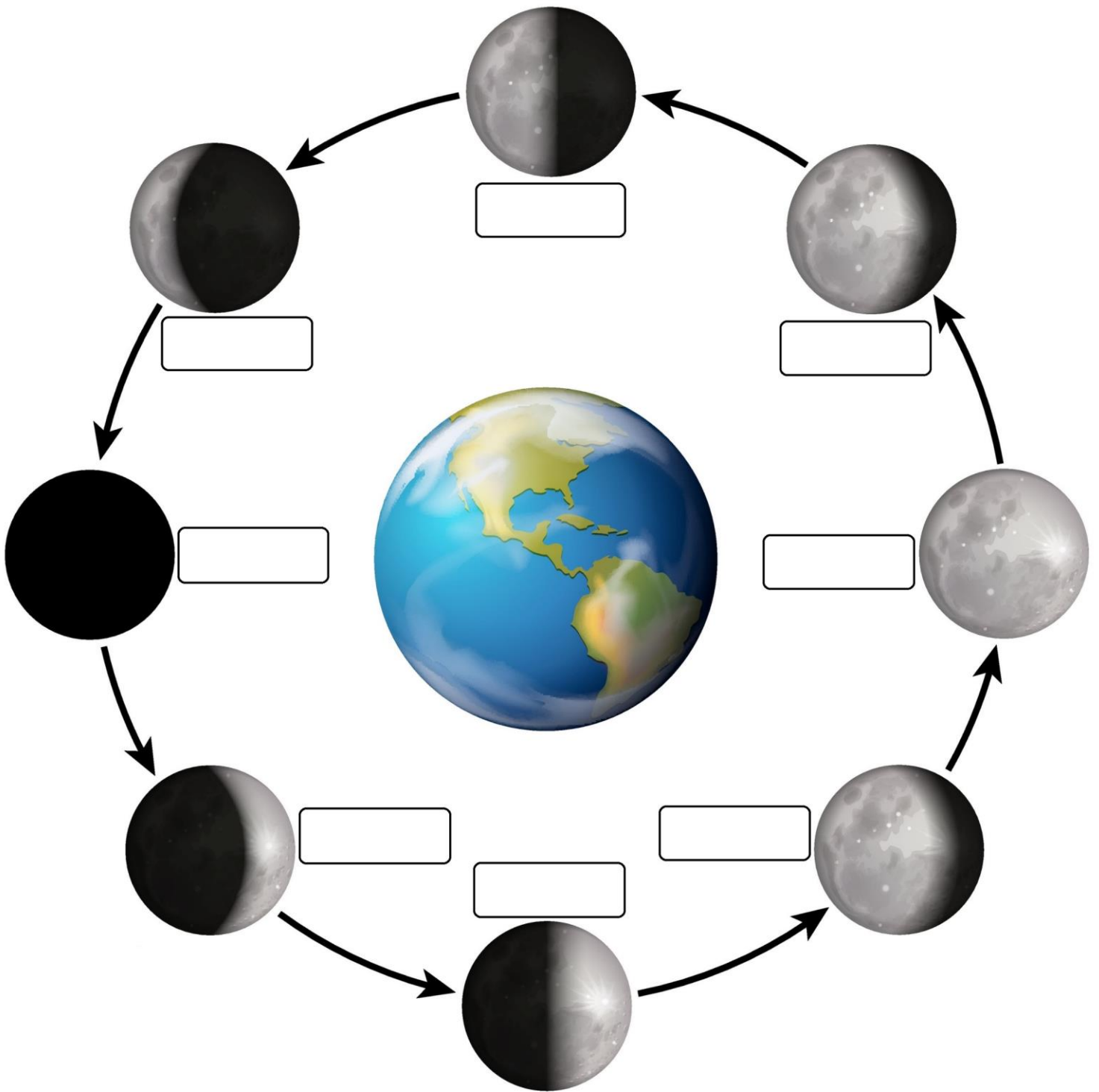
Can you identify these constellations?



