SOL RELEASED QUESTIONS:

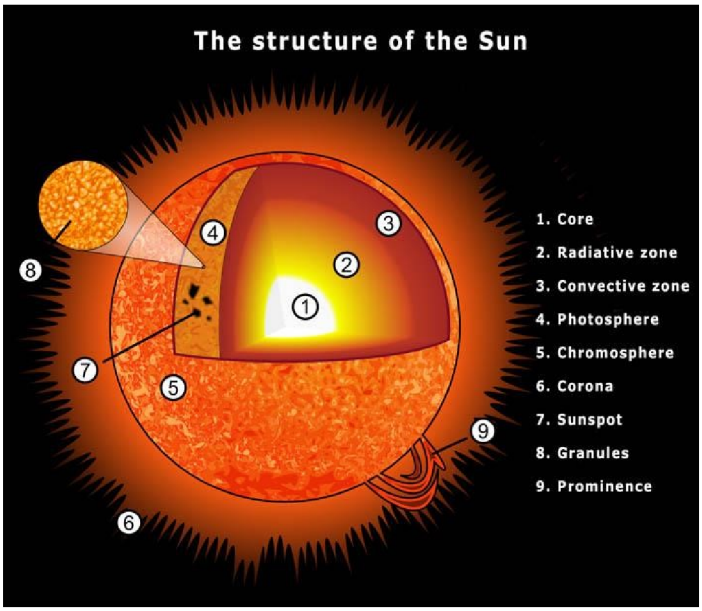
1. **Which body of water is often protected naturally from storms by barrier islands and also contains a mixture of fresh water and salt water? (2015)**
   a. Estuary
   b. Ocean
   c. Lake
   d. Pond

OUR SOLAR SYSTEM

The solar system consists of the sun, moon, Earth, other planets and their moons, meteors, asteroids, and comets. Each body has its own characteristics and features.

The Sun:

The **sun is the ultimate source of all life on Earth**. Radiant energy from the sun helps plants make their food, it heats the planet and it affects the weather. The sun is a self-illuminating ball of gas, and it **produces heat and light that will last for billions of years**. The sun's **strong gravity holds the planets in their orbits**. Its mass **makes up over 99% of the mass of the entire solar system**. The sun has an atmosphere and an interior. It differs from other objects in the solar system because **all the layers are gaseous**. The sun does not have a solid core like the earth.

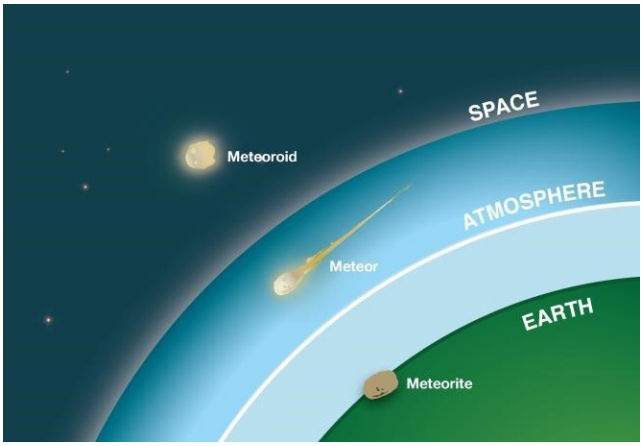


Features of the sun include **sunspots, prominences, and solar flares**. A **sunspot** is an area of the sun's surface that is **cooler than the area around it**. Sunspots appear as dark spots on the sun. **Reddish loops of gas** that appear to connect sunspots are called **prominences**. An **explosion of gas from the sun's surface** occurs when loops in sunspot regions suddenly connect. They are known as **solar flares**. Solar flares can affect communication on earth by disrupting radio, telephone, and satellite signals.

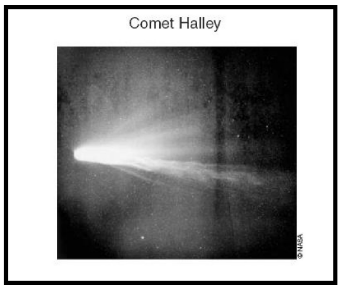
Other Rocky Bodies

<u>Moons</u> are natural satellites that revolve around a more massive body such as a planet. Moons exist because they are caught by the gravitational pull of a larger object. The Earth has one moon. Some planets, such as Mercury and Venus, have none. Other planets, such as Saturn, have over 20. Most moons do not have an atmosphere, and therefore do not experience a lot of weathering.

