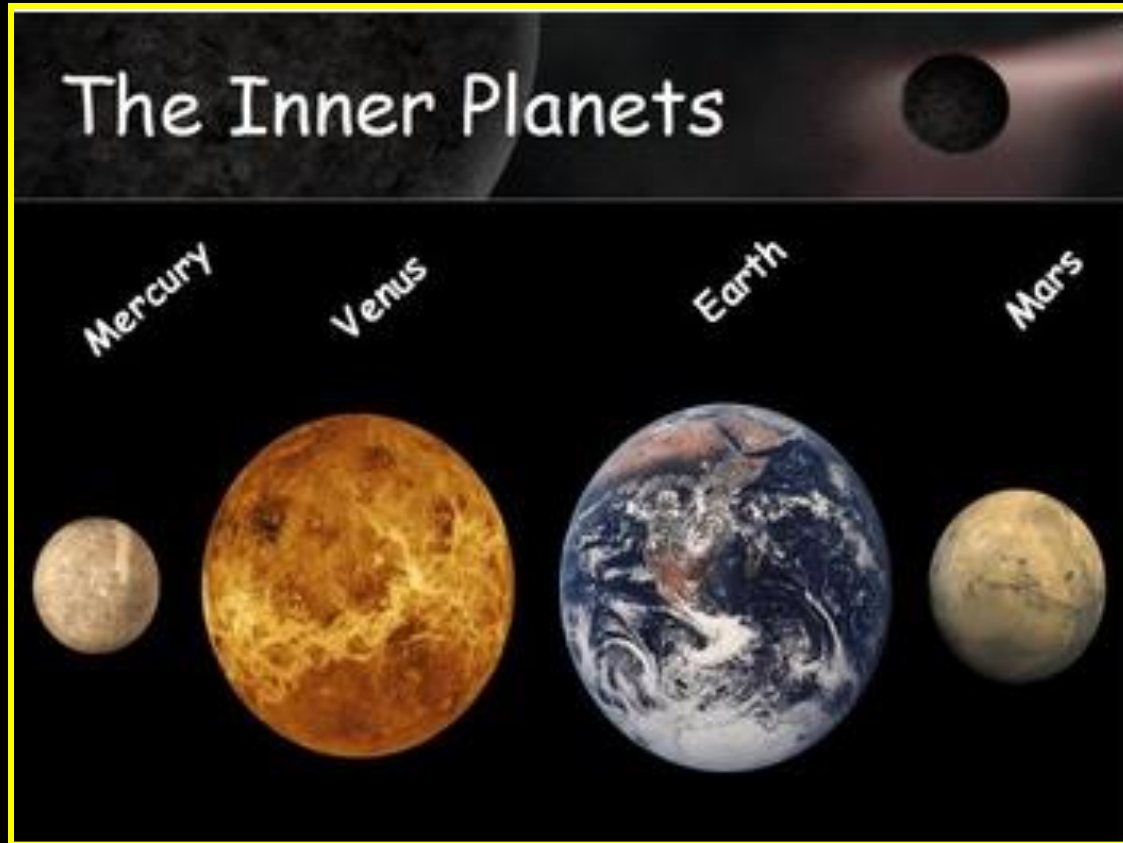


The Sun and Inner Planets



Essential Standard 1.1: Explain Earth's role as a body in space.

Objective 1.1.1: Explain Earth's motion through space, including precession, nutation, the barycenter, and its path about the galaxy.

