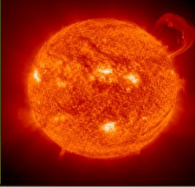


# The Sun, the Earth and the Moon

5.8D





# Our Solar System

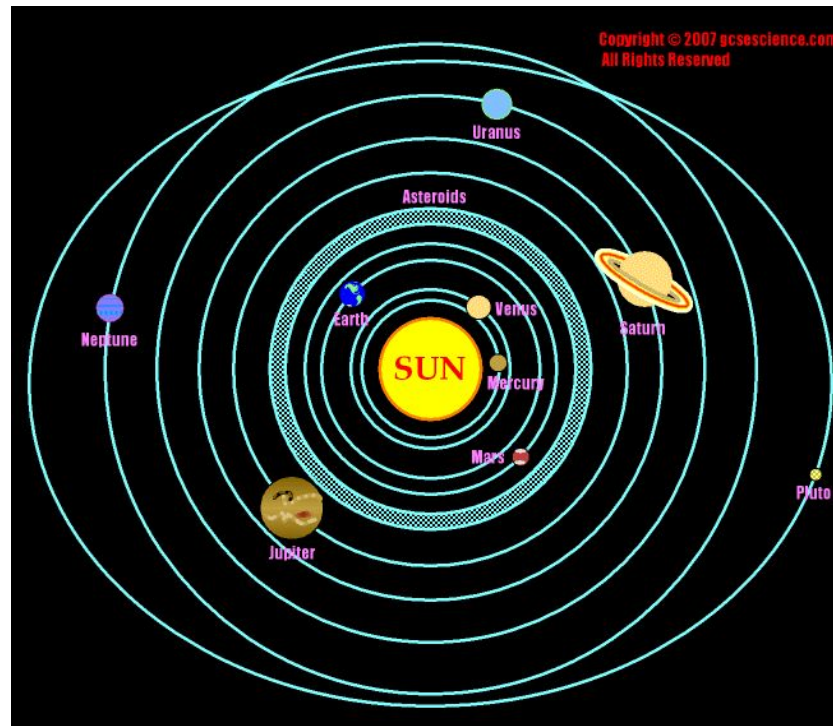
- Our solar system includes the sun, eight planets and their moons, comets, large space rocks called asteroids and small space rocks called meteoroids.

