

The Sun and Its Planetary System

Textbook pages 382–395

Before You Read

How many types of celestial bodies can you name? Write down as many as you know on the lines below.

Mark the Text

Identify Details

As you skim the section, use one colour to highlight the text or labels that talk about the parts of the Sun. Use another colour to highlight text that talks about the other parts of the solar system.

solar prominences:
streamers of
glowing gas that
arch into space

sunspots: cooler, darker
regions at the surface;
their numbers increase and
decrease in a regular pattern

photosphere: the "surface" of
the Sun (the part that we see),
which is about 6000°C

solar flares: violent
outbursts of hot gases
that send streams of
high-energy particles
into space; these streams
of particles are called the
solar wind

corona: the outermost
region of gas surrounding
the Sun, which can reach
over 3 000 000°C

The Sun

What is the Sun like?

The Sun is a huge sphere of mostly hydrogen gas. The nuclear reactions that take place at its core generate heat, light, and other forms of energy that radiate outward in all directions. Over 110 Earths could fit across the Sun's diameter. Some parts of the Sun are shown in the diagram above.

How did the planets of the solar system form?

A **solar system** is a group of planets circling a star. A **planet** is a spherical object made mainly of rock or gases, which orbits a star and is large enough that its own gravity holds it in a spherical shape. Planets spin on an imaginary line called an **axis**—a motion called **rotation**. Planets also travel around the Sun—a motion called **revolution**. ✓

A widely accepted hypothesis states that the planets began to form from the gases and other matter left over after the Sun formed. The rocky bodies closest to the new Sun were blasted with its radiation. Because they did not have enough gravity to hold much of their hot atmospheres, they became the rocky, inner planets: Mercury, Venus, Earth, and Mars. Farther out, away from the Sun’s intense heat, the outer planets kept their gases. They became the gas giants, the remaining planets of the solar system: Jupiter, Saturn, Uranus, and Neptune.

All planets except for Mercury and Venus have at least one moon. A **moon** is an object that orbits a planet.

What other objects make up the solar system?

Throughout much of the early history of the solar system, stray rocky material and dust pounded the planets and their moons. Craters are evidence of these interactions. Some of this rocky material remains in the form of **asteroids**—small objects that orbit the Sun, mainly found between Mars and Jupiter. Rocky material left over from the formation of the solar system is also found at its outer limits in a region called the Oort cloud. From this region come **comets**—objects made of rock and ice that orbit the Sun. ✓

✓ **Reading Check**

- 1. What is the difference between rotation and revolution?

✓ **Reading Check**

- 2. Name two types of solar-system objects that are not planets, stars, or moons.

Name _____

Date _____

Use with textbook pages 382–389.

Getting to know the solar system

Vocabulary

asteroids	Neptune
axis	nuclear reactions
comets	revolution
Earth	rotation
helium	Saturn
hydrogen	solar flares
Jupiter	solar prominences
Mars	solar wind
Mercury	Uranus
moon	Venus

Use the terms in the vocabulary box to fill in the blanks. You can use terms more than once. You will not need to use every term.

- The Sun is a huge sphere of mostly _____ gas.
- The _____ that take place at the Sun's core generate heat, light, and other forms of energy that radiate outward in all directions.
- The streamers of glowing gas that arch into space from the Sun are called _____.
- The violent outbursts of hot gases from the Sun that send streams of high-energy particles into space are called _____. These streams of particles are called the _____.
- Planets spin on an imaginary line called a(n) _____ in a motion called _____.
- Planets travel around the Sun in a motion called _____.
- The rocky, inner planets include _____, _____, _____, and _____.
- The planets that are gas giants include _____, _____, _____, and _____.
- All planets except for Mercury and Venus have at least one _____.
- Small objects that orbit the Sun and are mainly found between Mars and Jupiter are called _____.
- Objects made of rock and ice that orbit the Sun and come from the Oort cloud are called _____.