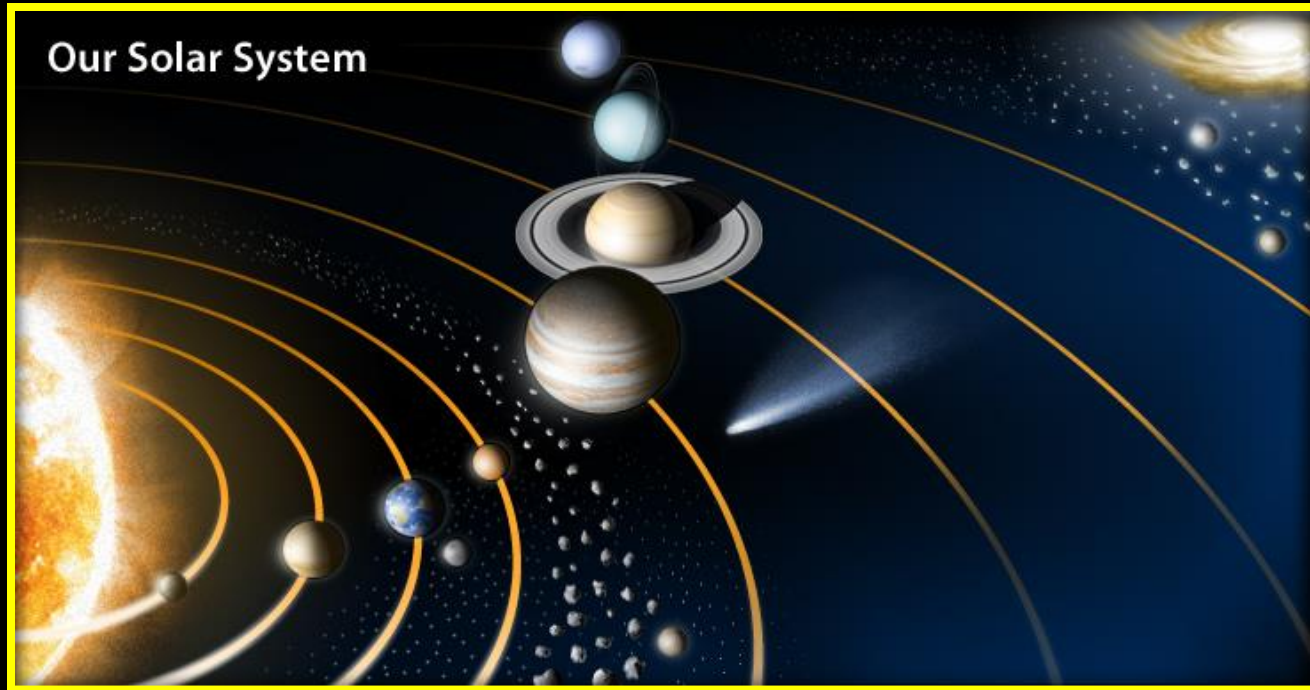
I Can Statements

At the end of this lesson, you should be able to say, with confidence:

- I can describe basic characteristics of our Sun.
- I can describe basic characteristics of the four rocky inner planets.
- I can compare the time it takes for each of the four rocky inner planets to orbit the Sun.

Solar System

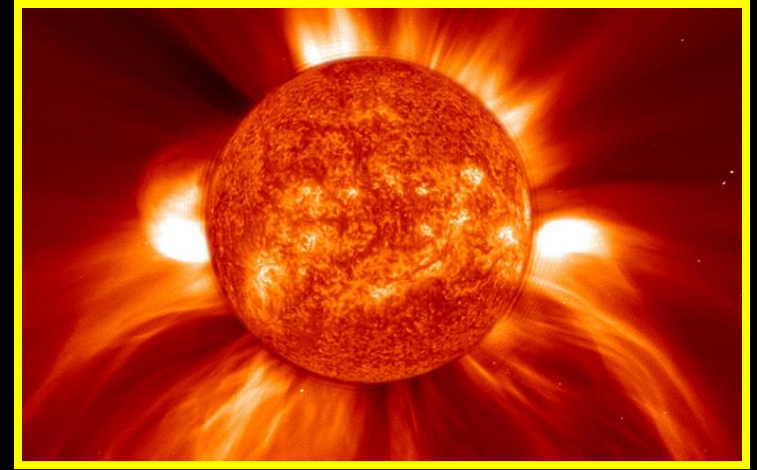
Our solar system consists of one star, called the Sun.



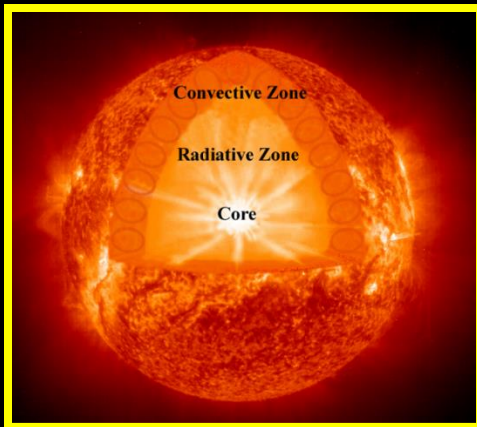
Eight planets, five dwarf planets, over a million asteroids, and thousands of comets orbit around the Sun.

The Sun

Our Sun is a bright, hot ball of hydrogen and helium that measures 864,000 miles in diameter.



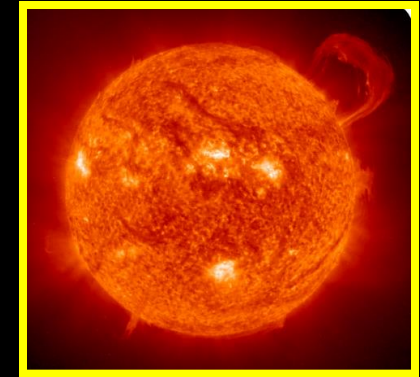
The temperatures at the surface of the Sun reach 10,000 degrees Fahrenheit.



The temperatures at the core of the Sun reach 27 million degrees Fahrenheit.

What's in a Name?

The ancient Greeks called the Sun, Helios.



The element, Helium, was discovered in the Sun, before being found on Earth. (Helios - Helium)