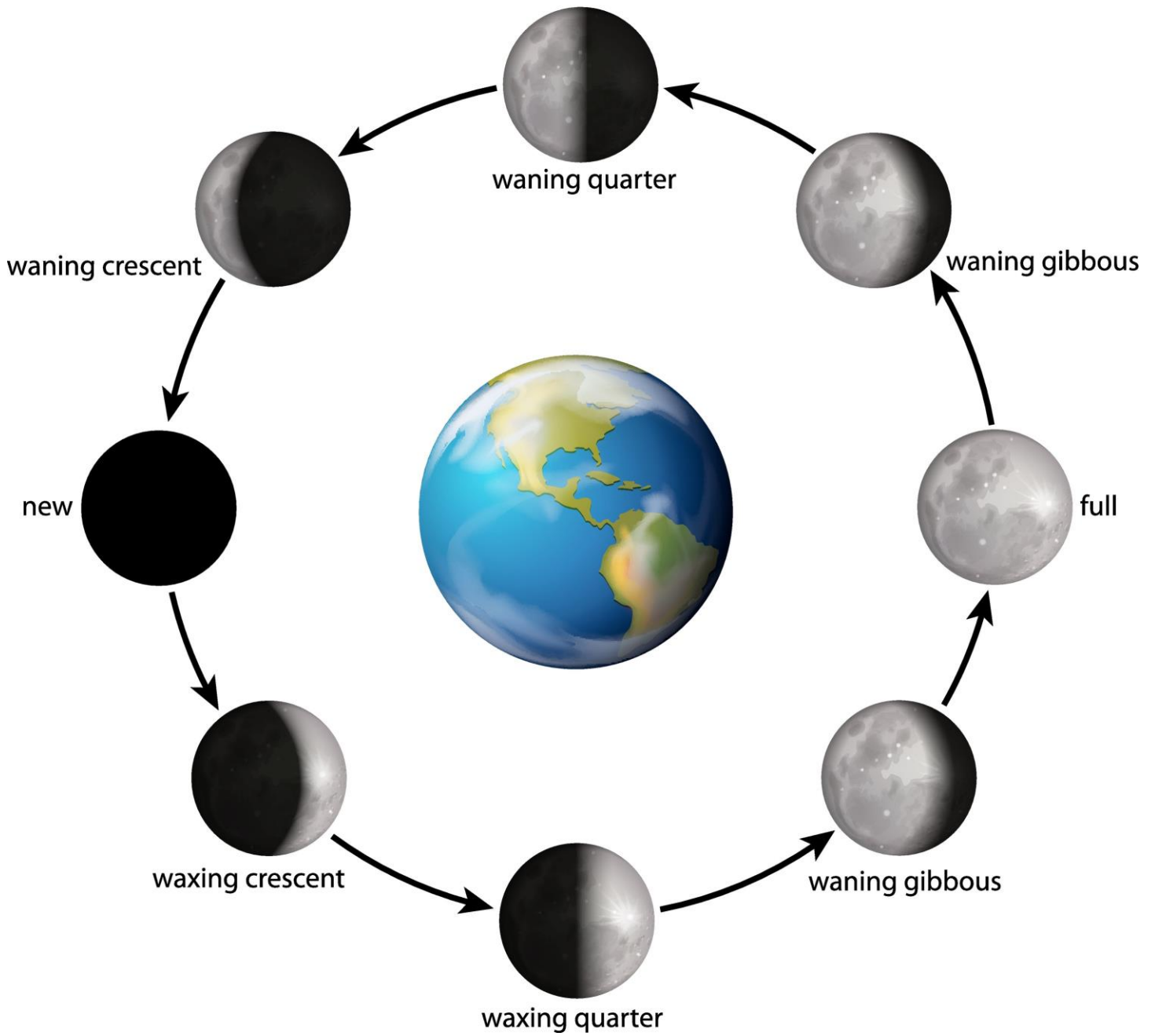
Label the phases of the moon:



Label the phases of the moon:



# Phases of the Earth's Moon

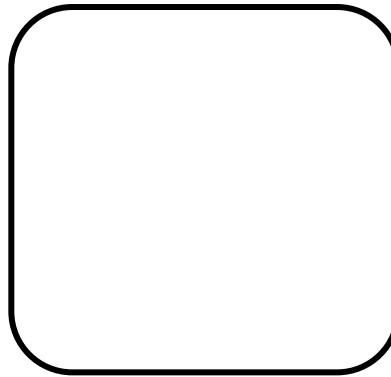


# Perseid Meteor Showers

A meteor shower is when a number of meteors – or shooting stars – flash across the night sky, seemingly from the same point. When you watch a meteor shower, you're actually seeing the pieces of \_\_\_\_\_ heat up as they enter the \_\_\_\_\_ and burn up in a bright burst of light. Usually the best time to see meteor showers is \_\_\_\_\_.

The 2017 Perseids will peak on the night of August 12 and early morning hours of August 13. This year, a \_\_\_\_\_ may hinder a good view of the meteor shower.

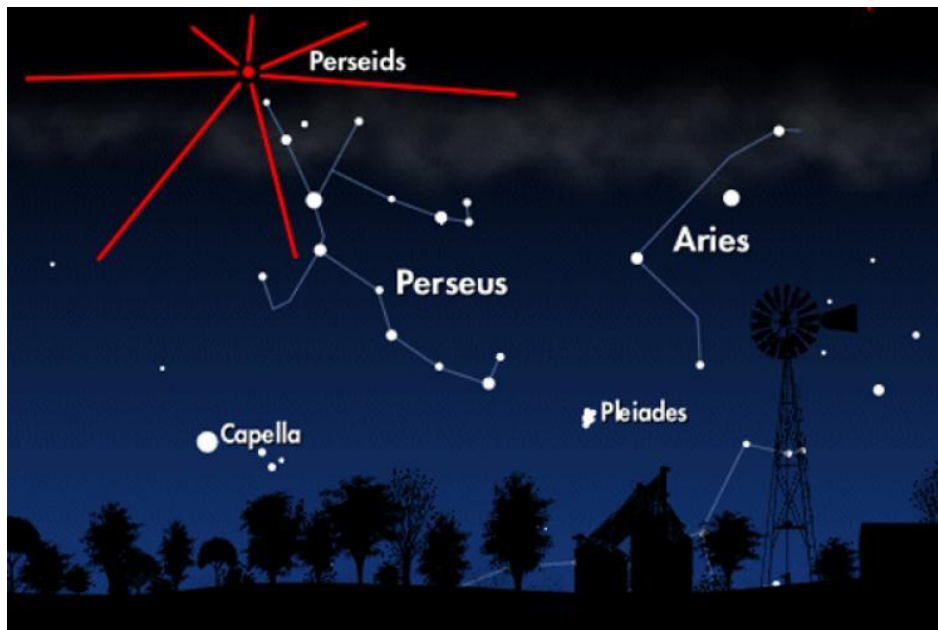
Draw a waxing gibbous moon:



Waxing means that the \_\_\_\_\_ is getting bigger.

Gibbous refers to the \_\_\_\_\_, which is larger than the semicircle shape of the Moon at First Quarter, but smaller than a full circle.

