16-1 What is the solar system?

Objective ▸ Name the planets that make up the solar system.

TechTerms

- **nebula** (NEB-yuh-luh): spinning cloud of hot gases
- **orbit:** curved path of one object around another object in space
- **solar system:** sun and all the objects that orbit the sun

Formation of the Solar System The solar system is the sun and all the objects that orbit the sun. Scientists are not sure how the solar system formed. However, several theories have been developed to explain the formation of the solar system. One theory states that the solar system formed from a spinning cloud of hot gases called a **nebula** (NEB-yuh-luh). Scientists think that the nebula shrank, or contracted, to form the sun, planets, and other objects in the solar system. According to this theory, the solar system formed slowly, over a long period of time.

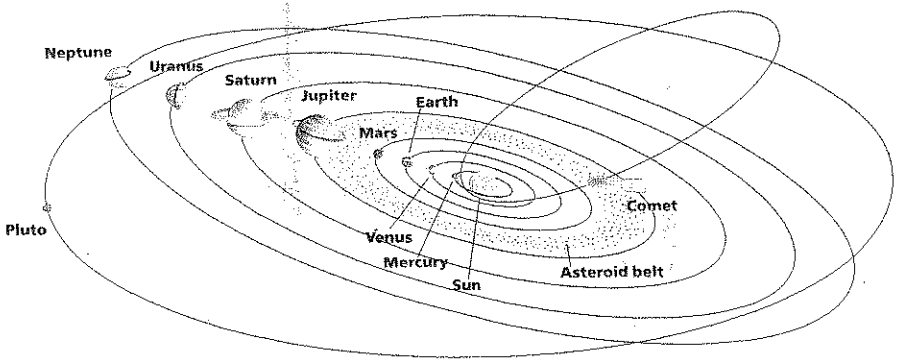
Define: What is a nebula?

The Sun's Family The sun has a "family" of nine planets. Ancient people observed that the planets changed their positions among the stars. The planets seemed to wander in the sky. The word "planet" comes from a Greek word meaning "wanderer." Earth is one of the nine planets in the solar system. Like all of these planets, Earth moves in a path around the sun. The path of a planet around the sun is the planet's **orbit.** All the planets orbit the sun in the same direction.

Explain: Why were the planets called wanderers?

Inner and Outer Planets The nine planets often are classified into two groups. These groups are the inner planets and the outer planets. Mercury, Venus, Earth, and Mars are the inner planets. The outer planets are Jupiter, Saturn, Uranus, Neptune, and Pluto.

Classify: Which planets are the inner planets?



Name _____ Class _____ Date _____

16–1 What is the solar system?

Lesson Review

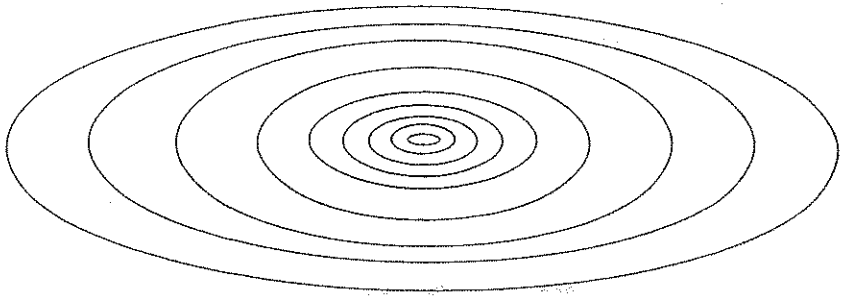
Complete the following.

1. What is the center of our solar system? _____
2. How many planets are in our solar system? _____
3. Name the inner planets. _____
4. Name the outer planets. _____
5. What is an orbit? _____
6. Describe the theory that explains how the solar system was formed. _____

Skill Challenge

Skills: *sequencing, modeling, identifying*

Draw the sun and the planets in the correct positions on the diagram. Use a red pencil for the inner planets and a blue pencil for the outer planets. Label the sun and each planet on your diagram.