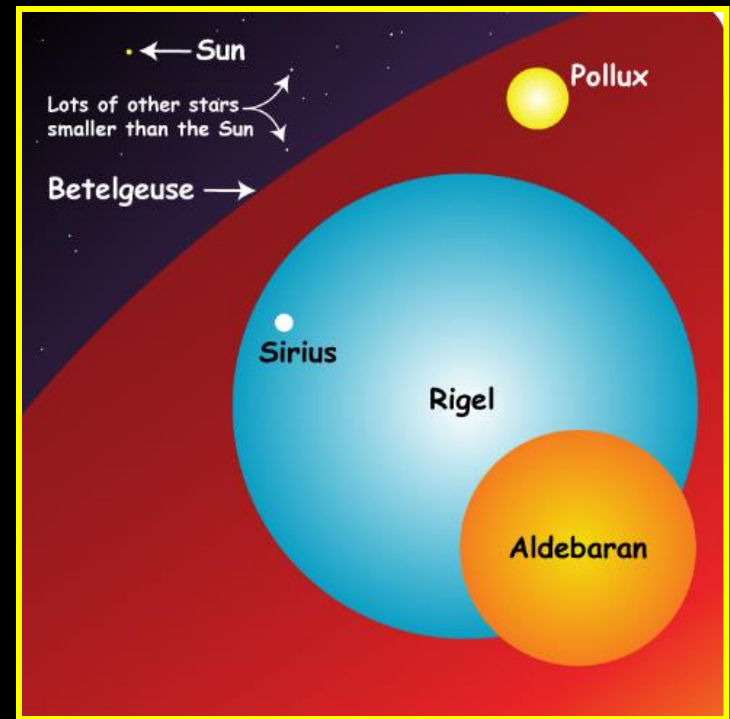
Later, the Romans called the Sun, Sol. (Solar)



Compared to Other Stars

Our Sun is just an average sized star that is about 4.5 billion years old.

The Sun is about half way through its life cycle.



Since all of the Solar System formed at the same time, scientists were able to determine its age by examining moon rocks, collected during the Apollo Missions.

Fate of our Sun

In about five billion years, our Sun will expand, cool down, and become a red giant star.



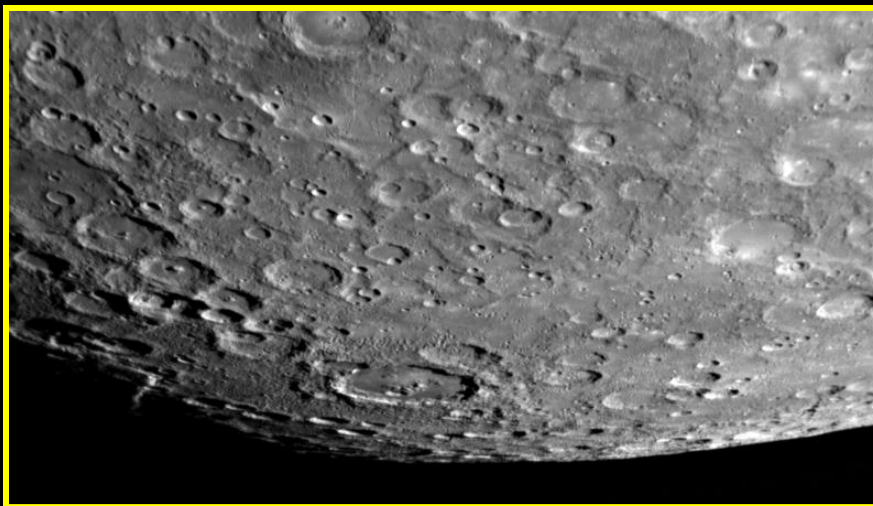
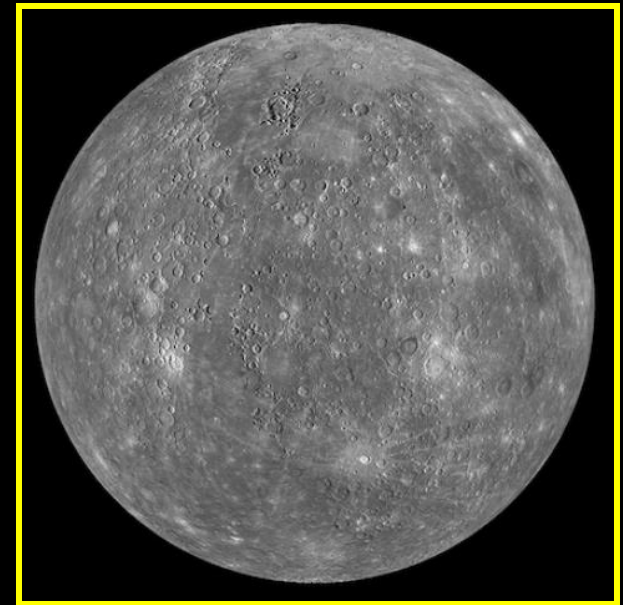
Later, the Sun will collapse into itself, forming a white dwarf star.





Mercury

Mercury is the closest planet to the Sun and is also the smallest planet, not much bigger than our Moon.

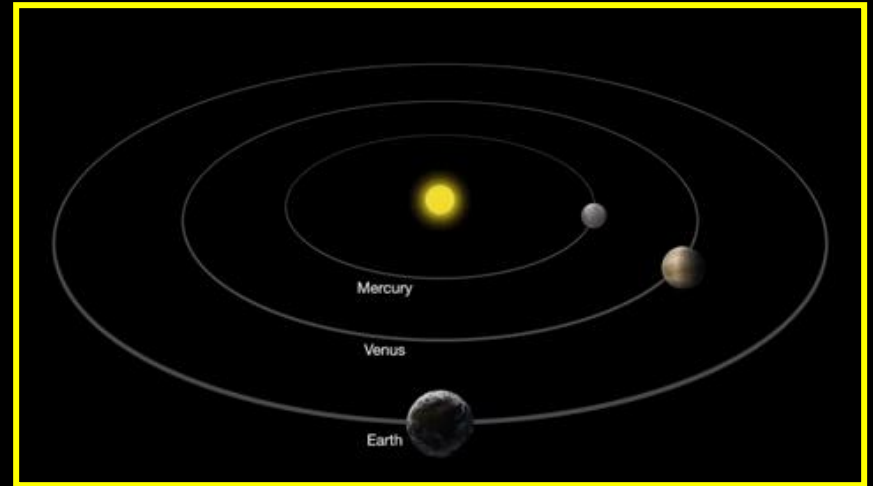


Mercury has a rocky surface, marked with craters, and a very thin atmosphere.