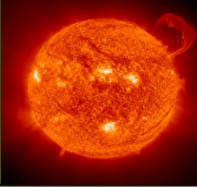




# Our Solar System

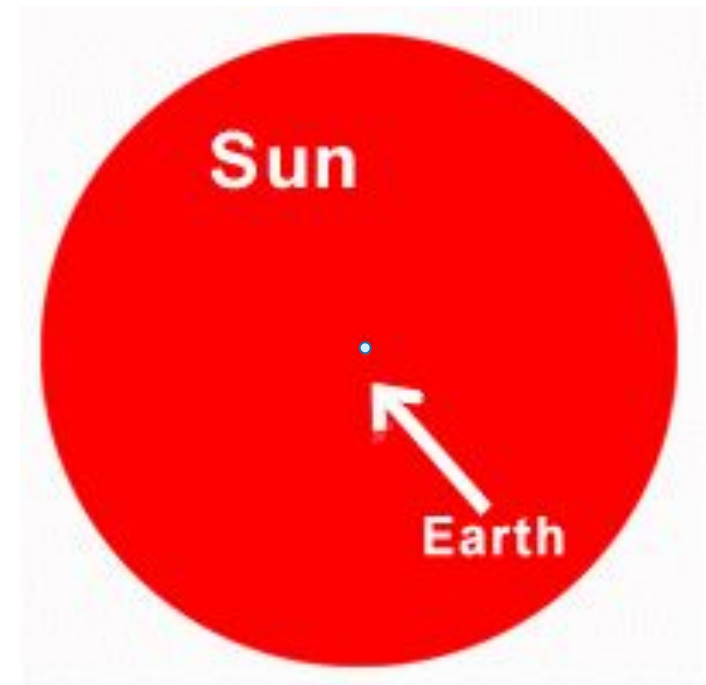
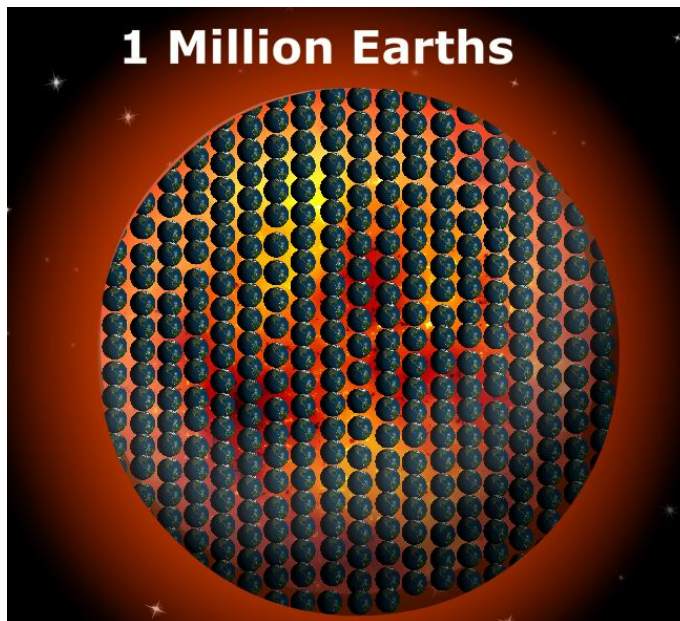
- The sun is at the center of our solar system.
- All of the planets, asteroids and comets revolve, or orbit the sun.

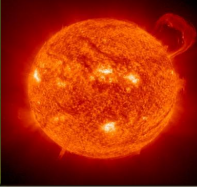
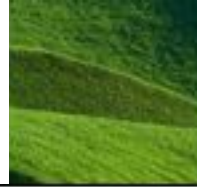




# Characteristics of the Sun

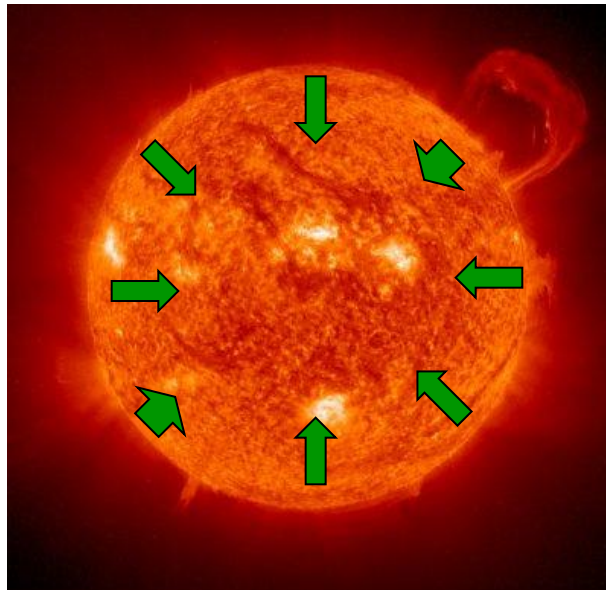
- The sun is the brightest object in our sky and the largest object in our Solar System.
- The sun is so massive that about a million Earths could fit inside of it!





# Characteristics of the Sun

- The sun's gravitational pull is tremendous due to its great mass.
- Greater mass = greater gravitational pull