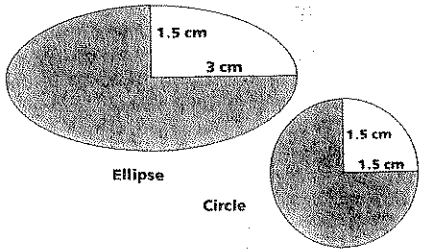


16-2 What is the shape of the earth's orbit?

Objective ▸ Describe the shape of the earth's orbit.

TechTerms

- **aphelion** (af-FEEL-yun): point in a planet's orbit at which it is farthest from the sun
- **ellipse** (uh-LIPS): flattened circle, or oval
- **perihelion** (per-uh-HEEL-yun): point in a planet's orbit at which it is closest to the sun



Circles and Ellipses A circle is perfectly round. All lines drawn from the center of a circle to its rim are the same length. An **ellipse** (uh-LIPS) looks like a flattened circle. An ellipse has an oval shape. Lines drawn from the center of an ellipse to different points on its rim are different lengths.

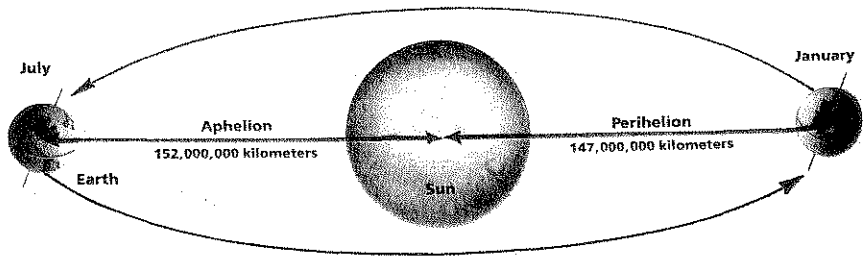
Define: What is an ellipse?

Earth's Orbit The earth travels around the sun in an elliptical (uh-LIP-tuh-kul) orbit. The earth's orbit looks like an ellipse. The earth is not the same distance from the sun at all times of the year. In January, the earth is at **perihelion** (per-uh-HEEL-yun). Perihelion is the point at which the earth is closest to the sun. The earth is about 147 million kilometers from the sun at perihelion. In July, the earth is at **aphelion** (af-FEEL-yun). Aphelion is the point at which the earth is farthest from the sun. The earth is 152 million kilometers from the sun at aphelion.

Describe: What is the shape of the earth's orbit?

Orbital Velocity The speed at which the earth travels in its orbit is called its orbital velocity (OR-buh-tul vuh-LOS-uh-tee). The earth travels at different speeds at different parts of its orbit. The closer the earth is to the sun, the greater is its orbital velocity. The earth moves fastest at perihelion. It moves slowest at aphelion.

State: When does the earth move fastest in its orbit?



Name _____ Class _____ Date _____

16–2 What is the shape of the earth's orbit?

Lesson Review

Part A *Complete the following.*

1. What is the difference between a circle and an ellipse? _____
2. What is the shape of the earth's orbit? _____
3. What is orbital velocity? _____

_____

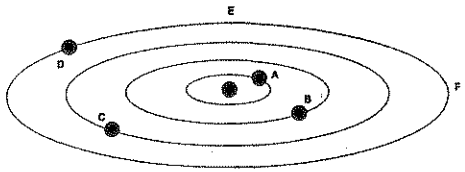
Part B *Decide whether each statement describes aphelion or perihelion. Place a check mark in the correct column.*

Statement	Aphelion	Perihelion
1. 147 million km		
2. Occurs in July		
3. Earth moves slowest in its orbit		
4. 152 million km		
5. Earth moves fastest in its orbit		
6. Occurs in January		

Skill Challenge

Skill: *interpreting a diagram, applying concepts*

Study the imaginary solar system. Then, answer the questions.



1. How many planets make up the solar system? _____
2. What is the shape of the planets' orbits? _____
3. Which planet has the greatest orbital velocity? _____
4. At which point will Planet D move slowest in its orbit–E or F? _____
5. Which planet has the slowest orbital velocity? _____

16-3 Why do planets orbit the sun?

Objective ▸ Explain how the force of gravity keeps planets moving around the sun.