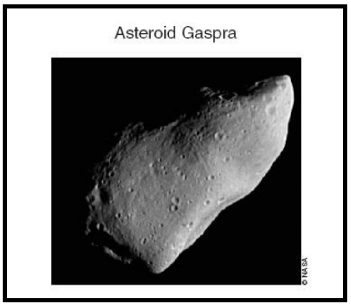
There is a difference between the following three words: **meteor, meteoroid,** and **meteorite**. While the object **orbits out in space** it is called a **<u>meteoroid</u>**. As it **burns up when it enters Earth's atmosphere**, it gives off light and is called a **<u>meteor or "shooting star"</u>**. **<u>Meteorites</u>** are fragments from space that survive the trip through the Earth's atmosphere and **land on Earth**. *Craters on Earth indicate that meteorites have hit Earth in the past.*



<u>Comets</u> are large bodies of **ice, gas, rock and dust** that travel around the sun in an elliptical orbit. Because of their composition, comets are sometimes called "dirty snowballs". If they come close enough to Earth, they can be seen as a shooting star with a long, glowing tail. A comet has three main parts, the **nucleus, coma and tails**. The nucleus is mostly solid with ice and dust mixed in. The coma is located around the nucleus and is a dense cloud of water and gases. Flowing behind the head is the comet's tail. It is composed of the dust tail and the ion tail. The tail is caused by solar winds blowing back matter from the coma. The dust tail is what is usually seen in the night sky. Some take only a few years to orbit the sun while others may take thousands of years to orbit the sun. One comet, named Hale-Bopp, has chemicals that are similar to those that might have formed life on Earth.



<u>Asteroids</u> are **pieces of rock made of minerals** similar to those found on rocky planets or moons. An asteroid belt exits between Mars and Jupiter. This belt orbits the sun. The word asteroid means "star-like".



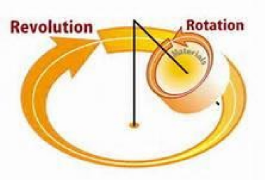
Planets

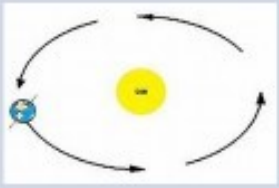
The solar system can be organized into the **<u>inner planets</u>** and **<u>outer planets</u>**. Mercury, Venus, Earth and Mars are known as the **<u>inner planets</u>** because they are **located within the asteroid belt**. These planets are **small, dense, and rocky**. As a result of these features, they are also referred to as **terrestrial planets**. Jupiter, Saturn, Uranus, Neptune, and Pluto are referred to as the **<u>outer planets</u>** because they are **located outside of the asteroid belt**. They are the largest planets. It is also believed that their surfaces are a liquid or slush surrounded by extensive gaseous atmospheres.

What is a dwarf planet? A **dwarf planet** is an object the size of a **planet** but that is neither a **planet** nor a moon or other natural satellite.

One mnemonic that could be used to help remember the order of the planets from the sun outward into space is "**M**y **v**ery **e**ducated **m**other **j**ust **s**erved **u**s **n**achos." The distances between the sun and the planets are so great that a measurement known as an astronomical unit or *AU* is used. An *AU* is 150 million kilometers, which is the average distance from the Earth to the sun. If something is 6 *AU* away from the sun, then the object is six times farther from the sun than the Earth is. Those planets closest to the sun have shorter revolutions, or years, compared to Earth. Those furthest from the sun have longer revolutions.

<u>What is the difference between rotation and revolution?</u>

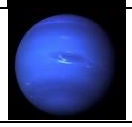


	Revolution	Rotation
Time to complete	365 ¼ or 1 year	24 hours or 1 day
What does it cause	Seasons	Day & Night
Sketch		

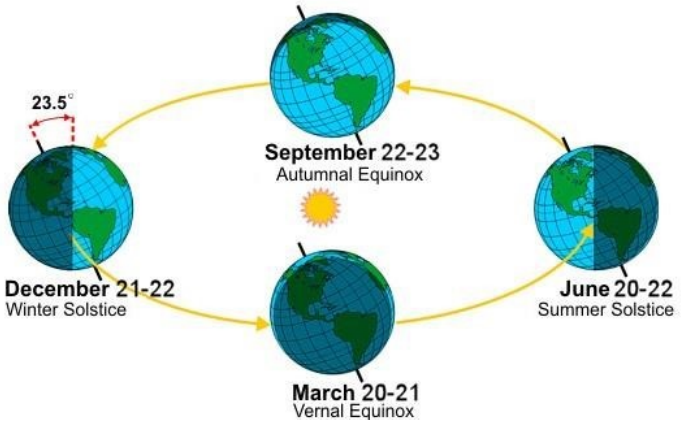
Gravity is the **force** pulling together all matter (which is anything you can physically touch). The more matter, the more **gravity** - things that have a lot of matter such as planets and moons and stars pull more strongly.