Mercury

Mercury takes 59 Earth days to make one full rotation and 88 Earth days to orbit the Sun.



Temperatures on Mercury range between 800 to minus 290 degrees Fahrenheit.

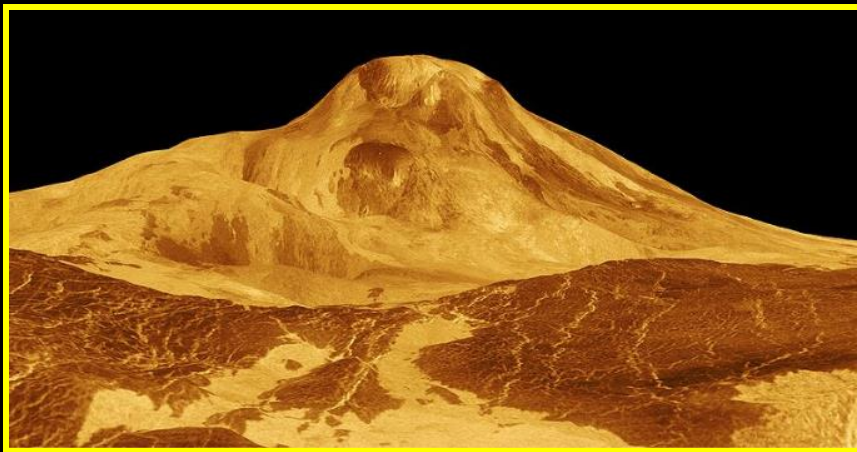
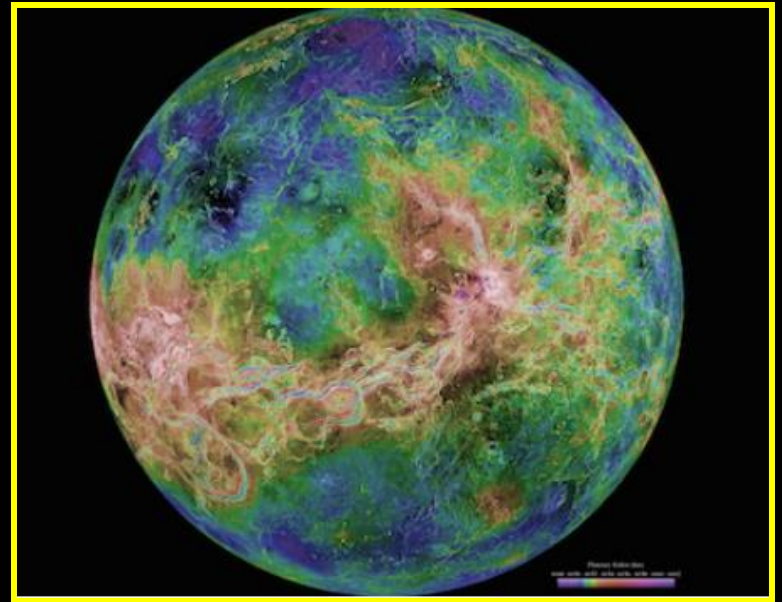




Venus

Venus is the second planet from the Sun. It is also a rocky planet and is just a little bit smaller than Earth.