TechTerm

▸ **gravity** (GRAV-uh-tee): force of attraction that exists between all objects in the universe

Gravity When you throw a ball into the air, you know that the ball will fall back to the ground. **Gravity** (GRAV-uh-tee) is the force that pulls the ball to the ground. On the earth, gravity pulls all objects toward the center of the earth.

Name: What force pulls a ball to the ground?

Curved Motion When you throw a ball, you give the ball a forward motion. At the same time, gravity pulls the ball toward the center of the earth. As a result, the ball has two motions. The ball has a forward motion and a downward motion. These two motions cause the ball to follow a curved path, as shown in Figure 1.

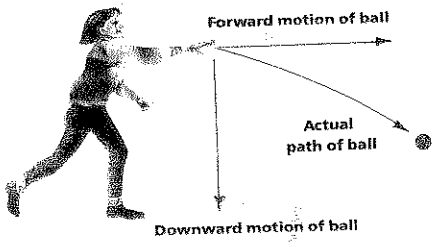


Figure 1

Suppose you tied a ball to the end of a string and swung the ball around your head. You would feel an outward pull on the string. The ball tends to fly off in a straight line. At the same time, your inward pull on the string would keep the ball from flying away. The inward pull on the string keeps the ball moving in a curved path around your head.

Explain: What keeps a ball on a string moving in a curved path?

Gravitational Attraction Every object in the universe pulls on every other object. This pull is the force of gravity, or gravitational attraction (grav-uh-TAY-shun-ul uh-TRAK-shun). There is a gravitational attraction between all objects in the universe. For example, there is a gravitational attraction between the sun and the planets. This gravitational attraction pulls the planets toward the sun as they move through space. Instead of flying off into space, the planets move in curved, elliptical orbits around the sun.

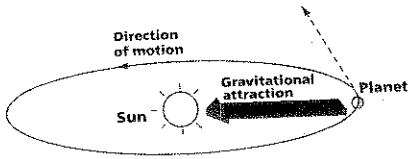


Figure 2

Explain: What keeps the planets in their orbits around the sun?

Effects of Gravitational Attraction The closer two objects are to each other, the greater is the gravitational attraction between them. As a planet gets closer to the sun, the gravitational attraction between the planet and the sun increases. As a result, the planet moves faster. When a planet is farther from the sun, the gravitational attraction between them decreases. The planet moves slower. This is why a planet moves fastest at perihelion and slowest at aphelion. The difference in gravitational attraction also explains why planets near the sun move faster than planets farther from the sun.

Describe: What happens as a planet gets closer to the sun?

Name _____ Class _____ Date _____

16–3 Why do planets orbit the sun?

Lesson Review

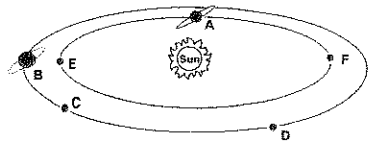
Complete the following.

1. What is gravity? _____
2. What keeps the planets in their orbits around the sun? _____
3. What is the shape of the planets' orbits around the sun? _____
4. As two objects get closer to each other, the gravitational attraction between the objects _____ .
5. A planet that is close to the sun moves _____ in its orbit than a planet that is far from the sun.
6. A planet moves fastest in its orbit at _____ .
7. Saturn is closer to the sun than is Jupiter. Which planet has a faster orbital velocity? _____
8. Will the gravitational attraction to the sun be greater for Saturn or Jupiter? Explain. _____

Skill Challenge

Skills: *applying concepts, analyzing*

Use the diagram to answer the questions.



1. What is aphelion? _____
2. Which of the planets in the diagram is at perihelion? _____
3. Is the orbital velocity of Planet B greatest at Point C or point D? _____
4. At what point will Planet A reach perihelion? _____
5. When will Planet B move slowest in its orbit? _____

16-4 What is a moon?

Objective ▸ Compare the moons of the different planets in the solar system.

