

Name \_\_\_\_\_

Date \_\_\_\_\_

# The Sun Times

## Key Words

ancient	core	corona
diameter	gravity	nuclear fusion
radiate	radiation	solar flares
solar prominences	solar winds	sun
sunspots		



**Fun Fact:** Many ancient peoples worshiped the Sun as a god. They thought a solar eclipse meant the god was angry with them. They believed the Sun god's anger could only be calmed with prayer and sacrifice.

The **Sun** is our closest star. It is in the center of our Solar System. The Solar System is a member of the Milky Way galaxy. The Sun is a yellow dwarf star, which means it is a medium size star. Thought to be 4.6 billion years old, the sun is mainly composed of hydrogen and helium gases. The Sun spins slowly on its axis as it revolves around the galaxy.

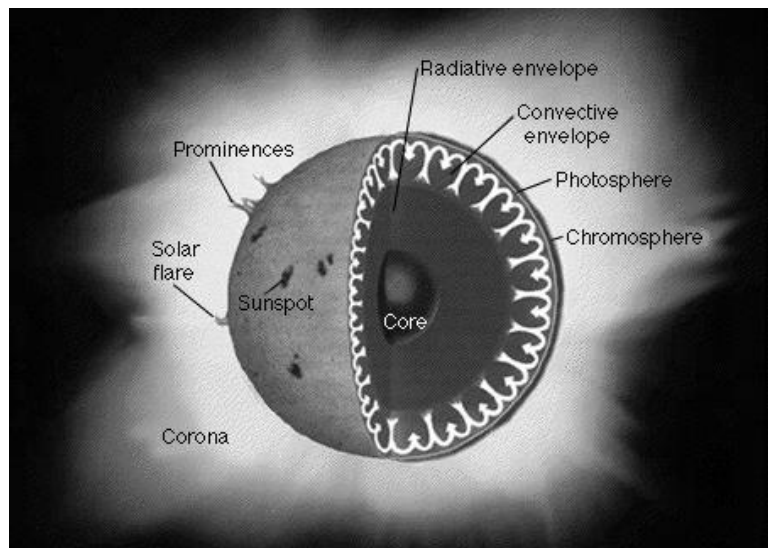


The **diameter** of the Sun is about 1,392,000 kilometers. That is about 100 times the diameter of the Earth! It would take about 1,000,000 Earths to fill up the sun if it was hollow. The temperature in the sun's **core** is estimated to be over 15,000,000 degrees Celsius. A process called "nuclear fusion" takes place in the core. **Nuclear fusion** produces massive amounts of energy. The energy created by this process **radiates** up to the top of the Sun and then off into space. It travels

into space in the form of heat and light. Some of it even arrives at Earth! It takes about 8 minutes for the light and heat from the sun to reach the Earth's surface. The sun is the major source of energy for the Earth. The sun provides power for the **water cycle**, the growth of plants and the creations of winds on the Earth.

Because the Sun is so immense, it exerts, or gives out, a powerful **gravitational** pull on everything in our solar system. It is because of the Sun's gravitational pull that Earth and all of the planets orbit the Sun in the manner that they do.

The Sun has several layers: the core, the radiation zone, the convection zone, and the photosphere (which is the surface of the Sun). In addition, there are two layers of gas above the photosphere called the chromosphere and the **corona**. Events which occur on the Sun include sunspots, solar flares, solar