- It holds the planets in orbit around the Sun, and moons in orbit around the planets.
- The gravitational pull of the Sun and Moon creates the tides on Earth.

Planet	Photo	Inner/Outer Planet	Important Characteristics
Mercury		Inner	▪ small, rocky ▪ no atmosphere ▪ closest to the sun ▪ no moon
Venus		Inner	▪ "Earth's Twin" ▪ hottest planet due to thick atmosphere (greenhouse effect) ▪ clockwise on axis ▪ no moon
Earth		Inner	▪ home! ▪ water in all states ▪ only planet in solar system known to have life
Mars		Inner	▪ known as the "red planet" due to high iron content ▪ has large volcanic systems, including largest volcano in solar system, Olympus Mons ▪ frozen water at polar ice caps

Jupiter		Outer	▪ gas giant ▪ largest planet ▪ has a giant storm called the Great Red Spot ▪ has many moons ▪ has a ring system
Saturn		Outer	▪ gas giant ▪ known for extensive ring system made of gases, dust, ice ▪ most moons
Uranus		Outer	▪ gas giant ▪ rotates on its side compared to other planets
Neptune		Outer	▪ gas giant ▪ characteristic blue color due to gases ▪ sometimes the furthest from the Sun

What causes seasons? The **seasons** are **caused** by the tilt of the Earth's rotational axis away or toward the sun as it travels through its year-long path (revolution) around the sun.