TechTerm

▸ **satellite** (SAT-uh-lite): natural or artificial object orbiting a body in space

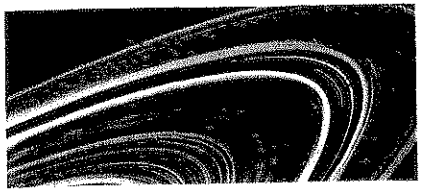
Moons and Rings Most of the planets in the solar system have one or more moons. A moon is a natural **satellite** (SAT-uh-lite) of a planet. A satellite is a natural or artificial object that orbits another object in space.

Astronomers have known about some moons for hundreds of years. For example, Galileo discovered the four largest moons of Jupiter in 1610. Other moons of Jupiter have been discovered recently by the space probe *Voyager 2*.

Some planets also have rings. Rings are made up of small particles of rock or ice. Each particle is a tiny satellite. Table 1 lists the planets and the number of their known moons. Table 1 also identifies the planets that have rings.

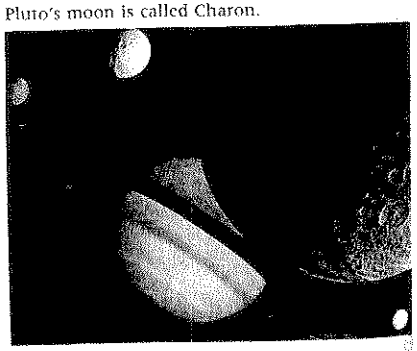
PLANET	NUMBER OF MOONS	RINGS
Mercury	0	No
Venus	0	No
Earth	1	No
Mars	2	No
Jupiter	16	Yes
Saturn	17	Yes
Uranus	15	Yes
Neptune	8	Yes
Pluto	1	No

Describe: What is a moon?



Planetary Moons As you can see in Table 1, Mercury and Venus are the only planets in the solar system without at least one moon. Earth has only one moon. Mars has two moons named Deimos and Phobos.

Most of the outer planets have rings as well as many moons. The moons of Jupiter that were seen by Galileo are Io, Europe, Ganymede, and Callisto. Saturn's rings are its most obvious feature, but Saturn also has five large moons. Saturn's largest moon is Titan. Uranus has at least 15 moons. The five largest are Oberon, Titania, Umbriel, Ariel, and Miranda. The two moons of Neptune that are visible from Earth are Triton and Nereid. Pluto, like Earth, has only one moon. Pluto's moon is called Charon.



Name: Which two planets have only one moon?

Name _____ Class _____ Date _____

16–4 What is a moon?

Lesson Review

Complete the following.

1. What is a satellite? _____
2. What are planetary rings? _____
3. Which planet has the most known moons? _____
4. Which two planets have no known moons? _____
5. What is the name of Saturn's largest moon? _____
6. Which two planets have only one moon? _____
7. Name the four planets with rings. _____
8. Which planet's four large moons were discovered by Galileo? _____

Skill Challenge

Skills: *analyzing, organizing data*

Use the information in the ***Data Bank*** *to complete the table. Data may be used more than once.*

Data Bank

Number of Moons	Names of Moons	Planet Names	Rings
6, 2, 0, 17, 11	moon; Io; no moons; Ariel; Callisto; Titan; Oberon	Jupiter, Neptune, Saturn, Uranus, Earth	none; present

Table 1 Characteristics of Planets

Planet	Number of Moons	Names of Some Moons	Rings
1.	1	2.	none
3.	4.	5.	present
Mars	6.	Phobos, Deimos	7.
Mercury	8.	9.	10.
11.	8	Triton, Nereid	12.
Pluto	13.	Charon	14.
15.	15	16.	17.
18.	19.	20.	present
Venus	21.	22.	none

16-5 What is known about the earth's moon?

Objective ▸ Describe some features of the moon.

TechTerms

- **craters** (KRAY-turz): round holes on the moon's surface
- **maria** (MAHR-ee-uh): broad, flat plains on the moon

Moon Landing On July 20, 1969, American astronauts set foot on the surface of the moon. These astronauts were the first humans to reach the moon. They had traveled 380,000 kilometers from the earth to the moon in five days. Since 1969, 12 astronauts have landed on the moon and returned to Earth. The last moon landing was made by *Apollo 17* astronauts in 1972.