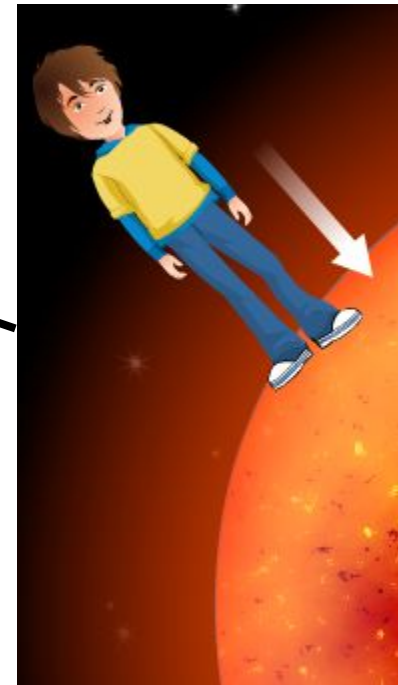
# Characteristics of the Sun

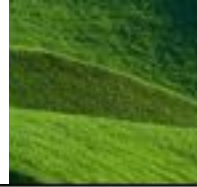
- The sun's gravitational pull is so strong that a person weighing 120 pounds on Earth would weigh 3,249 pounds on the sun!



120 pounds on Earth

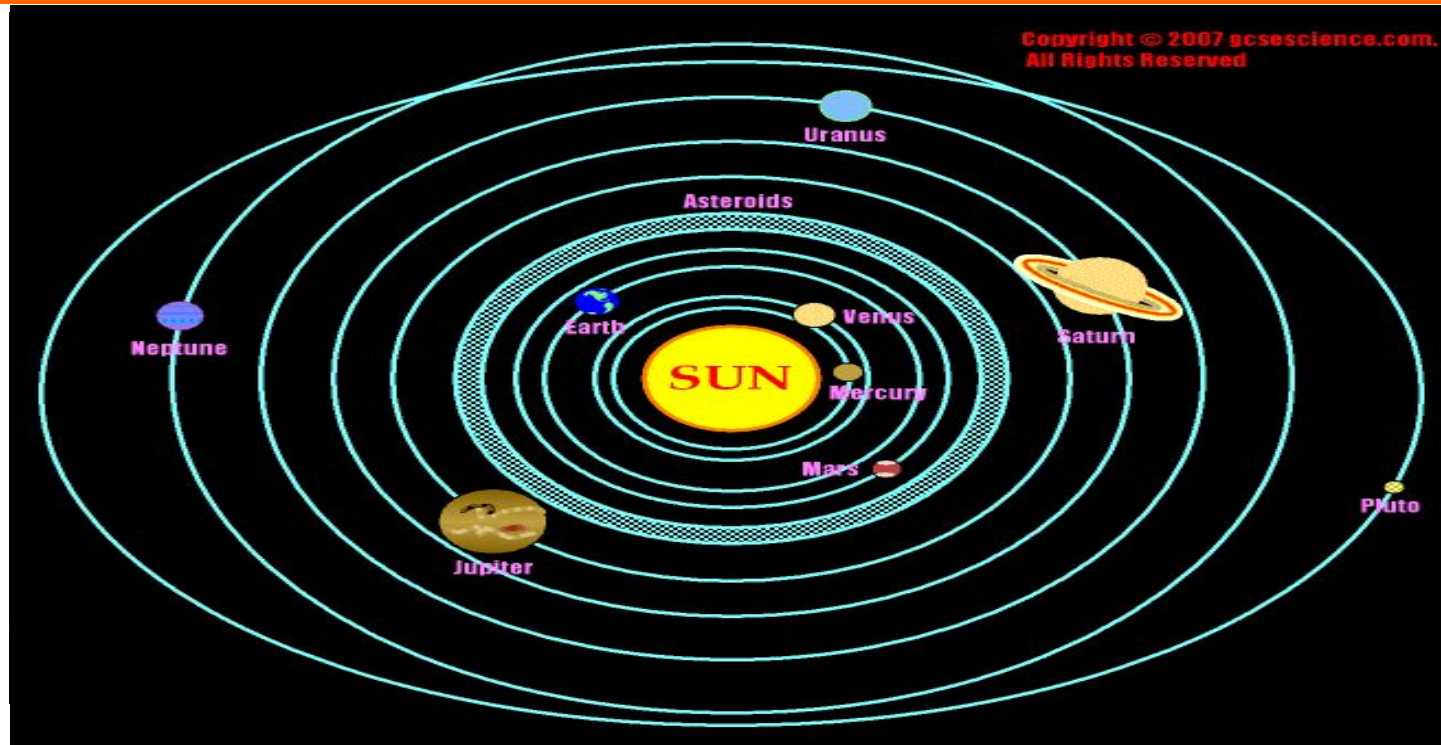
3,249 pounds on the sun





# Characteristics of the Sun

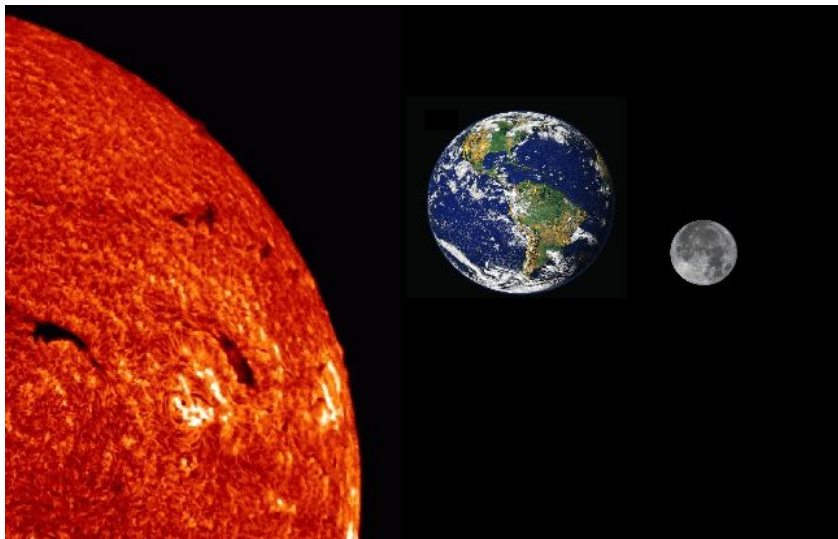
