Where are We?

Let's explore our solar system and the components within. Use resources (books, interviewing other people, and internet websites such as NASA) to answer questions about space and learn something new. Then, use the printouts and the information provided to replicate your own solar system to scale.

Ages: 6th-8th grades

Materials-

- Pencil, measuring tape, printouts of the planets, open space at least 12 feet long inside or outside

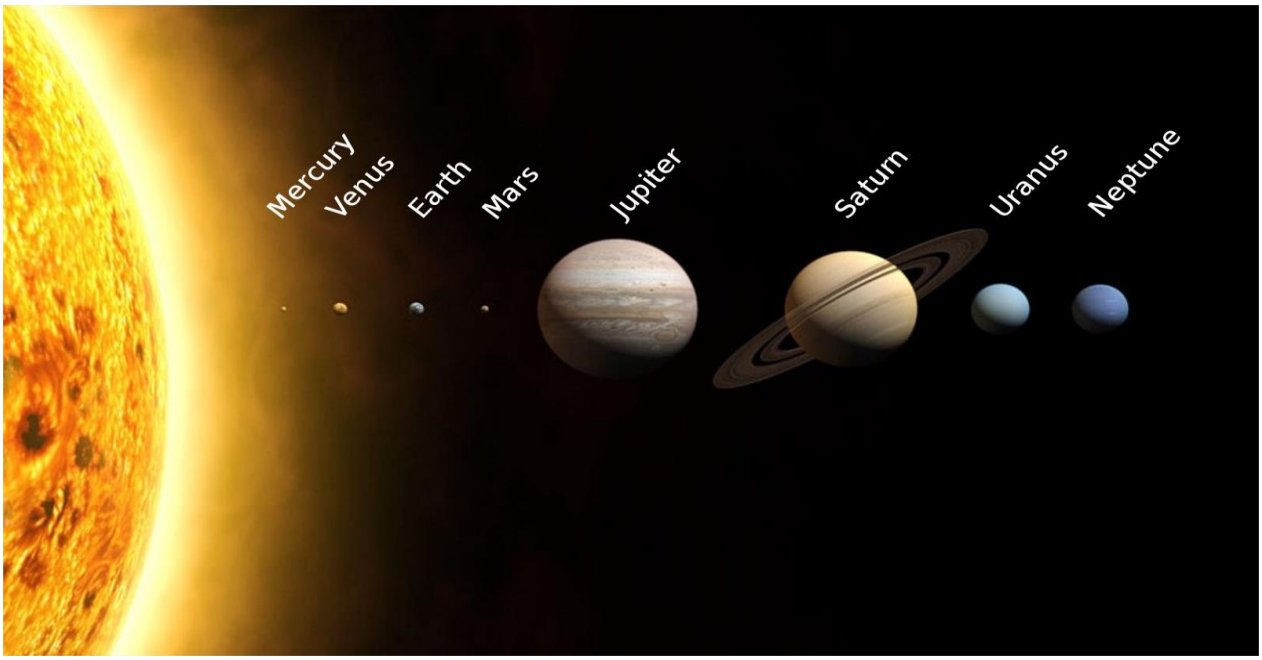
Guiding Questions -

- What types of things can be found in our solar system? How are they similar or different from each other?
- Which planets are closest to each other? Which planets are further away from each other?
- What do the planets' distances to the sun or to each other tell you about their composition, rock-based versus gas-based?
- What information did you use to hypothesize the planet distances? What did you learn while re-arranging the planets for the "scale distances"? Did you get any planets in their correct location or close? Which planets?

Activity Instructions-

- Start by trying your hand at the fill-in-the-blank activity sheet about our solar system. How many answers did you know without looking them up?
- Next, print and cut out the sun and planet pictures from the last page.
- Lay out your measuring tape to 12 feet. Place the sun at the start of the measuring tape.
- Hypothesize where you think the planets might be at this scale. Lay them out.
- Below is a list of the planets and their distances from the sun, in real life and at a 12-foot scale! Move the planets into their "scale distances" on your measuring tape. Take note of how they compare to your educated guesses.

Planets	Real Distances from the Sun (mi)	Scale Distances
Mercury	35,980,000	1.9 in
Venus	67,230,000	3.5 in
Earth	92,960,000	4.8 in
Mars	141,600,000	7.3 in
Jupiter	483,800,000	2 ft 1 in
Saturn	890,400,000	3 ft 10 in
Uranus	1,788,000,000	7 ft 8 in
Neptune	3,650,000,000	12 ft



Word Bank

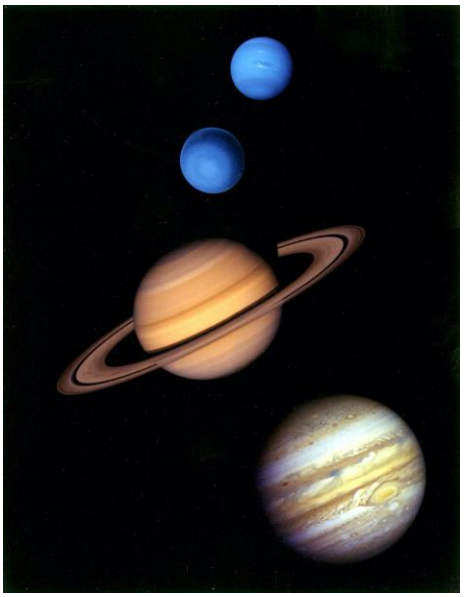
~ rocky ~ cleared ~ stars ~ comets ~ round ~
~ dwarf planet ~ gravity ~ Sun ~ moons ~ Pluto ~
~ gas giants ~ Milky Way ~ a star ~ thousands ~

A **solar system** consists of _____ and all the objects that travel around it—planets, _____, asteroids, _____ and meteoroids. Most stars host their own solar systems, so there are likely tens of _____ of other solar systems in the _____ galaxy alone.

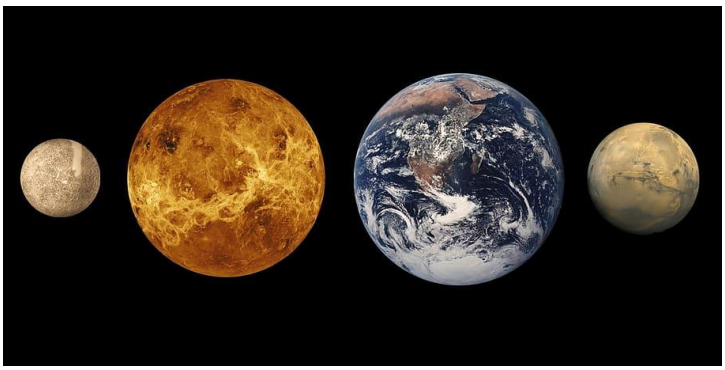
What makes a planet a planet? The definition has changed over the years, but the most recent (2006) says that a planet must do 3 things. Do you know what they are?

1. It must orbit a _____ (for our solar system, our star is the _____.)
2. It must be big enough to have enough _____ to force it into a _____ shape.
3. It must be big enough that its gravity _____ any other objects of a similar size near its orbit.

An orbiting body that does not meet the other characteristics is called a _____ _____. The most famous of these is _____. Others are called Ceres, Makemake, Haumea, and Eris.



Our planets are grouped into two separate categories: _____ and _____ _____. Looking at these pictures, can you tell which planets are in which group?



Can you put the planets in order? Cut out these pictures, identify the planets, and put them in order from the sun.