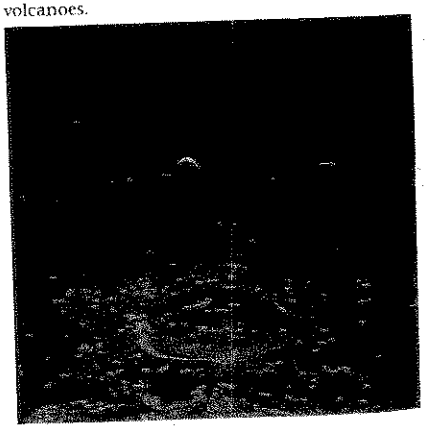
State: When did humans first land on the moon?

The Moon The moon is the earth's only natural satellite. The moon is much smaller than the earth. It is about 3200 kilometers in diameter. Because the moon has less mass than the earth, the moon's gravity is less than the earth's gravity. Gravity on the moon is only one-sixth as strong as gravity on the earth. As a result, your weight on the moon would be one-sixth of your weight on the earth. The moon's smaller gravity also means that you could jump six times higher on the moon than on the earth.

The moon has no water and no atmosphere. Temperatures on the moon can be as high as 120°C or as low as −153°C. Astronauts need space suits to survive on the moon.

Calculate: If you could jump 60 cm high on the earth, how high could you jump on the moon?

The Moon's Surface There are three main features on the moon's surface. Galileo called the smooth, dark areas that he saw on the moon **maria** (MAHR-ee-uh). The word "maria" means "seas" in Latin. The first astronauts to land on the moon landed in the Sea of Tranquility. Today, scientists know that the moon's maria are broad, flat plains. Galileo also saw light areas on the moon. These light areas are mountains, or highlands. Some mountains on the moon are as high as the highest mountains on Earth. The most obvious features on the moon's surface are its many **craters** (KRAY-turz). Most craters were caused by large objects striking the moon's surface. Others may have been caused by erupting volcanoes.



List: What are three features on the moon's surface?

Name _____ Class _____ Date _____

16–5 What is known about the earth's moon?

Lesson Review

Complete the following.

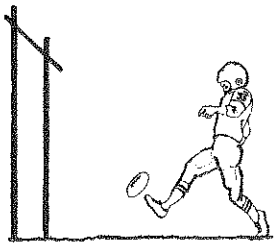
1. The first American astronauts set foot on the moon's surface in _____ .
2. The last spaceship to carry astronauts to the moon was _____ .
3. The moon is the earth's only natural _____ .
4. Gravity on the moon is only _____ as strong as gravity on Earth.
5. The moon has no water and no _____ .
6. The three main features of the moon's surface are _____ , _____ , and _____ .
7. Most craters were caused by _____ .
8. Some craters were caused by active _____ .
9. Astronauts need _____ to survive on the moon.
10. Your weight on the moon is _____ than your weight on Earth.

Skill Challenge

Skills: *applying concepts, calculating*

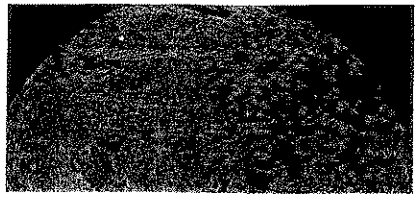
Complete the following.

1. An object on the moon weighs one-sixth what it weighs on Earth. If an object on Earth weighs 6 pounds, how much will the object weigh on the moon? _____
2. If an object weighs 10 pounds on the moon, what will the object weigh on Earth? _____
3. You can jump six times higher on the moon than you can on Earth. If you can jump 1.5 meters into the air on Earth, how high can you jump on the moon? _____
4. If you can jump 6 meters on the moon, how high can you jump on Earth? _____
5. If you can kick a football 20 meters into the air on Earth, how high could you kick the football on the moon? _____



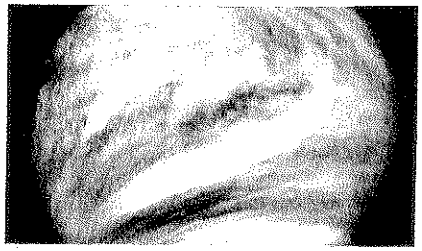
16-6 What is known about the inner planets?