In fact, the sun's gravitational pull is so strong that it holds all the planets in orbit around it.

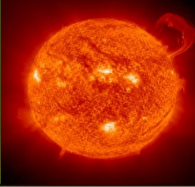




# Characteristics of the Sun

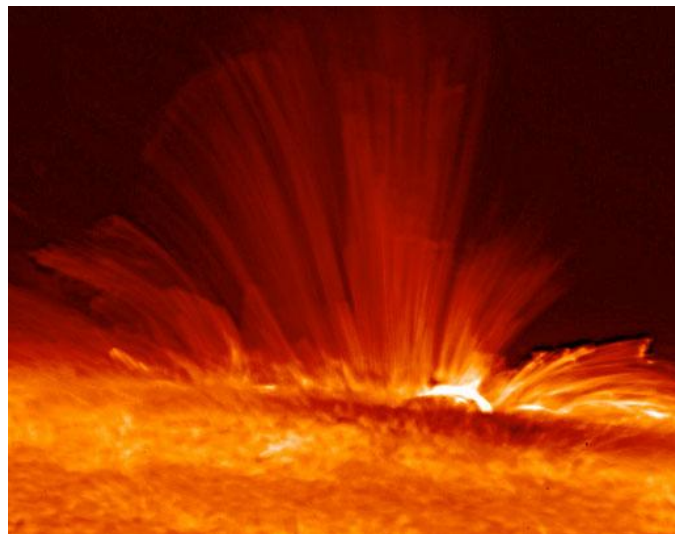
- The sun is about 150 kilometers (93 million miles) from the Earth.
- If you were traveling in a rocket going 5,000 meters a second, it would take you almost a year to get from the Earth to the sun.