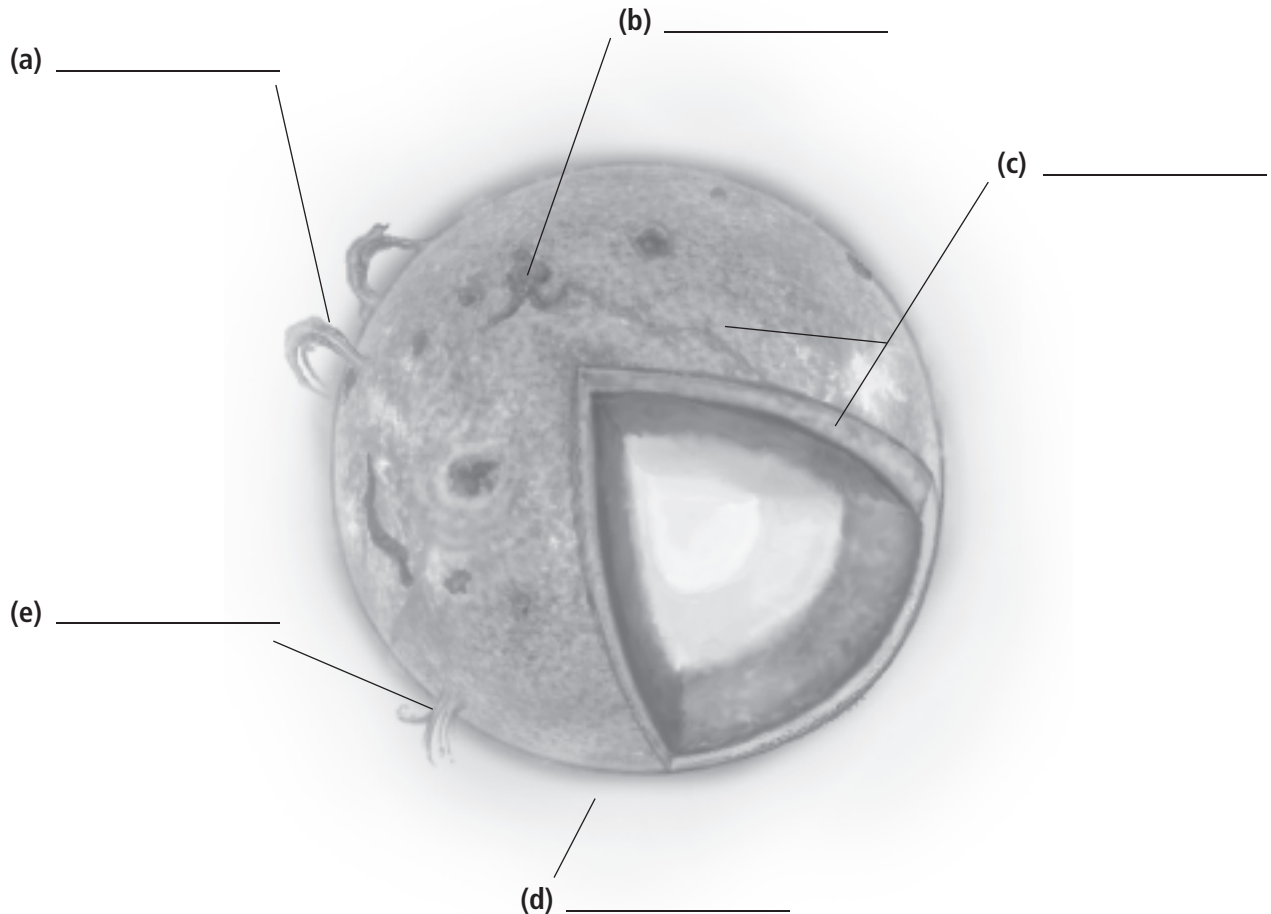
Use with textbook pages 383–384.

Features of the Sun

Match each feature of the Sun on the left with its description on the right. Then label the parts of the diagram. Each description may be used only once.

Feature of the Sun	Description
1. _____ corona	A. streamers of glowing gas that arch into space
2. _____ photosphere	B. cooler, darker regions at the surface; their numbers increase and decrease in a regular pattern
3. _____ solar flares	C. violent outbursts of hot gases that send streams of high-energy particles into space; these streams of particles are called the solar wind
4. _____ solar prominences	D. the “surface” of the Sun, which is about 6000°C
5. _____ sunspots	E. the outermost region of gas surrounding the Sun, which can reach over 3 000 000°C