Image has been altered to show the surface of Venus

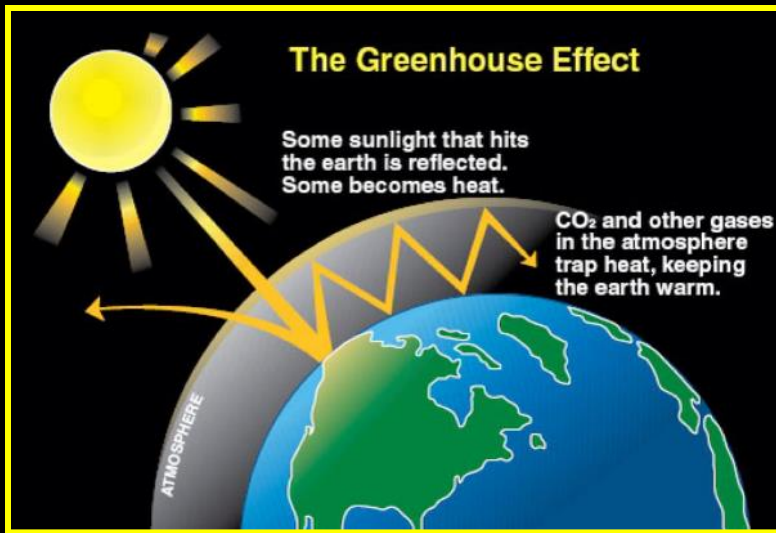
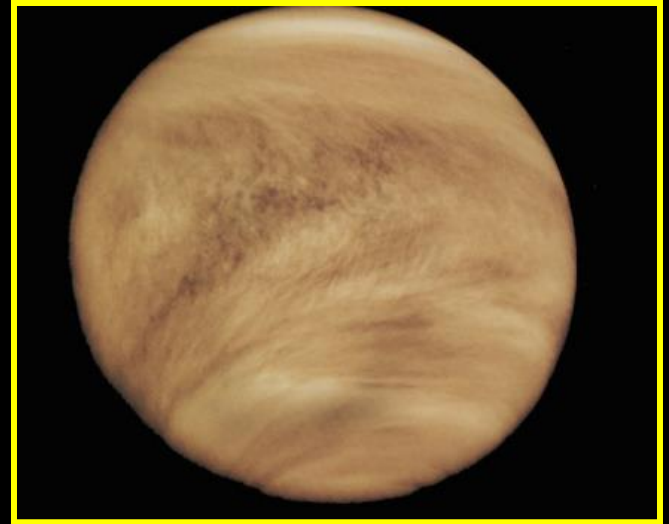


The surface of Venus contains mountains and volcanoes. In fact, Venus has more volcanoes than any other planet.



Venus

Venus is surrounded by a very thick atmosphere of carbon dioxide and has clouds of sulfuric acid.



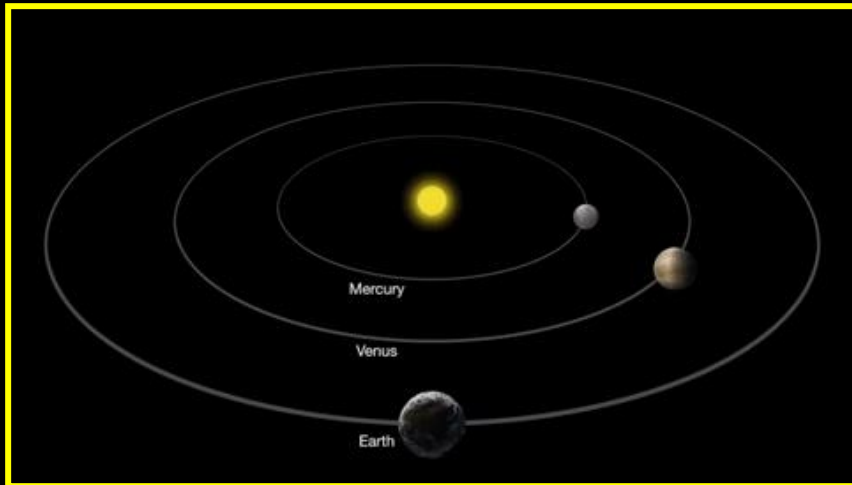
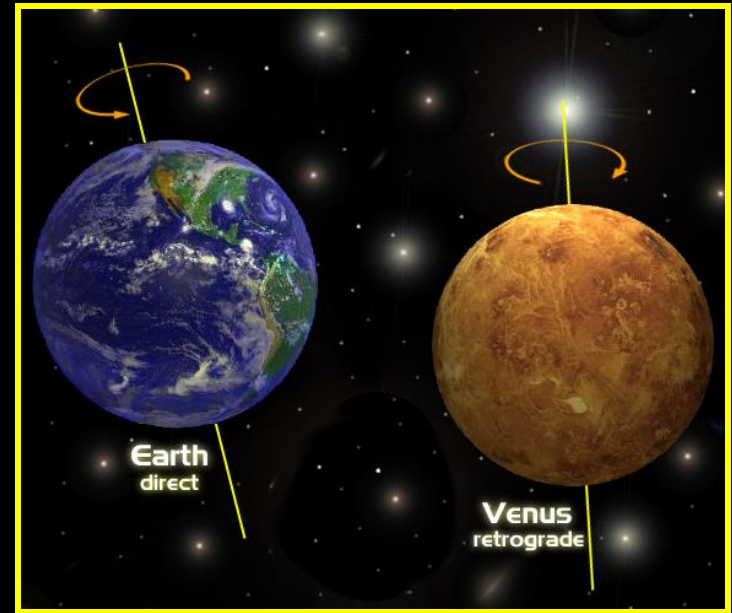
The carbon dioxide acts as a greenhouse, keeping the temperatures on Venus about 864 degrees Fahrenheit.

Venus experiences what is called the Runaway Greenhouse Effect



Venus

Venus rotates in a clockwise direction, opposite to Earth's rotation, so it is said to be in retrograde.