The Perseids show up every year in \_\_\_\_\_ when Earth ventures through trails of \_\_\_\_\_ and \_\_\_\_\_ left behind by an ancient \_\_\_\_\_. As the dust and particles hit the Earth's atmosphere at high speed, they rub against air particles and heat up, disintegrating in flashes of light.



Perseid meteors travel at nearly \_\_\_\_\_ miles per hour (59 kilometers per second)!

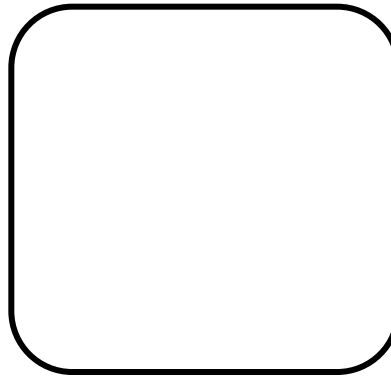


# Perseid Meteor Showers

A meteor shower is when a number of meteors – or shooting stars – flash across the night sky, seemingly from the same point. When you watch a meteor shower, you're actually seeing the pieces of comet debris heat up as they enter the atmosphere and burn up in a bright burst of light. Usually the best time to see meteor showers is right before dawn.

The 2017 Perseids will peak on the night of August 12 and early morning hours of August 13. This year, a Waning Gibbous Moon may hinder a good view of the meteor shower.

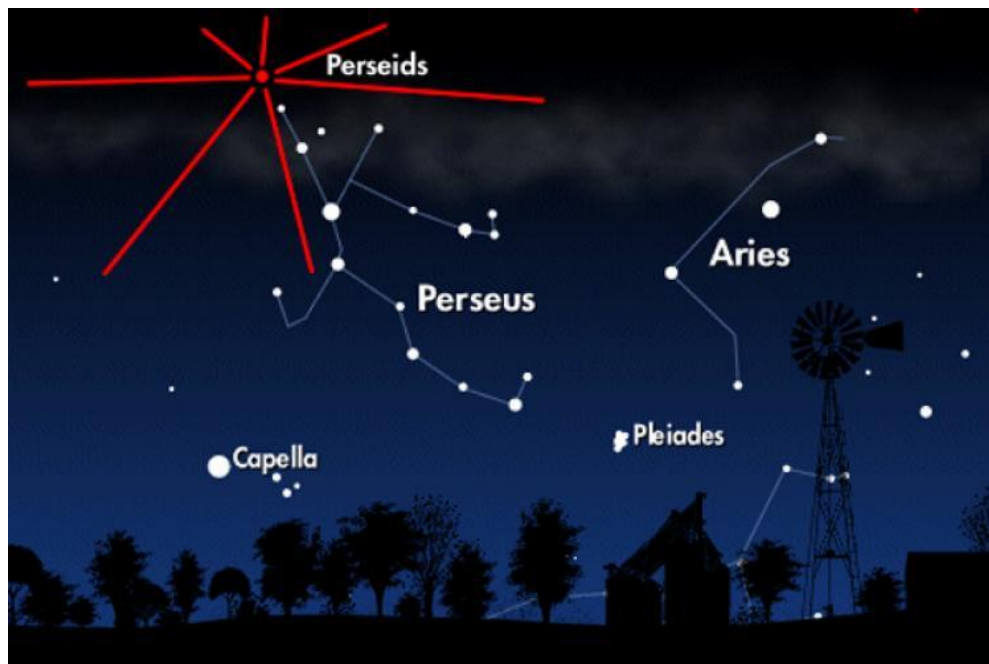
Draw a waxing gibbous moon:



Waxing means that the moon is getting bigger.

Gibbous refers to the shape, which is larger than the semicircle shape of the Moon at First Quarter, but smaller than a full circle.

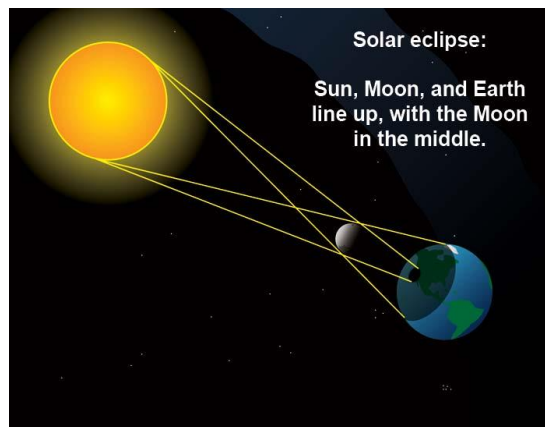
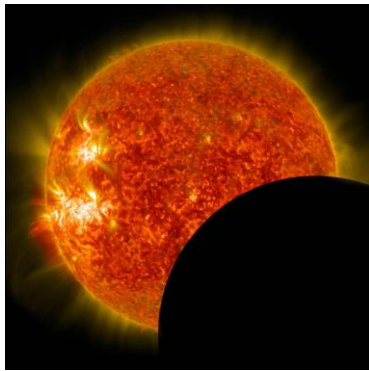
The Perseids show up every year in August when Earth ventures through trails of dust and debris left behind by an ancient comet. As the dust and particles hit the Earth's atmosphere at high speed, they rub against air particles and heat up, disintegrating in flashes of light.