6. Label this diagram of the Sun.

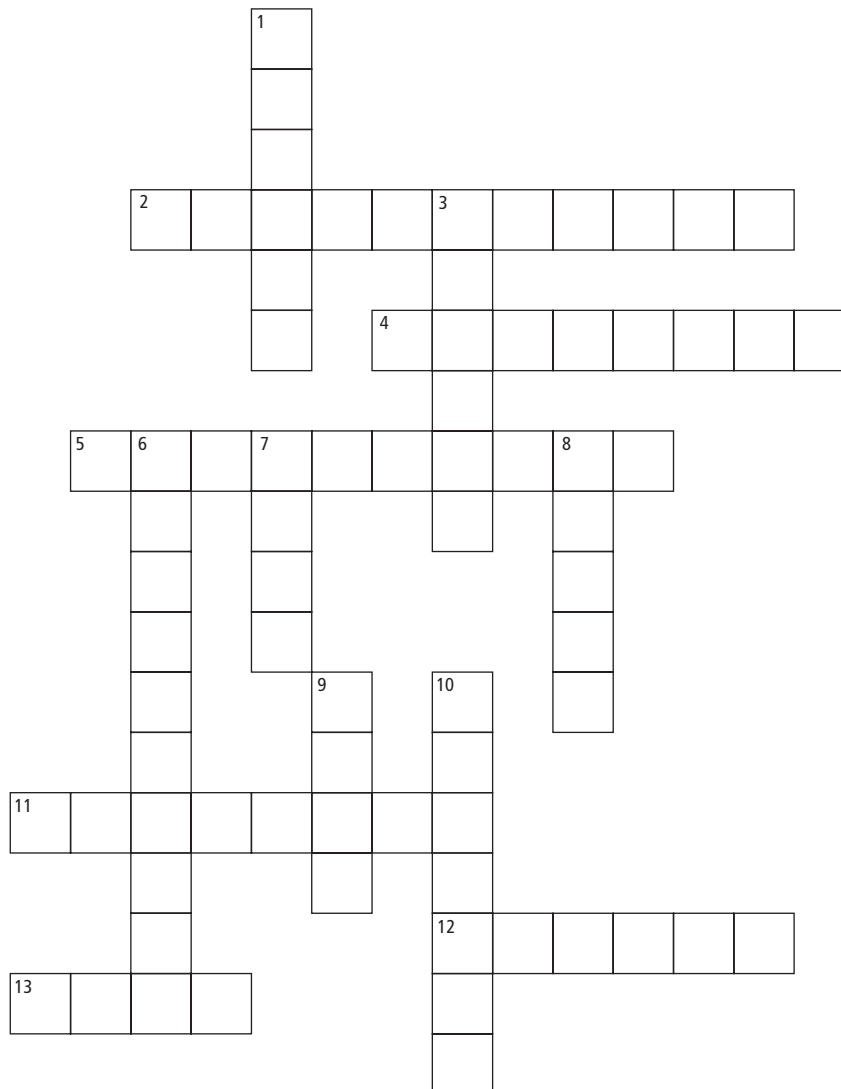


Name _____

Date _____

Use with textbook pages 382–389.

Our solar system



Across	Down
2. the part of the Sun that we see 4. small rocky body; many of these orbit the Sun between Mars and Jupiter 5. a streamer of glowing gas that arches into space is called a solar ____ 11. the motion of Earth as it spins on its axis 12. a celestial body that orbits a star 13. streams of high-energy particles are called the solar ____	1. the outermost part of the Sun's atmosphere 3. a collection of planets orbiting a star is called a solar ____ 6. the motion of Earth as it orbits the Sun 7. a celestial body that orbits a planet 8. a small body of rocky material and ice from the Oort Cloud 9. an imaginary line through a planet 10. cooler, darker region on sun's surface

Use with textbook pages 382–389.

The Sun and its planetary system

Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once.

Term	Descriptor
1. _____ asteroid	A. an imaginary line through Earth
2. _____ axis	B. a celestial body that orbits a star and is large enough that its own gravity holds it in a spherical shape
3. _____ comet	C. a small body made up of rock and ice
4. _____ moon	D. a small rocky body that orbits the Sun between Mars and Jupiter
5. _____ planet	E. the motion of Earth as it orbits the Sun
6. _____ revolution	F. a celestial body that orbits a planet
7. _____ rotation	G. a group of planets circling a star
8. _____ solar system	H. a stream of high-energy particles
	I. the motion of Earth as it spins on its axis

Circle the letter of the best answer.

9. The Sun is mainly made up of
- A.** hydrogen gas
 - B.** oxygen gas
 - C.** a combination of hydrogen and oxygen gases
 - D.** a combination of hydrogen and methane gases

10. What is a solar prominence?
- A.** dark patch on the surface of the Sun
 - B.** large arch of super-hot gas that extends out from the Sun's surface
 - C.** the outermost part of the Sun's atmosphere
 - D.** the thin layer on the outside of the Sun
11. When high-energy particles rush past Earth, what is created?
- A.** sunspots
 - B.** comets
 - C.** convection currents
 - D.** solar wind
12. Where are most asteroids found in the solar system?
- A.** beyond Jupiter
 - B.** beyond Neptune
 - C.** between Earth and Mars
 - D.** between Mars and Jupiter
13. Where is the Oort cloud found?
- A.** the surface of the Sun
 - B.** between Earth and Mars
 - C.** the outer limits of the solar system
 - D.** beyond the solar system
14. Which of the following correctly identifies the planets?

	Gas giants	Rocky planets
I.	Mercury, Venus	Earth, Jupiter
II.	Jupiter, Saturn	Mercury, Venus
III.	Saturn, Venus	Mars, Jupiter
IV.	Venus, Saturn	Earth, Mars

- A.** I
- B.** II
- C.** III
- D.** IV