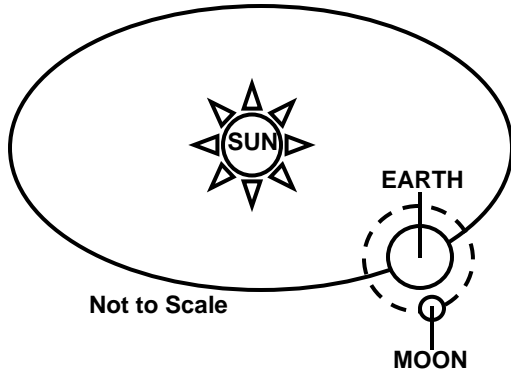


Name \_\_\_\_\_

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# Our Solar System

## What makes up our Solar System?



The sun is the center and the largest body in our solar system. Eight planets and their moons, plus one dwarf planet, revolve, or orbit, the sun. Smaller bodies—comets and asteroids—also revolve around the sun. Everything travels in the same direction and in its own orbit, or path.

Beyond our solar system are the stars that make up the rest of the universe. Most of the universe is empty space. In this huge empty space are galaxies—groups of stars.

The pull of gravity holds the bodies of the solar system together. Gravity between the sun and the planets keeps the planets in their orbits. Gravity between each planet and its moons keeps the moons in orbit around the planet.

The orbit of a planet is a kind of oval path called an ellipse. It takes each planet a certain length of time to complete one revolution around the sun. Because a planet's movements are predictable, space scientists know where it will be at any given time. They need this information when planning space flights and doing research.

1. Name five objects that make up our solar system. \_\_\_\_\_

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2. What force prevents the planets and other objects in the solar system from flying off into space? \_\_\_\_\_

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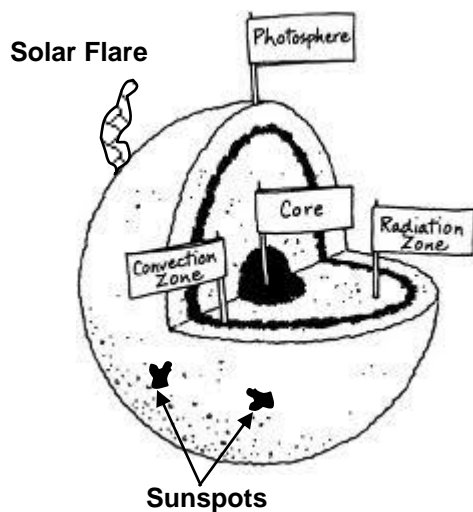
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# Comparing the Earth, the Sun, and the Moon

## How do the Sun, the Earth, and the Moon Compare?

At the center of our solar system is the sun, a medium-sized yellow star. Some stars in the universe are much larger than the sun; others are smaller. Our sun and its solar system are part of the Milky Way galaxy, which contains billions of other stars.



The sun is composed mostly of hydrogen and helium gases. These extremely hot gases produce the energy that reaches Earth through space. Without energy from the sun, life on Earth would not be possible.

The sun's surface changes over time. Sunspots are dark spots that appear on the sun's surface. They look dark because they are cooler than the rest of the surface. Solar flares are violent bursts of energy from the sun's surface. They send out streams of particles that can interact with particles in Earth's upper atmosphere, creating spectacular light shows called auroras.

Earth and the moon are alike in many ways and differ in many others. The moon's surface is covered with plains,

mountain ranges, valleys, and craters. Craters are formed when objects from space hit the moon's surface. Because the moon has no running water and no atmosphere, there is no weather or erosion. There is also no soil on the moon's surface. Instead, it is covered with dust. (Remember, soil contains humus—dead and decaying organisms. There are no organisms on the moon to die. Therefore, there is no humus to form soil with the dust.) No earthquakes or volcanic eruptions change the moon's surface. The only way the moon's surface can change is by being hit by objects from space.

The Earth has many of the same surface features as the moon. Its surface is also covered with plains, mountain ranges, valleys, and craters. There are fewer craters on Earth because of Earth's atmosphere. Due to friction with the air, most space objects burn up before they hit Earth's surface. If an object from space hits Earth, the crater that forms is smoothed by erosion. On Earth, erosion, weathering, deposition, earthquakes, volcanoes, and landslides are constantly changing the surface features. The Earth also has 6 times more gravity than the moon.