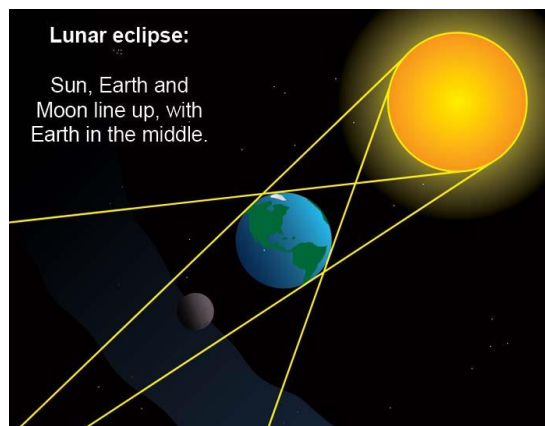
Perseid meteors travel at nearly 132,000 miles per hour (59 kilometers per second)!

# What is the difference between a solar and lunar eclipse?

What is a solar eclipse?



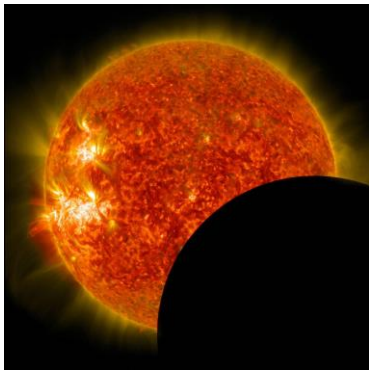
What is a lunar eclipse?



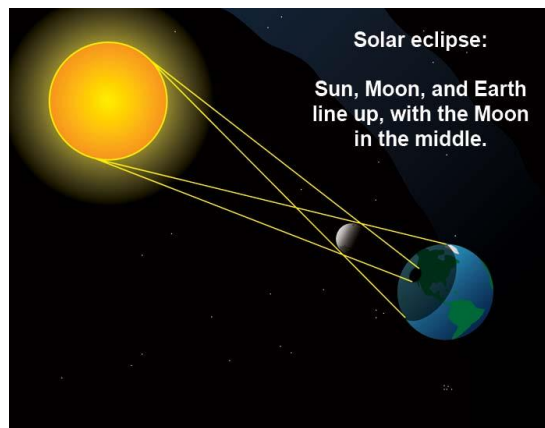
# What is the difference between a solar and lunar eclipse?

## What is a solar eclipse?

A solar eclipse occurs when the Moon passes between the Earth and the Sun, blocking all or a portion of the Sun. It is the Sun that is being "eclipsed" (meaning hidden or blocked from sight).



Picture courtesy of [NASA](#)



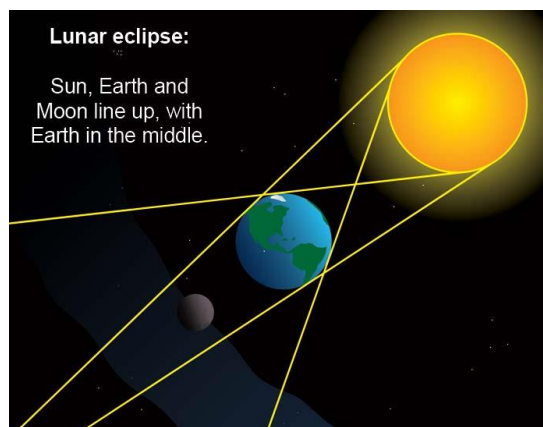
Picture courtesy of [NASA](#)

## What is a lunar eclipse?

A lunar eclipse occurs when the Earth passes between the Moon and the Sun. The Earth's shadow obscures the moon or a portion of it.



Picture courtesy of [NASA](#)



Picture courtesy of [NASA](#)

# Solar Eclipse

August 21, 2017



Picture courtesy of [NASA](#)

Looking at the map above, which states will experience a total solar eclipse?

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# Solar Eclipse

August 21, 2017



Picture courtesy of [NASA](#)

Looking at the map above, which states will experience a total solar eclipse?

Oregon

Kansas

Tennessee

Idaho

Missouri

Georgia

Wyoming

Illinois

North Carolina

Nebraska

Kentucky

South Carolina

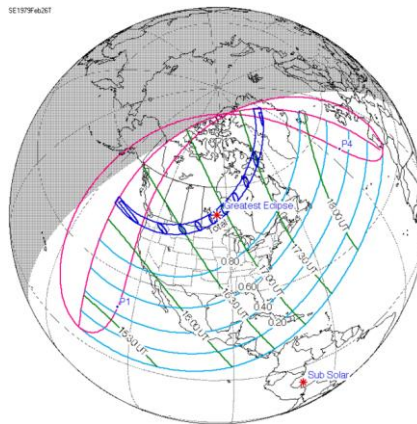
# Solar Eclipse

August 21, 2017

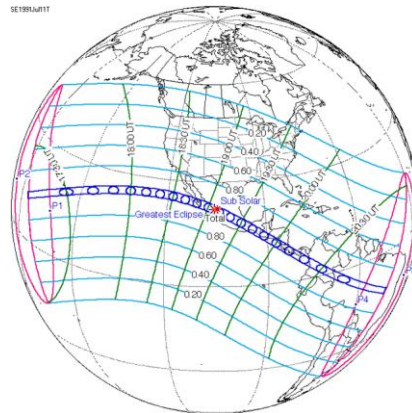
**Why is this special?** Very few people have actually seen a total solar eclipse! They often occur in remote locations.

**When were the last total solar eclipses in the U.S.?**

The most recent total eclipses in the US were in 1979 (only in the northwest part of the country-Washington, Oregon, Idaho, Montana, North Dakota and parts of Canada)



and 1991 (but only in Hawaii).