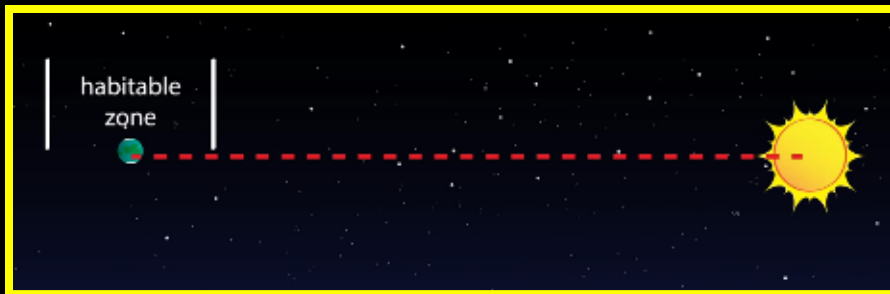


Venus makes one rotation every 243 Earth days and takes 225 Earth days to orbit the Sun.



Earth

Earth is the third rocky planet from the Sun. Earth is unique because it is an ocean planet, with water covering 70% of its surface.



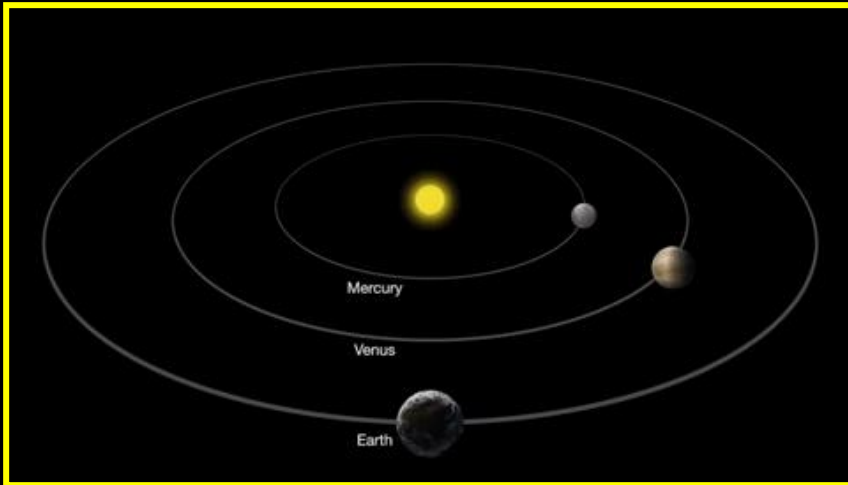
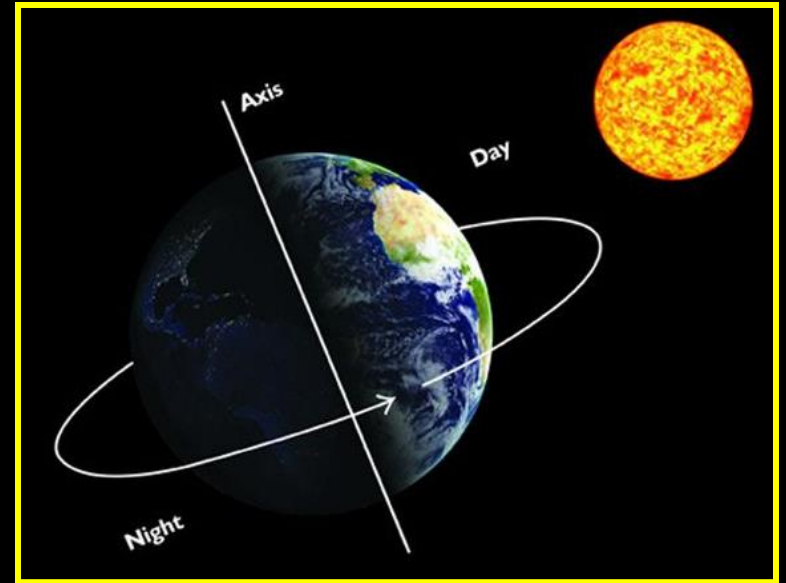
Earth exists in the habitable zone, where the temperatures allow water to exist in all three phases.





Earth

Earth rotates in a counter-clockwise direction, taking 24 hours to complete one rotation, or one day.



It takes Earth 365.25 days to orbit around the Sun. The 0.25 means that every four years we have to add a day to the calendar.



Earth

Earth's atmosphere is 78% nitrogen and 21% oxygen, allowing us to breathe and protects us from radiation and meteoroids.



Earth has one moon, called Lunar, that takes 27 days to complete one orbit around Earth.

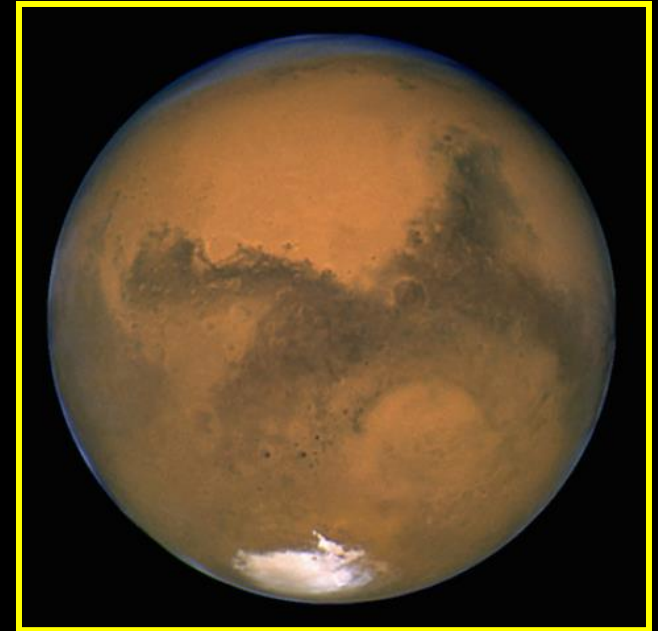


Mars

Mars is the fourth planet from the Sun and is about half the size of Earth.