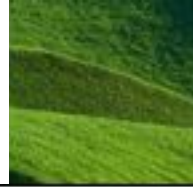




# Characteristics of the Sun

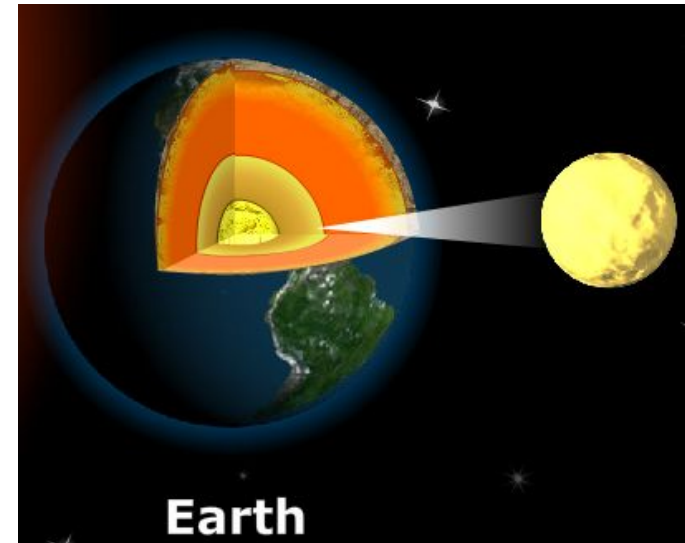
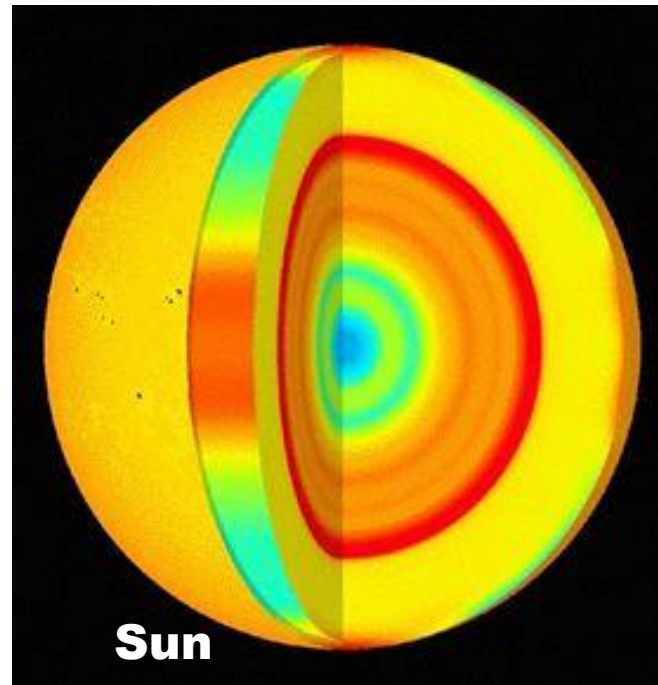
- The sun is not solid, like the Earth and the moon. It is made up of gases—mainly hydrogen and helium.
- The temperature of the surface of the Sun is about  $6093^{\circ}\text{C}$ . It is very hot!

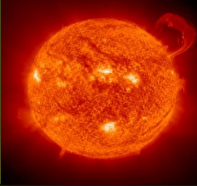




# Characteristics of the Sun

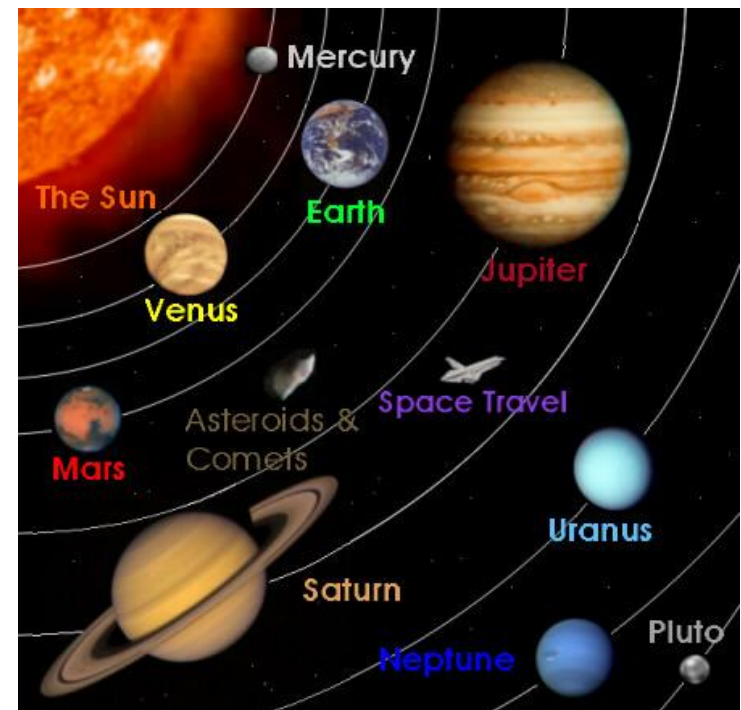
Like the  
Earth and  
the moon,  
the Sun  
has a core.

