Space

Lesson 7: Objects in the Solar System

Today's focus

I will be able to:

- observe that the patterns of stars in the sky stay the same, although they appear to shift across the sky nightly, and different stars can be seen in different seasons.

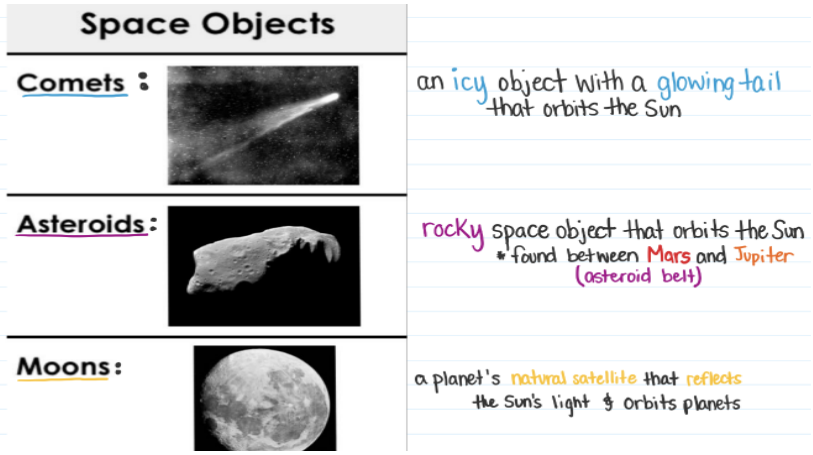
Bellringer

Maya designed an investigation to see how much rain falls off this type of leaf. She placed collecting trays under the leaves and gathered data after each rainfall. She recorded everything she did so her investigation could be repeated.

Which of these is **NOT** a reason why it is important for Maya's investigation to be repeated by someone else?

A. so others can see if they collect similar results
B. so others can change the procedures of the investigation
C. so others can verify if her results were correct
D. so others can develop their own research using different leaves

Brain Dump:



Think About This!!!:

Our solar system is a part of space that is made up of many stars, planets with moons, lots of empty space, and comets.

Do you agree with this statement that the teacher put on the board? Explain why you agree or disagree with the statement.

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_____

_____

Space

What is in Our Solar System?

Our Solar System

Our Solar System is made up of the Sun and all of the objects that orbit it. Since the Sun sits at the center of the Solar System and makes up over 95% of the Solar System's mass, it's gravitational pull is able to hold all of the other objects in their revolutions (orbits) around it.

The other objects in the Solar System include the eight planets and their moons, asteroids (located in the asteroid belt between Mars and Jupiter), comets, dwarf planets and space dust.

According to the text, what keeps all of the objects in the Solar System orbiting the Sun?

_____

Use evidence from the passage to identify what we find in our Solar System.

_____

_____

_____

Found inside A Solar System

Planets: Planets are objects that orbit stars. Astronomers have found over 4,000 planetary systems. Some of these are outside of our galaxy. They have also documented over 5,500 planets in those planetary systems. These planets are referred to as exoplanets because they are outside of our solar system. Our solar system has eight planets that orbit the Sun.

Moons: A moon is any naturally occurring object that revolves, or orbits, around a planet. Moons are also referred to as naturally occurring satellites. The number of moons differs from planet to planet. There is evidence that moons exist that orbit planets outside of our solar system.

Based on the text, how are planets and moons different?

_____

_____

Asteroids: An asteroid is a rock in outer space. Some asteroids can be very large, while others are as small as a grain of sand. Asteroids are found revolving around the Sun in the region between Mars and Jupiter.

Comets: A small, frozen chunk of ice, gas, and dust that revolves around the Sun is a comet. Comets have very elliptical orbits, where the planets' orbits are more circular in shape. As a comet approaches and gets close to the Sun, it warms up and the frozen matter is emitted as vaporized dust and gas. This debris trail forms a tail as it reflects the Sun's light. The presence of a tail is a telltale sign that the object is a comet. A comet's tail will always point away from the Sun.

Using evidence from the text, explain the difference between an asteroid and a comet?

_____

_____

_____

Space

Found inside Our Solar System

The Planets

There are eight planets that orbit the Sun in our solar system. The four inner planets are smaller in size, have rocky surfaces, higher temperatures, and shorter revolution paths. These planets are Mercury, Venus, Earth and Mars. Our solar system also includes the four outer planets called the gas giant planets. These planets include Jupiter, Saturn, Uranus and Neptune. These planets are much larger, are composed mostly of gas, have rings and many moons, colder temperatures, and very long revolutions (orbits).

Moons

A moon is any naturally occurring object that revolves, or orbits, around a planet. Moons are also referred to as naturally occurring satellites. The number of moons differs from planet to planet. The inner planets have fewer moons than the outer planets. Mercury and Venus do not have any moons. Earth has one moon. Mars has two moons. The outer planets have many more moons.

Name the four inner planets.

1._____

2._____

3._____

4._____

Name the four outer planets.