Earth, Mars, the Moon



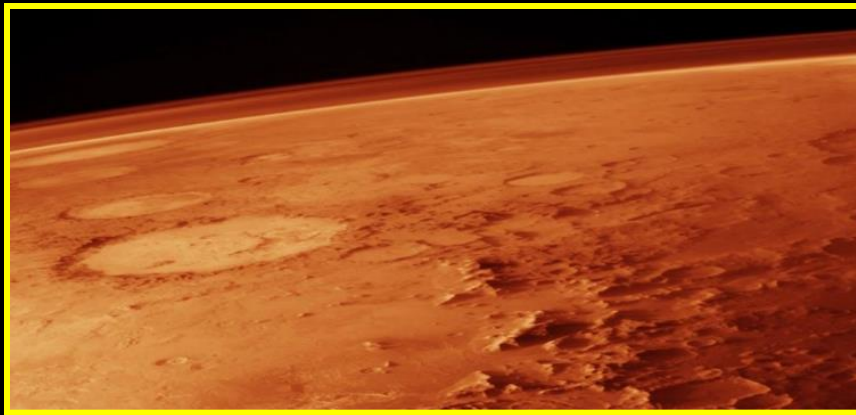
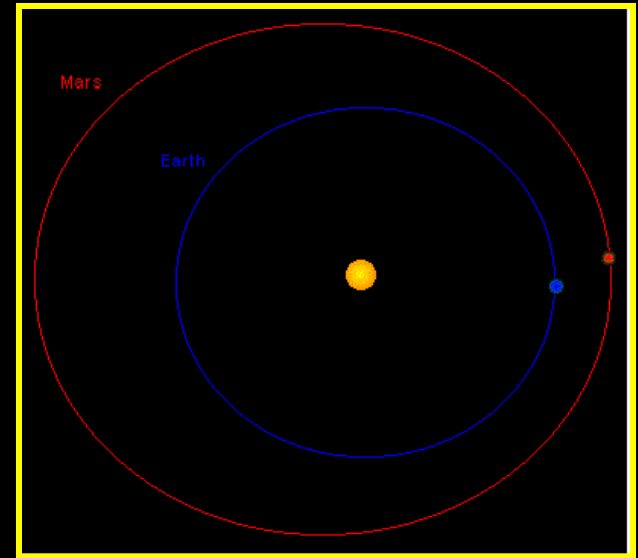
Mars is another rocky planet and is often called the red planet, due to the iron in its soil that gives it a reddish color.



Mars

Mars takes 24.6 days to make one rotation on its axis and takes 687 Earth days to orbit the Sun.

Mars is much closer to Earth when it is on the same side of the Sun as Earth.
(about every two years)

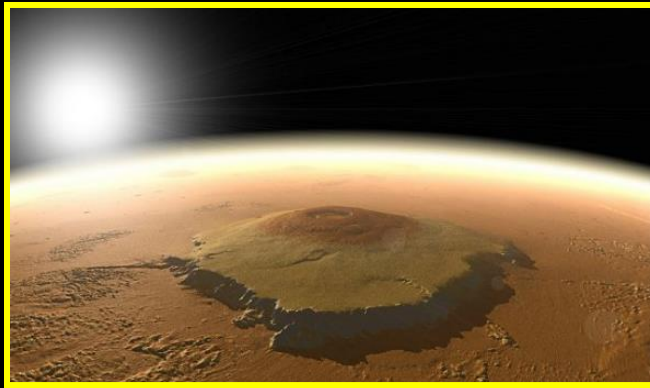


Mars has a very thin atmosphere, composed of carbon dioxide, nitrogen and argon.



Mars

Mars has frequent and really large dust storms.



Mars contains the largest known volcano in the Solar System, called Olympus Mons.

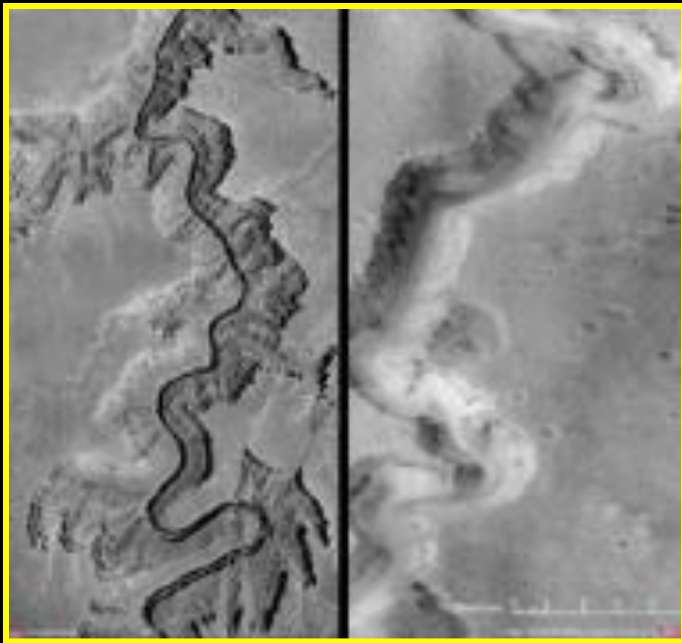
Olympus Mons is currently not an active volcano.