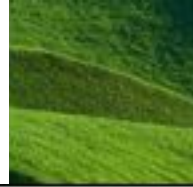




# Characteristics of the Earth

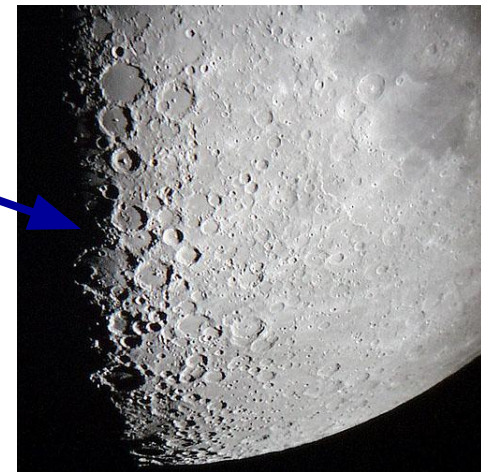
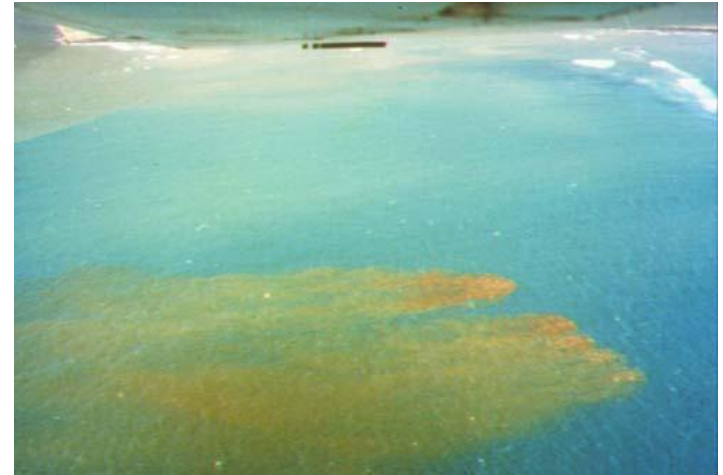
- The Earth is the third planet from the sun.
- At about 12,756 km, the Earth is the fifth largest planet in our solar system.





# Characteristics of the Earth and the Moon

- About  $\frac{3}{4}$  of the Earth's surface is covered with water.
- There is no liquid water on the moon. However, scientists believe that there may be some frozen ice at the moon's poles.