Objective ▸ Identify the basic features of the four inner planets.



Mercury Mercury is the closest planet to the sun. For this reason, Mercury moves faster in its orbit than any of the other planets. Astronomers cannot take clear photographs of Mercury from Earth because Mercury is so close to the sun. However, the space probe *Mariner 10* has visited Mercury. Photographs taken by the space probe show that the surface of Mercury is covered with craters. Mercury has a thin atmosphere. Temperatures on Mercury range from 500°C during the day to −200°C at night.

Explain: Why can astronomers not take clear photographs of Mercury from Earth?

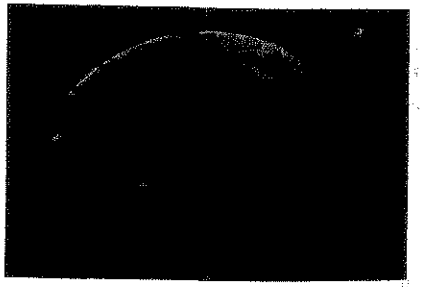


Venus Venus has been called Earth's twin. The two planets are about the same size, mass, and density. However, temperatures and pressures on Venus are much higher than on Earth. Astronomers think that the high surface temperature of Venus is related to its thick atmosphere. There is a lot of carbon dioxide in the atmosphere of Venus. Carbon dioxide traps heat close to the planet's surface. Soviet space probes have landed on the surface of Venus. Photographs taken by the probes show smooth plains, mountains, and valleys. Some scientists think that Venus may have had oceans at one time.

Infer: Why is Venus sometimes called Earth's twin?

Earth The third planet from the sun is Earth. Earth is the fifth largest planet in the solar system. It is the only planet known to have oceans of liquid water. Earth also is the only planet known to support living things. Life is possible on Earth because of its combination of proper temperature, oxygen in the atmosphere, and liquid water.

List: What three features make life on Earth possible?



Mars Mars is the fourth planet from the sun. Many space probes, including two Viking landers, have studied Mars. Photographs show that the surface of Mars has many craters. It is covered with loose rocks. Mars also has huge volcanoes that are now dead. The atmosphere of Mars is thin and made mostly of carbon dioxide. Winds up to 500 km per hour raise giant dust storms that cover the whole planet. Scientists think that Mars probably once had running water. There is no liquid water on Mars now because temperatures are too low.

Explain: Why is there no liquid water on Mars now?

Name _____ Class _____ Date _____

16–6 What is known about the inner planets?

Lesson Review

Complete the following.

1. Which four planets are called the inner planets? _____
2. Why is Venus sometimes called Earth's twin? _____
3. What gas makes up much of the atmosphere of Venus? _____
4. How does the size of Earth compare to the sizes of the other planets in the solar system? _____
5. What gas makes up most of the atmosphere of Mars? _____
6. Why is there no liquid water on Mars now? _____
7. List the inner planets in order from closest to the sun to farthest from the sun. _____
8. Which of the inner planets have craters on their surfaces? _____
9. Describe the surface of Venus. _____
10. Name two things that are found on Earth that are not known to be on any other planets. _____

Skill Challenge

Skills: *organizing, comparing*

Complete the table.

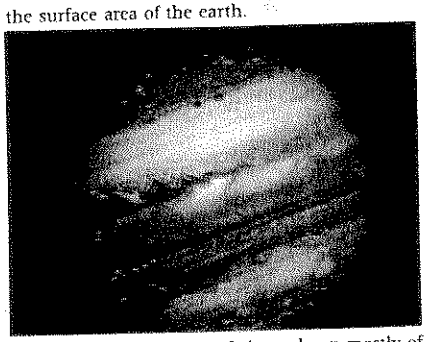
Table 1 The Inner Planets

Planet	Position Compared to the Sun	Surface Features
Mercury	1.	2.
Venus	3.	4.
Earth	5.	6.
Mars	7.	8.

16-7 What is known about Jupiter and Saturn?