Mars

Mars has polar ice caps on its north and south poles.



Grand Canyon
in Arizona

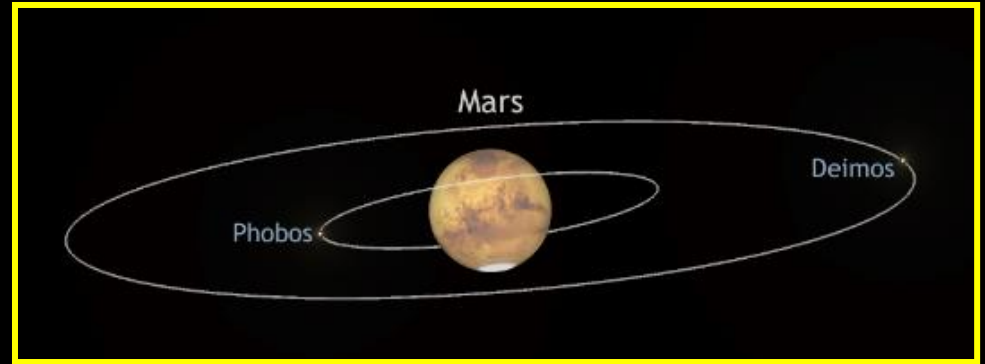
Canyon
on Mars

Although there is evidence of ancient flood events, water on Mars today is found only in icy dirt or very thin clouds.



Mars

Mars has two moons,
Deimos and Phobos.



9 miles wide

17 miles wide

Deimos and Phobos
are smaller than our
Moon and are
irregular in shape
because they don't
have enough gravity
to form a sphere.



The Mars Rovers

Since 1997, NASA has sent four robotic vehicles, called rovers, to Mars and just recently sent another one this month.

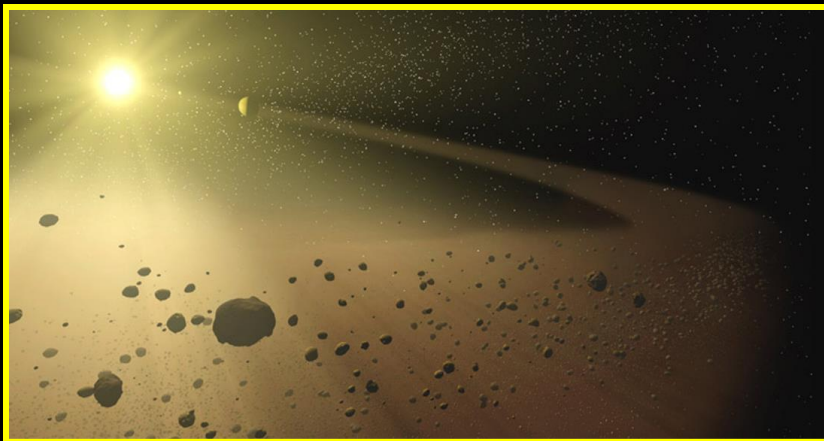
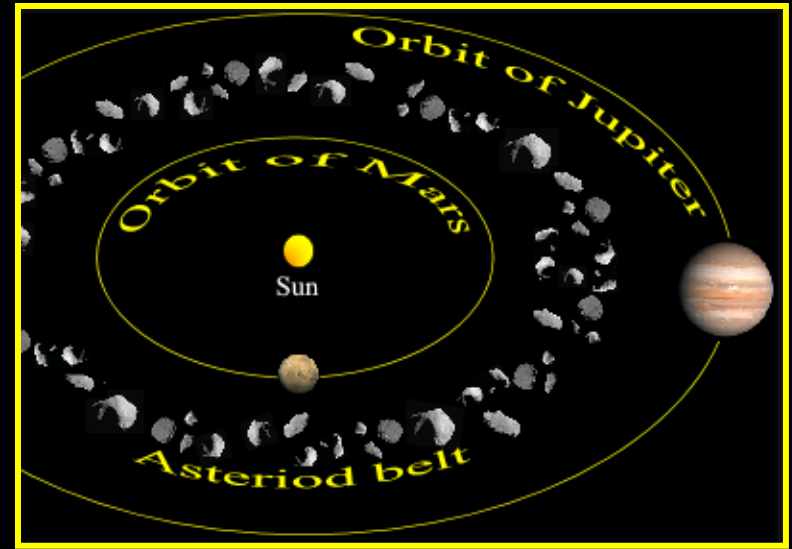


Hole drilled by the rover named Curiosity

The rovers are equipped with science equipment and are able to test rocks, look for water, test for signs of ancient life, and tests current conditions for life.

Asteroid Belt

The Asteroid Belt is located between Mars and Jupiter and is where most of the asteroids are found within the Solar System.



The asteroids in the Asteroid Belt never got a chance to form a planet due to the competing gravitational forces of the Sun and Jupiter.

The End