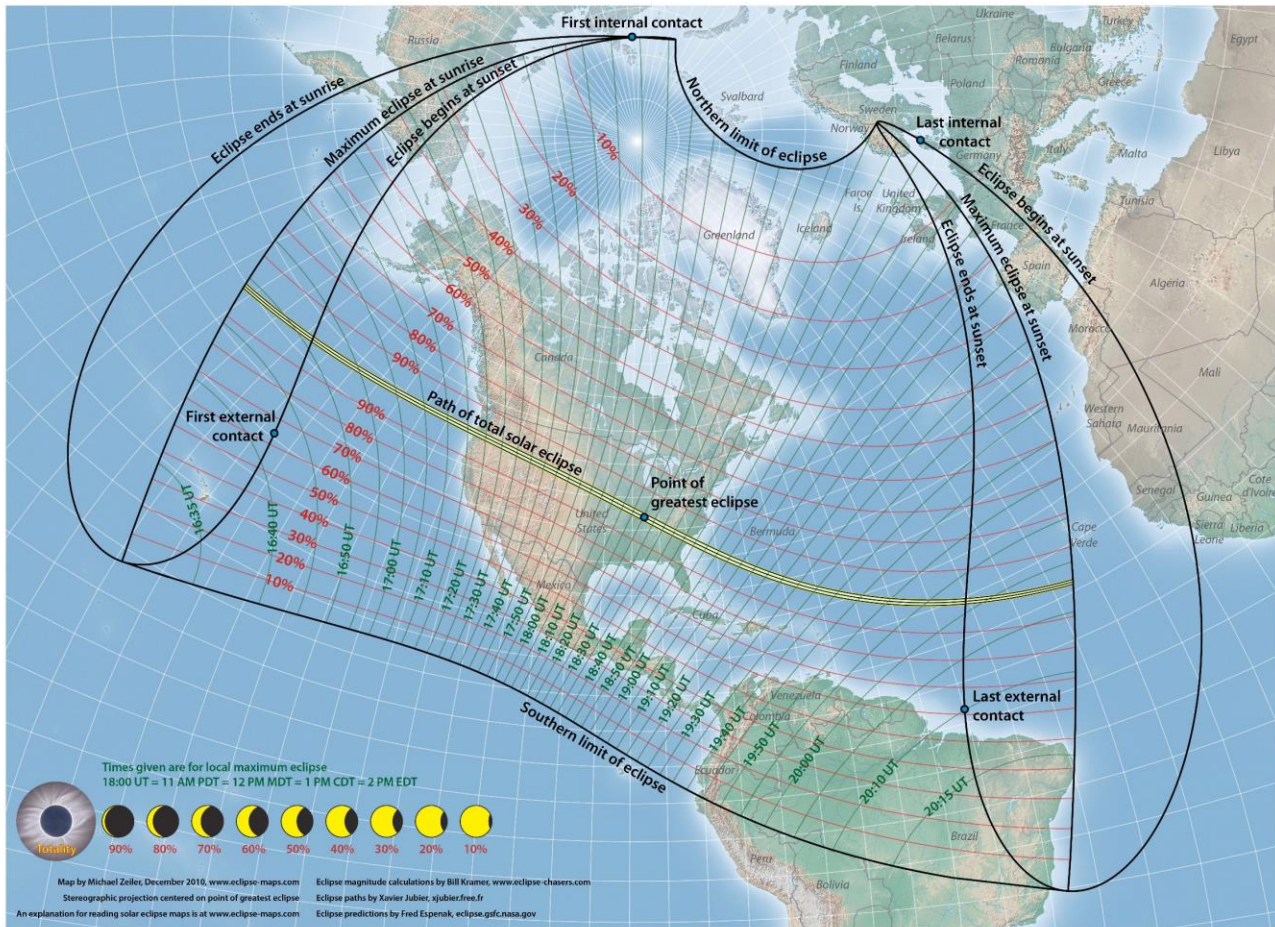


**Can I be near the path of totality and still see the eclipse?** NO!! You have to be right in the path to see a total eclipse of the sun! Check out [NASA's map here](#) to see if you are in the path of the eclipse. This [map has some of the best cities to view the eclipse](#).