Objective ▸ Identify some features of Jupiter and Saturn.

Jupiter Jupiter is the largest planet in the solar system. Because it is so large, Jupiter can easily be seen without a telescope. Its mass is twice the mass of all the other planets combined. Jupiter has a diameter of 143,000 km. The earth's diameter is less than 13,000 km. Jupiter has 125 times the surface area of the earth.



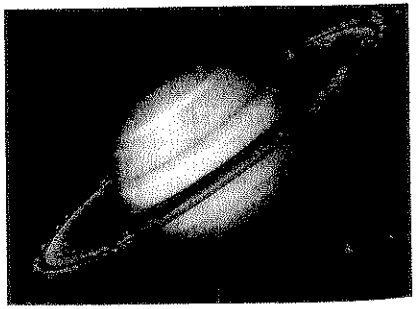
Jupiter is a gas giant. It is made up mostly of hydrogen and helium. Because these gases are very light, Jupiter's density is only one-fourth the density of Earth. Astronomers cannot see the surface of Jupiter. The planet is completely covered with clouds. The clouds are arranged in colorful bands around the planet.

Name: What two gases make up most of Jupiter?

The Great Red Spot The largest and best known feature of Jupiter is the Great Red Spot. Astronomers have been observing this huge storm system since it was discovered in 1664. Astronomers think that the Great Red Spot is caused by heated gases rising through the atmosphere of Jupiter.

Describe: What is the Great Red Spot?

Saturn Saturn is the second largest planet in the solar system. Its diameter is 121,000 km. Like Jupiter, Saturn is a gas giant made up mostly of hydrogen and helium. Saturn has colorful bands of clouds like Jupiter. However, Saturn is much less dense than Jupiter. Saturn's density is less than the density of any other planet. It is even less than the density of water. If you could put Saturn in a bucket of water, it would float.



Contrast: How is Saturn different from Jupiter?

Name _____ Class _____ Date _____

16–7 What is known about Jupiter and Saturn?

Lesson Review

Part A *Decide whether each statement describes Jupiter or Saturn. In the space provided, write J for Jupiter and S for Saturn.*

_____ 1. The largest planet in the solar system.

_____ 2. The second largest planet in the solar system.

_____ 3. Least dense of all planets.

_____ 4. The Great Red Spot is one of its features.

_____ 5. Has a diameter of 121,000 km.

_____ 6. Has a density that is only one-fourth the density of Earth.

_____ 7. Has a diameter of 143,000 km.

_____ 8. Would float if it could be placed in a bucket of water.

Part B *Place a check beside each statement that applies to both Jupiter and Saturn.*

_____ 1. It is a gas giant.

_____ 2. Has a Great Red Spot.

_____ 3. It is surrounded by colorful bands of gases.

_____ 4. It is larger than the Earth.

_____ 5. It is more dense than Earth.

_____ 6. It is less dense than Earth.

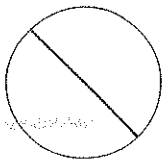
_____ 7. Can be seen easily without a telescope.

Skill Challenge

Skills: *applying concepts, labeling*

In the space provided, identify whether each circle represents Earth, Saturn, or Jupiter. Then, label the distance of the diameter of each model planet.

1.

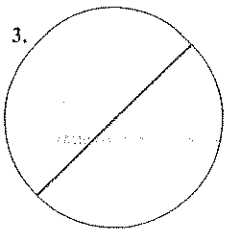


_____

2.

_____

3.

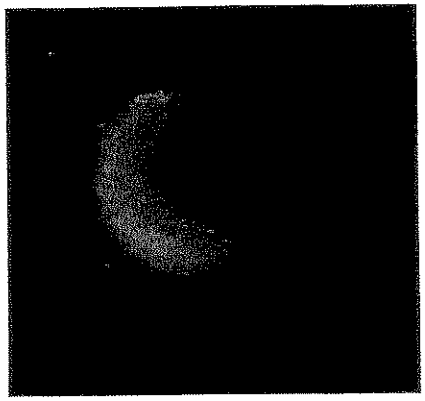


_____

16-8 What is known about the outermost planets?