5._____

6._____

7._____

8._____

What is a moon?

_____

_____

Which planets do not have moons?

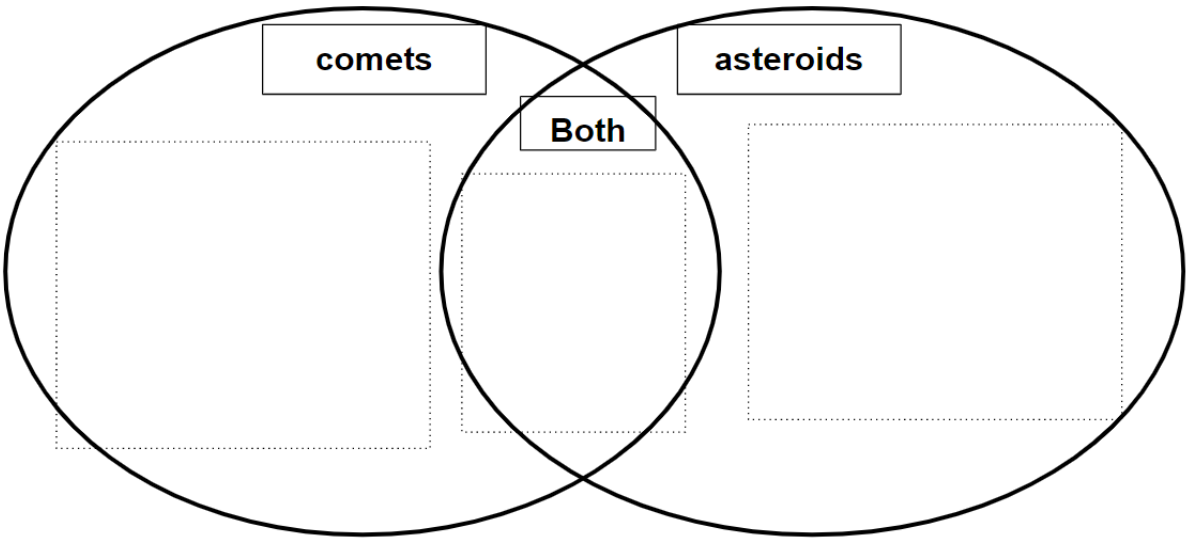
_____

Asteroids:

The asteroid belt is a region of space in our solar system between the orbits of Mars and Jupiter. This is where most of the asteroids in our Solar System are found orbiting the Sun. The asteroids in the asteroid belt come in a variety of sizes. Some are very small (less than a mile across), while others are quite large. The largest asteroid in the asteroid belt is called Ceres (*Seer eez*). It is about one-quarter the size of our moon.

Comets:

Comets are small, frozen masses of ice, dust and gas that revolve around the Sun. They are formed in the outer region of the solar system. As a comet approaches and gets close to the Sun, it starts to vaporize and give off dust and gas as a debris trail. This debris trail is observed as a glowing tail because it is reflecting light from the Sun. The tail will always point away from the Sun. This happens because as the comets orbit around the Sun, solar energy creates winds that blow the gas and dust in the debris trail away from the Su



Space

Hunting In Space:

Not all items are in our Solar System.

***Place a star next to the item that is NOT in our solar system but is in our galaxy.**

_____ Very large, hot balls of burning gases that give off heat and light energy. They appear as only small points of light in the night sky.

_____ Large, round objects that orbit (or revolve) around stars

_____ Groups of stars that form particular shapes in the night sky. Some are only seen during the same time each year.

_____ Naturally occurring objects that orbit planets

_____ Small, rocky objects that orbit the Sun between Mars and Jupiter. They can range in size from 10 meters in diameter to 530 kilometers in diameter.

_____ Often described as "dirty snowballs." They consist of frozen ice, gases, and dust. When they get close to the Sun, they seem to have long, glowing tails.

_____ Extremely small pieces of matter found in space. Collected together it often appears to look like clouds.

Writing

Write 2-3 sentences explaining to a friend that the solar system is made up of many parts and what they would find if they traveled through the solar system.

_____

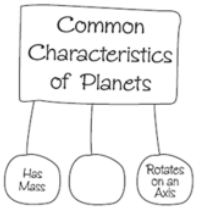
_____

_____

Exit Ticket/Check What You Know

1. Jacob started creating a diagram to show some of the common characteristics of the planets in our solar system.

Which characteristics should Jacob write in the empty circle of the diagram?



a. Made mostly of gas
b. Has a rocky surface
c. Revolves around a star
d. Is a satellite of another planet

2. During a visit to an observatory. Silvano observed the moon, Venus, the sun, and the star Sirius. Which of these objects is outside of the solar system?

a. Sirius
b. Venus
c. sun
d. moon

3. Lee saw photographs of asteroids and comets that astronomers took using telescopes. What could Lee look for in the photographs to tell a comet from an asteroid?

a. A long tail
b. A small size
c. A rocky surface
d. An irregular shape