**Protect yourself!** Be sure to order Solar Eclipse Glasses because looking directly at the sun can cause blindness!

# Solar Eclipse 2017

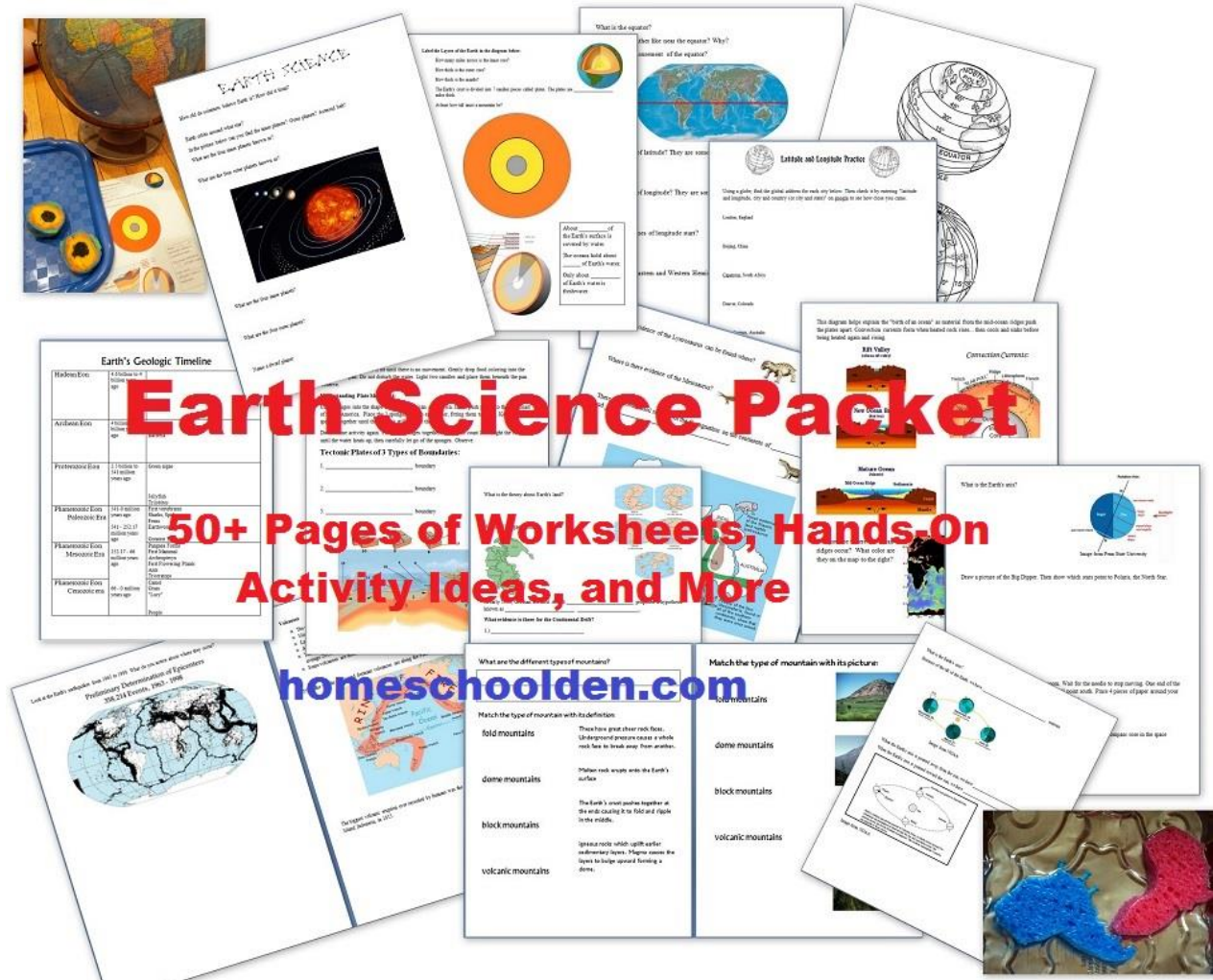
Total Solar Eclipse of 2017 August 21



Picture courtesy of [NASA](http://NASA)

You might also be interested in these packets:

**Earth Science Packet (50 pages)**



**Simple Machines Packet (30 pages)**





# A Study of Cells (35 pages)

**Cell Theory Develops:**  
Cells are the basic units of all living things. All living things are made up of cells. Most living things are made of many cells. Some are made of only one cell. The structure of the living organism is related to the number of cells. Robert Hooke was the first to see the cells. He used a microscope to look at the cells. He saw that they were made of small squares. He called them cells. The structure of the living organism is related to the number of cells.

**Types of Cells:**  
There are two main types of cells: animal cells and plant cells. Animal cells are round and have a nucleus. Plant cells are square and have a cell wall and a nucleus.

**Organelles of an Animal Cell:**  
Mitochondria: The powerhouses of the cell. They convert glucose into energy. Golgi apparatus: A stack of flattened sacs that move and package proteins. Lysosomes: Small organelles that break down waste. Centrioles: Two cylindrical structures that help in cell division. Vacuole: A large, clear space that stores water and other substances. Chloroplasts: Organelles that capture light energy and convert it into chemical energy. Cell wall: A rigid outer layer that provides structural support. Nucleus: The control center of the cell, containing DNA. Cytoplasm: The fluid inside the cell where organelles are suspended. Plasma membrane: The outer boundary of the cell that controls what enters and leaves.

**Cell and the Human Body:**  
Cells are the basic units of the human body. They are specialized to perform different functions. For example, muscle cells contract to move the body, and nerve cells transmit signals. The human body is made up of trillions of cells. These cells are organized into tissues, organs, and organ systems. The human body is a complex system of cells working together to maintain life.

**Classification of Cells:**  
Cells are classified into prokaryotic and eukaryotic. Prokaryotic cells are simple and lack a nucleus. Eukaryotic cells are more complex and have a nucleus. Eukaryotic cells are found in plants, animals, and fungi. Prokaryotic cells are found in bacteria and archaea.

**Plant vs. Animal Cells:**  
Plant cells have a cell wall, a large central vacuole, and chloroplasts. Animal cells lack these structures. Both types of cells have a nucleus, mitochondria, and other organelles.

**How Proteins are Made:**  
Proteins are made in the ribosomes. The process starts with a messenger RNA molecule. The ribosome reads the code on the mRNA and assembles amino acids into a polypeptide chain. The chain then folds into a specific shape to become a functional protein.

**Cells of the Body:**  
The human body contains many different types of cells. Some are specialized for movement, like muscle cells. Others are specialized for communication, like nerve cells. Each cell type has a unique shape and function that allows it to perform its specific role in the body.

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# Human Body Systems (25 pages)

## Human Body System Worksheets

**Body Systems and Organs:**  
A grid of diagrams showing the skeletal, urinary, muscular, endocrine, and digestive systems, along with their respective organs.