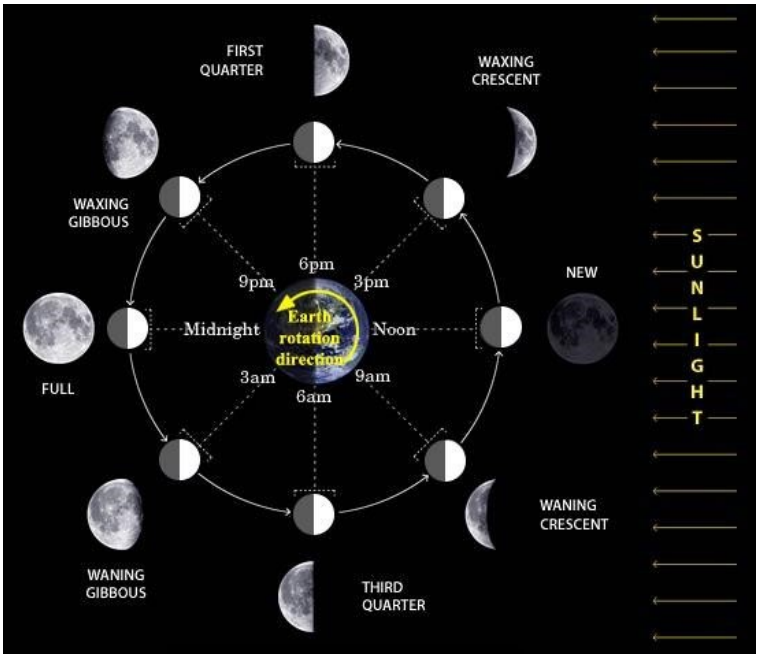


Solar System review adapted from www.neisd.net/curriculum/SchImprov/science/6th

The Moon

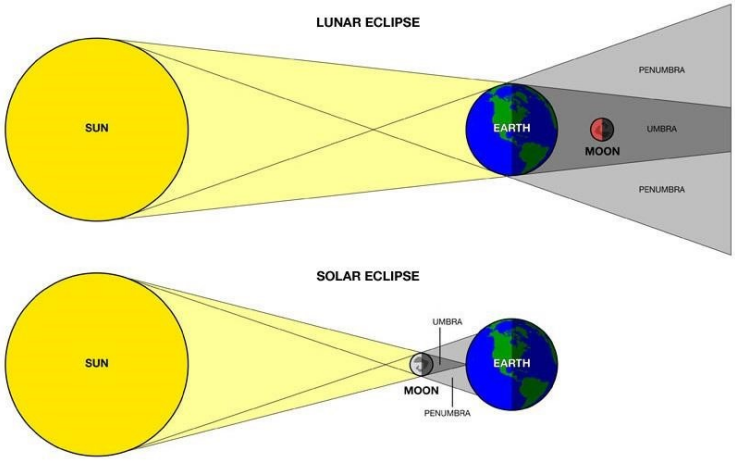
The moon goes through a complete moon phase cycle in about one month. That's true, but it's not exactly one month. It takes the moon about 27.3 days to revolve around Earth. The moon rotates on its axis about every 27.3 days. A day and a year on the moon is the same length. Moon phases occur as the moon makes one revolution around Earth. The phases of the moon we see are due to the position of the sun, Earth, and moon. How much of the reflected surface we see of the moon depends on the positions of the sun, Earth, and moon. The visible portion of the moon that we see each night follows a pattern starting with the new moon. The phases of the moon are the changing shape of the bright part of the Moon that we see is called its phase.

What causes part of the moon to be lit up*?* The moon is illuminated because it reflects the light from the sun. The part of the moon facing the sun is lit up. The part facing away from the sun is in darkness.



ECLIPSES

An eclipse occurs when one object gets in between you and another object and blocks your view. From Earth, we routinely experience two kinds of eclipses: an eclipse of the moon and an eclipse of the sun. Sometimes, as the Earth orbits the sun, it comes between the sun and the moon. When this happens, the Earth throws a dark shadow across the moon. This is known as an eclipse of the moon, or **a lunar eclipse**. Sometimes, the moon passes between the Earth and the sun. The moon blocks the light of the sun and a shadow of the moon is cast on the Earth's surface. This is an eclipse of the sun, or a **solar eclipse**.



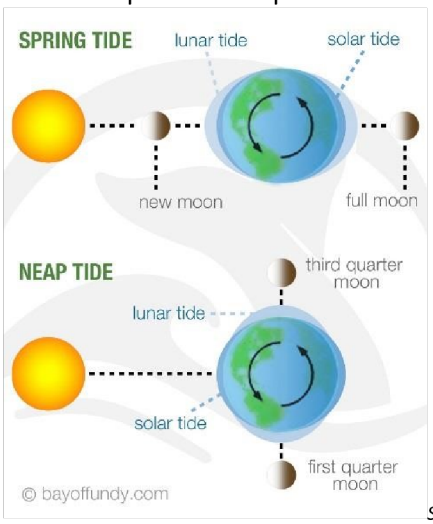
TIDES

A *gravitational pull occurs between the Earth and the moon*. The Earth's seasons do not affect the moon's gravitational pull. What are **tides**? Tides are the **periodic swelling, or rising, and falling of bodies of water** on the Earth's surface. Climate factors can affect the tides, as well as earthquakes. However, besides climate, the gravitational attraction that exists between the Earth and the moon also greatly affect the rise and fall of water levels. As the Earth is rotating while the moon orbits it, there are two high tides and two low tides each day. The tidal cycle, therefore, runs every 24 hours and 50 minutes.

TYPES OF TIDES

Spring Tides: The strongest gravitational forces occur when the **moon and the sun are aligned**. The gravitational pull causes the water levels to be either extremely high or extremely low. When the water levels are extremely high or extremely low, they are known as Spring Tides. **Spring Tides occur during the New Moon and the Full Moon**.

Neap Tides: When the **moon and the sun are not aligned**, the gravitational pull is much weaker. This causes the level of the high and low tides to be far less severe in nature. These types of tides are then known as Neap Tides. Neap Tides occur during the 1st Quarter Moon and the 3rd Quarter Moon.



Source: http://www.educationquizzes.com/us/grade-6/science/the-moon-and-tides/

SOL RELEASED QUESTIONS:

1. **During which phase does the Moon receive sunlight only on the side facing away from Earth? (2009)**
   a. Full Moon
   b. New Moon
   c. Waning gibbous
   d. Waxing gibbous
2. **Which of the following best describes why the Moon orbits Earth? (2009)**
   a. The distance the Moon and Earth are from the Sun
   b. The energy reflected from the surface of Earth
   c. The winds generated on Earth by the energy of the Sun
   d. The gravitational attraction between the Moon and Earth