



The Author
29 Moon Crescent
Earth Orbit
Milky Way
24826

Dear Student,

In this section you will have a chance to review what you remember about Earth's orbit around the Sun and the Moon's orbit around Earth.

Sometimes the Sun is referred to as a "ball of fire". Do you think so? You'll know for sure after you have studied this section.

The Sun is at the center of our solar system. As you know, Earth is not the only planet orbiting around the Sun. In this section we'll find out about more planets and other celestial bodies in orbit around our Sun.

And, you'll solve the mystery of how those orbits actually work!

Yours truly,

The Author



California Content Standards — Grade 5

Standard Set 5. Earth Sciences (The Solar System)

5. The solar system consists of planets and other bodies that orbit the Sun in predictable paths.
- 5.a. Students know the Sun, an average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium.

The Story



Ancient people were excellent scientists. They observed everything around them and asked questions. They often came up with answers, based on their observations. These ancient astronomers (scientists who study the solar system) observed the Sun moving across the sky all day long. They watched the Moon moving across the sky at night, and, sometimes even in the daytime. Their conclusion: Earth is the center of the universe.

Earth at the center of everything makes sense, based on what those ancient people saw. More observations through time, and further questions that were investigated (and continue to be investigated) showed that Earth is **not** the center of the universe after all.

In the 1500's a Polish scientist named, Copernicus, used mathematics and his observations of the sky (without a telescope, which was not invented for another 100 years) to reach a startling conclusion. His theory was that the Sun was actually the center of our solar system.

Astronomers have continued to explore space. They have discovered that many planets besides Earth orbit our Sun. They have found asteroid belts, comets, and even other solar systems with their own Suns!

Focus Question

Think about our own solar system. Where is the Sun located?




The center.

Answer

California Content Standards

5.a. Students know the Sun, an average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium.

Key Words:

Star —	a large body in space that produces its own energy	
Sun —	the name we give the star that is at the center of our solar system	
Hydrogen —	a lightweight gas that reacts easily with other elements	
Helium —	a lightweight gas that does not react easily with other elements	
Solar —	something related to the Sun, ex. solar system	

The Sun

The Sun is the largest body in our solar system. Although it is an average size star, it seems huge to us.

Earth, as we know it, would not exist without the Sun. Without the Sun's light energy, plants could not make their own food.

Without plants, you know what would happen to the animals!

Without the warmth of the Sun, even though it is approximately 150,000,000 kilometers (93 million miles) away from Earth, all the water here would freeze. It would get so cold that no life could exist.



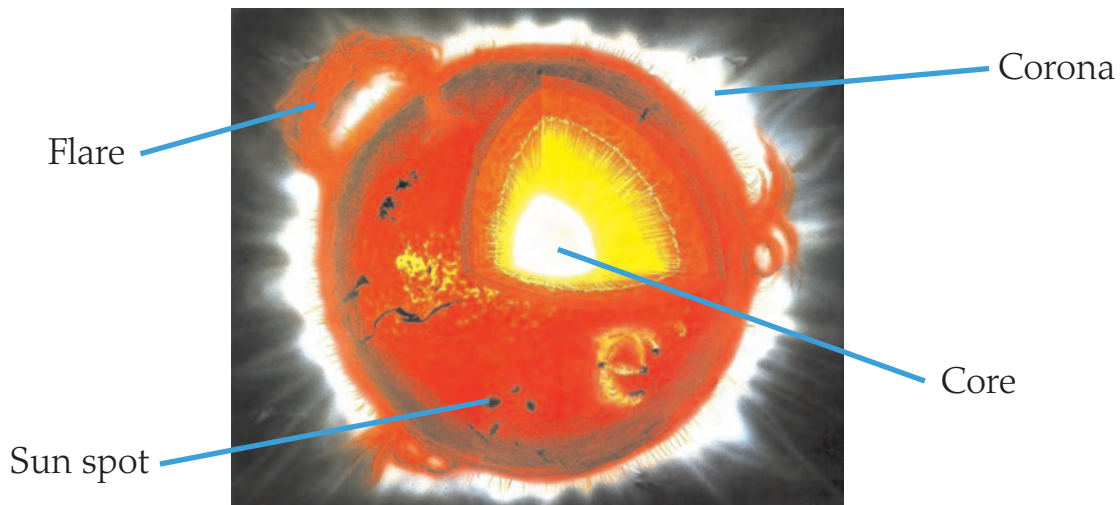
"How does the Sun make all this heat and light energy?"



California Content Standards

5.a. Students know the Sun, an average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium.

Like all stars, the Sun is made up of gases. Our Sun is made up mainly of hydrogen and helium. Because there is so much pressure and such extreme heat in the Sun, hydrogen atoms join together in a process called “fusion”. Two hydrogen atoms “fusing” together form a helium atom. The process creates a tremendous amount of energy. On Earth we can see that energy in the form of light and feel it in the form of heat.



Astronomers want to learn more about the Sun. They know that the bright ring around the outside is part of the Sun’s atmosphere. It is called the “corona”. They also know that sometimes there is an extra high-energy explosion of hydrogen called a “flare”. They know that sometimes there are storms on the surface of the Sun. These storms are called “sunspots”. By observing the sunspots scientists have discovered that the Sun rotates just like Earth does. They know that sunspots occur according to a cycle and have something to do with magnetic fields; but they don’t know why and they don’t know what.

“Scientists do know that the more they find out, the more questions there are.”


Focus Question

A lot of energy is continuously created by the Sun. How is this energy created?



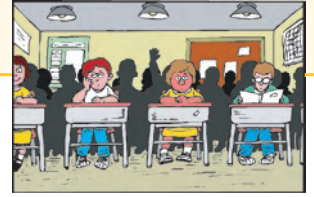
Hydrogen gas is combining to form helium atoms. A lot of energy is released during this reaction.

Answer

California Content Standards

5.a. Students know the Sun, an average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium.

Test Practice Questions



1. Which body is at the center of our solar system?

- A. Earth
- B. Sun
- C. star cluster
- D. orbitals

Answer: _____

2. What effect would be seen on Earth if there were no Sun?

- A. photosynthesis would stop
- B. the rate of photosynthesis would increase
- C. oceans would flood coastal plains
- D. rivers would flow more slowly

Answer: _____

3. The Sun is mainly made up of

- A. helium and nitrogen
- B. fire and oxygen
- C. steam and hydrogen
- D. hydrogen and helium

Answer: _____

4. Earth and other planets orbit

- A. around the Sun
- B. inside the Sun
- C. around each other
- D. differently every solar year

Answer: _____