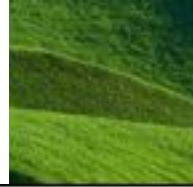


# Characteristics of the Earth and the Moon



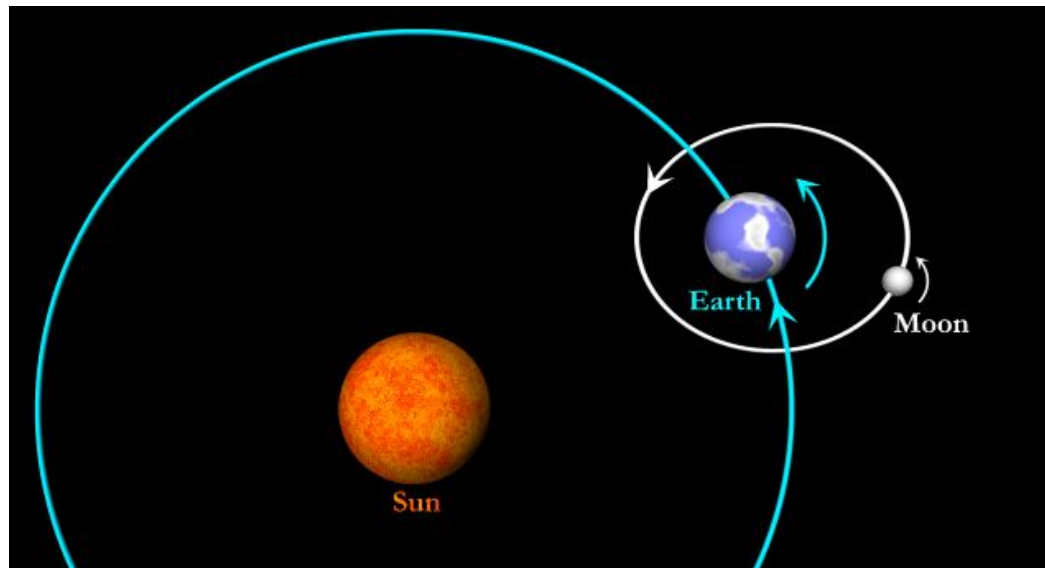
- Each day on Earth is about 23.93 hours. (It takes the Earth 23.93 hours to rotate once on its axis.)
- It takes the moon about 27.3 Earth days to rotate once on its axis.
- The same side of the moon always faces the Earth.





# Characteristics of the Earth and the Moon

- It takes the Earth about 365  $\frac{1}{4}$  days, or one year, to orbit the sun.
- It takes the moon about 27.3 days (one month) to orbit, or revolve, around the Earth.

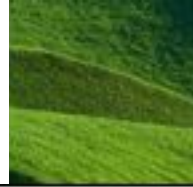




# Characteristics of the Earth and the Moon

- The temperature on Earth ranges from between  $-88^{\circ}\text{C}$  to  $58^{\circ}\text{C}$ . The coldest recorded temperature was on the continent of Antarctica (Vostok in July, 1983). The hottest recorded temperature was on the continent of Africa (Libya in September, 1922).
- The temperature on the Moon ranges from daytime highs of about  $130^{\circ}\text{C}$  to nighttime lows of about  $-110^{\circ}\text{C}$ .



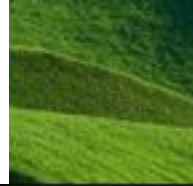


# Characteristics of the Earth and the Moon

- The atmosphere is a thin layer of gases that surrounds the Earth. It is composed of 78% nitrogen, 21% oxygen, 0.9% argon, 0.03% carbon dioxide, and trace amounts of other gases.



- The moon has little or no atmosphere. On the moon, the sky is always dark, even on the bright side (because there is no atmosphere). Also, since sound waves travel through air, the moon is silent; there can be no sound transmission on the moon.



# Characteristics of the Earth and the Moon

- The Earth is the densest planet in our Solar System.
- To escape the Earth's gravitational pull, a vehicle must travel 11,180 m/sec.
- There is much less gravity on the surface of the moon. It is about one-sixth of that on the Earth.





## Characteristics of the Moon

- Mare (plural maria) means "sea," but maria are plains on the moon.
- They are called maria because very early astronomers thought that these areas on the moon were great seas.
- The first moon landing was in the Mare Tranquillitatis (the Sea of Tranquility).
- Maria are concentrated on the side of the moon that faces the Earth; the far side has very few of these plains.





# Characteristics of the Moon

- The surface of the moon is scarred by millions of circular craters, caused by the impacts of asteroids, comets, and meteorites.
- There is no atmosphere on the moon to help protect it from bombardment from potential impactors like on the Earth (most objects from space burn up in our atmosphere).
- Also, there is no erosion (wind or precipitation) to wear away these craters, so they remain unchanged until another new impact changes it.
- These craters range in size up to hundreds of kilometers, but the most enormous craters have been flooded by lava, and only parts of the outline are visible. The biggest unflooded lunar crater is Clavius which is 160 km in diameter.