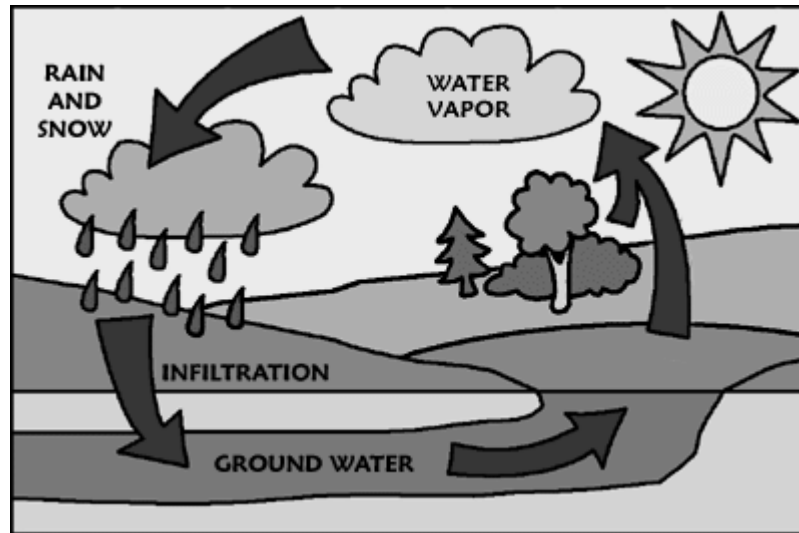


wind, and solar prominences. **Sunspots** are magnetic storms on the photosphere which appear as dark areas. Sunspots regularly appear and disappear in eleven year cycles. Sunspots appear darker because they are cooler than the rest of the sun's surface. **Solar flares** are spectacular discharges of magnetic energy from the corona. These discharges send streams of protons and electrons outward into space. Solar flares can interrupt the communications network here on Earth. **Solar winds** are the result of gas expansion in the corona. This expansion leads to streams of gas particles that flow out from the sun's surface. **Solar prominences** are storms of gas which erupt from the surface in the form of columns that either shoot outward into space or twist and loop back to the Sun's surface.

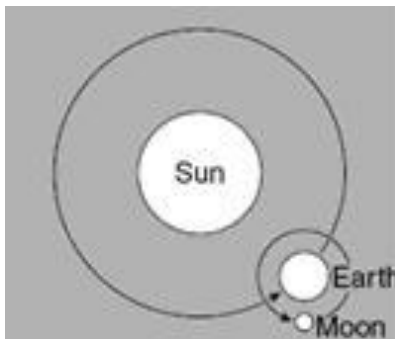
The Sun gives off many kinds of **radiation** other than light and heat. It also emits radio waves, ultraviolet rays, and X-rays. Our atmosphere protects us from the harmful effects of the ultraviolet rays and the X-rays. The Sun does rotate, but because it is a large gaseous sphere, not all parts rotate at the same speed. This is known as a differential rotation.

1. What is the meaning of the word *emit* in Paragraph 5?
  - A Give off
  - B Rotate
  - C Atmosphere
  - D Radio waves
  
2. The surface of the sun is made up of—
  - A gases
  - B solids
  - C liquids
  - D energy
  
3. What force exerted by the sun keeps the planets in orbit?
  - A Solar flares
  - B Gravity
  - C Inertia
  - D Nuclear fusion
  
4. Where does the process of nuclear fusion take place on the sun?
  - A In the sun's atmosphere
  - B In the sun's radiation zone
  - C In the solar flares
  - D In the core of the sun
  
5. Which of the following is a scientific theory that has been disproved by modern-day scientists?
  - A The sun provides the Earth with heat and light energy.
  - B Corona is a synonym for atmosphere.
  - C A solar eclipse means the sun god is angry.
  - D The sun gives off many kinds of radiation.
  
6. What are solar flares?
  - A Spectacular discharges of magnetic energy from the corona
  - B Streams of gas particles that flow out from the sun's surface
  - C Darker, cooler spots on the sun's surface
  - D Storms of gas which erupt from the sun's surface
  
7. The sun is a medium-size star made up mostly of—
  - A heat and hydrogen
  - B hydrogen and helium
  - C helium and oxygen
  - D nitrogen and helium

8. What energy source powers the natural cycle shown in the drawing below?



- A Fossil fuels
- B Solar energy
- C Ozone layer
- D Electrical energy



9. What is keeping the distances between the sun, Earth and the moon constant?

- A Friction
- B Speed
- C Thrust
- D Gravity

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Early in history	Center
The sun's outermost part of the sun's atmosphere	The width or thickness of an object
Force that pulls objects together	Explosions in the core of the sun that produce massive amounts of energy
To spread out from the center	Energy emitted in rays or waves
Spectacular discharges of magnetic energy from the sun's surface	Storms of gas which erupt from the surface of the sun

<p>Streams of gas particles that flow out from the sun's surface</p>	<p>The star that is in the center of our Solar System</p>
<p>Cooler, darker spots on the sun's surface</p>	