Another important difference between the Earth and the moon is the availability of water. About 75% of the Earth's surface is covered with water. There is no liquid water on the moon—just a little ice at the poles. Finally, the Earth is surrounded by an atmosphere containing many gases—mostly nitrogen and oxygen. The moon has no atmosphere. The lack of water and breathable air make it impossible for life to exist on the moon's surface at this time. Those same elements make it possible for life to exist on the Earth and make our planet home for many creatures.

### Comparing the Sun, the Earth, and the Moon

Property	The Sun	The Earth	The Moon
<b>Diameter</b>	1,390,000 kilometers	12,756 kilometers	3,475 kilometers
<b>Shape</b>	Sphere	Sphere	Sphere
<b>Surface</b>	Gaseous (helium and hydrogen)	Rocky, soil-covered, few craters, rocky mountains, plains, valleys, oceans, seas, lakes, rivers, active and inactive volcanoes	Rocky, moon dust, lots of craters, rocky mountains, plains, valleys, inactive volcanoes
<b>Atmosphere</b>	Chromosphere—hydrogen and helium	Atmosphere—mostly nitrogen and oxygen with some other gases	No atmosphere
<b>Rotation</b>	About 25 Earth days	24 hours	About 28 Earth days
<b>Revolution</b>	<b>DOES NOT REVOLVE</b>	About 365 days	About 28 Earth days

3. Why are there so many craters on the moon? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. What are two ways that the sun, the Earth, and the moon are alike? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. What are three ways that the Earth and the moon differ? \_\_\_\_\_

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\_\_\_\_\_

**What do you know about the planets in our solar system?**

Planets are objects made of rock, metal, ice, and gas that revolve around the sun. They do not give off their own light as the sun does. There are eight planets and one dwarf planet in our solar system. They range in size from tiny rocky planets to huge gas giants with rings. The eight planets in their order from the sun are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

The largest planet is Jupiter—ten times the diameter of the Earth. It is so large that all of the other eight planets could fit inside of it. The tiniest planet is Mercury. In general, the farther away a planet is from the sun, the cooler it is and the longer its year in Earth time.

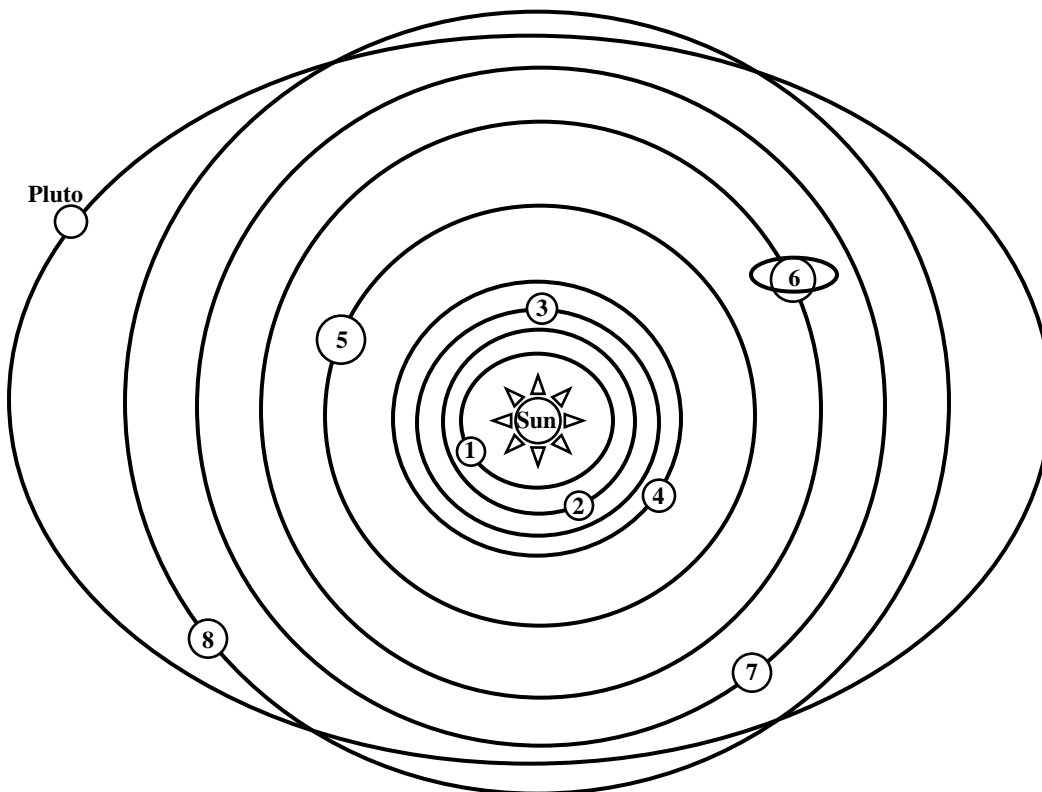
The four terrestrial, or rocky planets—Mercury, Venus, Earth, and Mars—are known as the Inner Planets. The inner planets are much smaller than all but one of the outer planets. Their solid surfaces are rocky and have mountains, plains, canyons, and craters.