Organ	Respiratory System	Circulatory System	Immune System	Excretory System	Reproductive System
Heart		X			
Lungs	X				
Brain		X	X		
Stomach					X
Intestines					X
Bladder				X	
Uterus					X
Vagina					X
Penis					X
Testes					X
Prostate					X
Thyroid				X	
Adrenal				X	
Pituitary				X	
Pancreas				X	
Gonads					X
Thymus					X
Spleen					X
Tonsils					X
Thyroid					X
Adipose					X
White Blood Cells					X
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# Digestive System Packet (40 pages)



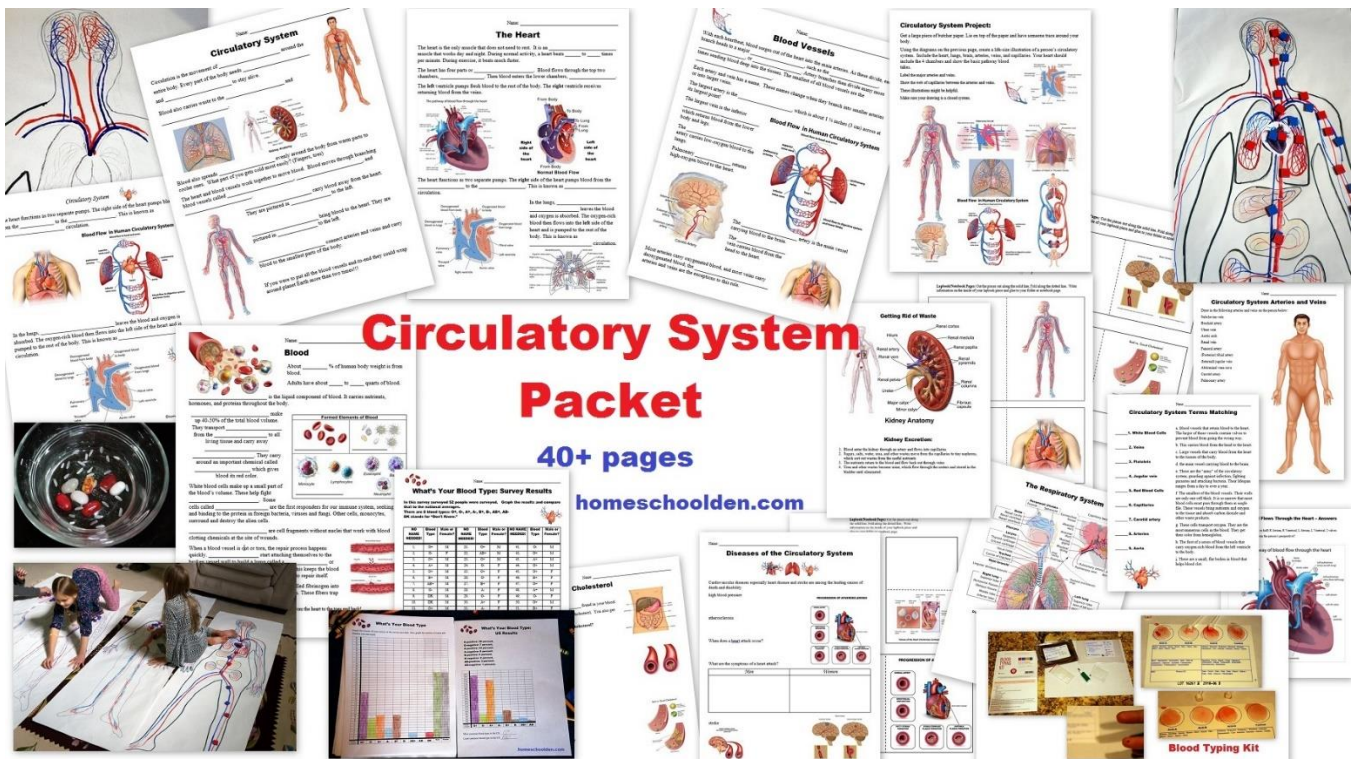
**Digestive System Worksheets**

**Lapbook Pieces**

[homeschoolden.com](http://homeschoolden.com)

The collage features several educational materials for a digestive system project. It includes two worksheets titled "THE DIGESTIVE SYSTEM:" with anatomical diagrams and labeling lists for organs like the mouth, esophagus, stomach, and small intestine. There are also smaller diagrams of the stomach, liver, and teeth. A "Digestive Function" sheet lists organs and their roles. A "Digestive Tract" sheet provides measurements for the mouth, esophagus, stomach, small intestine, and large intestine. A "Human Liver Anatomy" sheet shows a detailed diagram of the liver. A "Digestive System Project" sheet offers instructions for a lapbook. The website "homeschoolden.com" is prominently displayed at the bottom.

# Circulatory System Packet (40 pages)



**Circulatory System Packet**

**40+ pages**

[homeschoolden.com](http://homeschoolden.com)

This collage displays a variety of worksheets and lapbook components for a circulatory system project. It includes a "Circulatory System" overview sheet with diagrams of the heart and blood vessels. A "The Heart" sheet details the four chambers and the flow of blood. A "Blood Vessels" sheet explains the differences between arteries and veins. A "Circulatory System Project" sheet provides a template for a lapbook. Other sheets include "Blood Flow in Human Circulatory System", "Kidney Anatomy", "Circulatory System Arteries and Veins", "Circulatory System Terms Matching", "The Respiratory System", "Diseases of the Circulatory System", "Cholesterol", "What's Your Blood Type? Survey Results", and "Blood Typing Kit". The website "homeschoolden.com" is visible at the bottom.



# STEM: Electricity and Circuits Unit (30 pages)

**Electricity and Circuits Packet**  
**Hands-On Activities**

**Electricity and Circuits Packet**  
**30-Page Packet**  
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**Open and Closed Circuits**  
An open circuit is an incomplete electrical path. We use it to turn off a light bulb.

**LED Lights**  
LEDs are preferred - consume less energy, do not generate heat, and are more durable.

**Parallel Circuits**  
Parallel circuits allow current to flow along more than one path. If one path is blocked, the current can still travel through the circuit.