Jupiter, Saturn, Uranus, and Neptune are classified as Outer Planets. They are made of gases. Because of this, they are often called the gas giants. These planets have no solid surfaces. Pluto, now classified as a dwarf planet, is the farthest from the sun. It is small and rocky.

The asteroid belt lies in the space between the inner and the outer planets. Thousands of asteroids orbit the sun within this area.

**Directions:** Write the names of the planets in our Solar System on the correct lines below.

**Our Solar System**

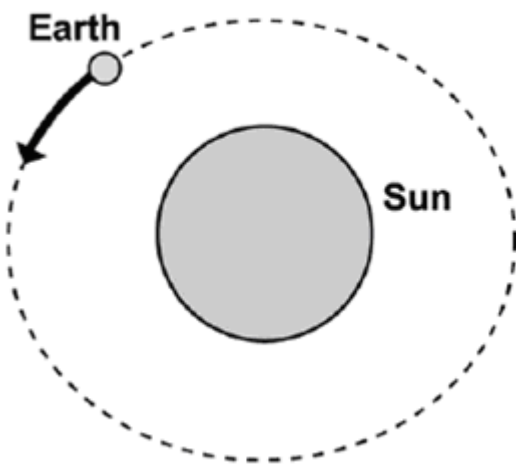


**Planet Code**

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_

1. Which planet comes between Mars and Saturn?
  - A Earth
  - B Jupiter
  - C Neptune
  - D Mercury
  
2. Which of the following planets is farthest from the sun?
  - A Saturn
  - B Jupiter
  - C Mars
  - D Earth
  
3. What object is found in the center of our solar system?
  - A Jupiter
  - B Pluto
  - C The moon
  - D The sun
  
4. The sun is at the center of our solar system, and all the planets orbit it. Why do the planets orbit the sun?
  - A The sun's magnetic energy attracts all of the planets.
  - B The sun is the only object in the sky.
  - C The sun has the most mass and the most gravitational pull.
  - D The sun is more dense, so it is the only object in the sky with gravity.
  
5. Which of the following is one way that the Earth and the moon are **NOT** the same?
  - A The moon has craters.
  - B The Earth rotates on its axis.
  - C The Earth has an atmosphere.
  - D The moon has inactive volcanoes.
  
6. The Earth rotates on its axis and revolves around the sun. The moon rotates on its axis and revolves around the—
  - A Sun
  - B Earth
  - C planets
  - D solar system
  
7. The sun is of great importance to the Earth. Which of the following is not a characteristic of the sun?
  - A The sun provides energy for the water cycle.
  - B The sun heats the atmosphere unevenly, causing wind.
  - C The sun revolves around the Earth and the moon.
  - D The sun provides solar energy for the Earth.
  
8. All of the following are true statements about the sun EXCEPT—
  - A the sun has many different layers
  - B the sun is the source of almost all of the Earth's energy
  - C we can fit about 1 million Earth's inside the Sun
  - D the sun is a solid mass of rock much like the Earth

9. All of the following are features of the sun EXCEPT—
- A solar flares
  - B valleys
  - C solar winds
  - D sunspots



10. Which statement best describes the diagram above?
- A Earth is rotating around the sun.
  - B The sun is rotating around Earth.
  - C Earth is revolving around the sun.
  - D The sun is revolving around Earth.

11. Why does the moon's surface have more craters from meteorite strikes than the Earth's surface?

- A The moon has little or no atmosphere, so the meteorites reach its surface without burning up.
- B The moon has a stronger gravitational pull than the Earth, so more meteorites strike there.
- C Heat from the greenhouse effect on the Earth's surface pushes the meteorites back into space.
- D The Earth has many more buildings, trees, and other objects to block the path of any meteorites.

#### True or False

- \_\_\_ 12. There is more water on the Earth than on the moon.
- \_\_\_ 13. The sun is at the center of our solar system.
- \_\_\_ 14. The sun's surface is covered with valleys and mountains.
- \_\_\_ 15. There are more craters on the moon's surface than the Earth's surface.
- \_\_\_ 16. Earth is larger than the moon but smaller than the sun.
- \_\_\_ 17. Weathering and erosion constantly occur on the moon.