# Animal Packet (Vertebrates-Invertebrates, Animal Characteristics and more)

**Animal Unit**  
**30+ Page Packet**

**Types of Animals**  
**Animal Characteristics**  
**Vertebrate Groups**  
**Invertebrate Groups**  
**Insects vs. Spiders**  
**Domesticated vs. Wild Animals**  
**Animals and their Tracks**

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**Types of Animals**  
Mammals: Dog, Cat, Lion, Tiger, Elephant, Whale, Shark, Snake, Frog, Lizard, Snake, Bird, Fish, Insect, Spider, Mollusk, Amphibian, Reptile.

**A Few Invertebrate Groups**  
Insects: Ant, Bee, Butterfly, Flea, Mosquito, Termite, Tick, Spider, Scorpion, Centipede, Mite, Crab, Snail, Slug, Earthworm, Jellyfish, Starfish, Sea Anemone, Hydra, Sponges, Cnidarians, Mollusks, Arthropods, Nematodes, Rotifers, Platyhelminths, Ctenophores, Comb jellies, Radiolarians, Forams, Dinoflagellates, Green Algae, Red Algae, Brown Algae, Diatoms, Radiolarians, Forams, Dinoflagellates, Green Algae, Red Algae, Brown Algae, Diatoms.

**Domesticated vs. Wild Animals**  
Domesticated animals are those that have been bred and raised by humans for a specific purpose. Wild animals are those that live in the wild and are not domesticated.

**Animals and their Tracks**  
Rabbit, Moose, Deer, Wolf, Cat, Dog, Squirrel, Chipmunk, Skunk, Raccoon, Bear, Pig, Goat, Chicken, Turkey, Duck, Goose, Cow, Horse, Pig, Goat, Chicken, Turkey, Duck, Goose, Cow, Horse.

# Biology Packet (60+ pages)

**The Biosphere Levels of Organization**

**The Biosphere Levels of Organization**

**Climate Zones**

**Food Chains**

**Energy Pyramid**

**Biological Interactions**

**Biological Interactions**

**What is a Habitat?**

**Feeding Relationships**

**herbivore**  
these obtain energy by only eating plants

**carnivore**  
these obtain energy by eating animals

**omnivore**  
these obtain energy by eating both plants and animals

**detritivore**  
these feed on plant and animal remains and other dead matter

**decomposer**  
these break down organic matter

**60+ Pages**

**Biology Packet**  
**The Biosphere**  
**Biomes, Ecosystems, Habitats,**  
**Biological Interactions,**  
**Feeding Relationships**  
**and more!**

# Ocean Packet (65+ pages)

**Ocean Packet**

**65+ Pages**

**Marine Habitats, Ocean Navigation,**  
**Features of the Ocean Floor, Salinity,**  
**Ocean Tides and Currents, Ocean Life,**  
**Bioluminescence, and More**

**homeschoolden.com**

# Winter Packet: Earth's Axis/Seasons, The Arctic vs. Antarctica, Polar Animals and More (75+ pages)

**SEASONS**  
WINTER POLAR UNIT

Earth's Axis  
Months/Seasons  
Solstice, Equinox

**THE ARCTIC VS. ANTARCTICA**  
What are the differences between these two regions?

**WINTER PACKET**

75+ Pages  
Activities  
Lapbook Pieces  
Hands-On Activity Ideas

**SEALS, SEA LIONS, WALRUSES**

**PENGUINS**

**MAKE YOUR OWN CRYSTALS**

**WINTER WORKSHEETS**

**POLAR ANIMALS**

**POLAR ANIMALS LAPBOOK**

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# World Animals Packet 60+ page Packet

**World Animal Activity Pages**

**60+ Page Unit**

**Australia**

**Antarctica**

**World Animal Activity Pages**

**Montessori 3-Part World Animal Cards**

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# Dinosaur Packet 60+ Page Packet For ages 3-7 (60+ pages)

**AGE OF THE REPTILES**  
The Mesozoic Era is divided into three periods:  
**Triassic Period** (252 to 201 million years ago)  
**Jurassic Period** (201 to 145 million years ago)  
**Cretaceous Period** (145 to 66 million years ago)

**Number Wheel**  
3 + 3 = 6  
3 + 4 = 7  
5 + 1 = 6  
3 5 6

**Dinosaur Information Cards**

**DINOSAUR BINGO CARDS**

**Dinosaur Lapbook**  
Tyrannosaurus, Stegosaurus, Triceratops, Velociraptor, Spinosaurus, Iguanodon

**Math Games**  
3 1 2  
2 + 2 = 4  
7 + 9, 8 + 8, 9 + 9, 9 + 5, 9 + 1, 9 + 7, 9 + 8, 8 + 8, 8 + 4, 8 + 5, 7 + 2, 7 + 3, 7 + 4

**Letter Activities**  
Find all the letters - d  
z c d j k  
d h n d k  
y p b d s  
b i d f g  
d e c a d  
q h  
d i  
v d  
e m  
d h

**Word Search**  
Find all the letters - d

**Dinosaur Parts**  
Head, Neck, Tail, Leg, Arm, Wing, Claw, Horn, Spine, Tail, Head, Neck, Tail, Leg, Arm, Wing, Claw, Horn, Spine

**Fast Facts**  
Tyrannosaurus Rex was the largest dinosaur that ever lived. It was about 40 feet long and weighed about 8,000 pounds.

**Herbivores vs. Carnivores**  
Herbivores eat plants. Carnivores eat other animals.

**Age of Reptiles**  
The Mesozoic Era is the age of reptiles.

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