Objective ▸ Identify some features of Uranus, Neptune, and Pluto.

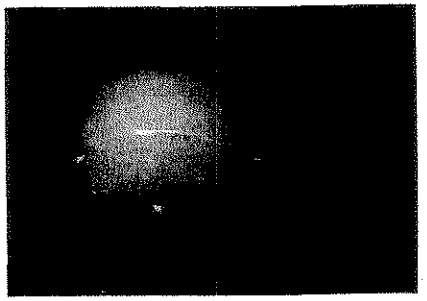
Uranus The seventh planet from the sun is Uranus. It is the third largest planet in the solar system. The diameter of Uranus is about 51,000 km.



Uranus was the first planet to be discovered since ancient times. Because Uranus is so far from the sun, very little was known about Uranus until very recently. In 1986, the *Voyager 2* space probe flew past Uranus. *Voyager 2* took many photographs of the blue-green clouds of Uranus. The color of the clouds shows that the atmosphere contains methane, as well as hydrogen and helium. The most unusual feature of Uranus is that the planet is tipped on its side.

List: What three gases are found in the atmosphere of Uranus?

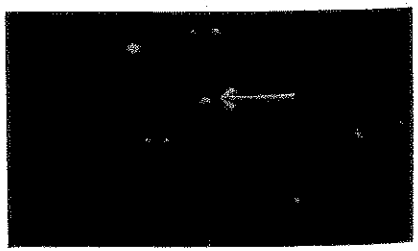
Neptune Neptune is the eighth planet from the sun. It is similar to Uranus in size and mass. Neptune's diameter is about 51,000 km. Neptune is so far from the sun that it takes 165 years to make one orbit around the sun. Neptune has not made a complete orbit since it was discovered in



1845. It was the last planet to be visited by *Voyager 2*. Photographs taken by *Voyager 2* show that Neptune has a Great Dark Spot, similar to Jupiter's Great Red Spot. Neptune also is a gas giant. Neptune's atmosphere is made up mostly of clouds of frozen methane.

Identify: When was Neptune discovered?

Pluto Pluto is the smallest planet in the solar system. Its diameter is only about 2200 km. Pluto usually is the farthest planet from the sun. However, Pluto's unusual orbit sometimes takes it inside the orbit of Neptune. This means that Neptune will be the most distant planet until about 1999. Scientists think that Pluto probably is made up mostly of frozen methane, with a thin methane atmosphere. Because of its distance from Earth, Pluto is the only planet that has not yet been visited by a space probe.



Explain: Why is Pluto not always the farthest planet from the sun?

Name _____ Class _____ Date _____

16–8 What is known about the outermost planets?

Lesson Review

Write true if the statement is true. If the statement is false, change the underlined term to make the statement true.

_____ 1. Uranus is the eighth planet from the sun.

_____ 2. The atmosphere of Uranus contains methane, as well as hydrogen and helium.

_____ 3. Neptune is similar to Uranus in size and mass.

_____ 4. Neptune was the first planet to be visited by *Voyager 2*.

_____ 5. Neptune is the ninth planet from the sun.

_____ 6. Pluto is the largest planet in the solar system.

_____ 7. Pluto is the ninth planet from the sun.

_____ 8. Pluto is the only planet that has not yet been visited by a space probe.

_____ 9. Neptune's atmosphere is made up mostly of frozen hydrogen.

_____ 10. A Great Dark Spot, similar to the Great Red Spot of Jupiter, is one of the features of Uranus.

Skill Challenge

Skills: *organizing information, comparing*

Complete the table. Then, answer the questions.

Table 1 The Outermost Planets

Planet	Position Compared to the Sun	Diameter	Gases in Atmosphere	Visited by a Probe?
Pluto	1.	2.	mostly methane	3.
Neptune	4.	5.	6.	yes
Uranus	7.	8.	9.	10.

11. What gas is found in the atmosphere of all of the outermost planets? _____

12. How much larger is Uranus than Neptune? _____

13. What is unusual about the orbit of Pluto? _____

14. Is it possible for Neptune to be the ninth planet from the sun? Explain your answer. _____

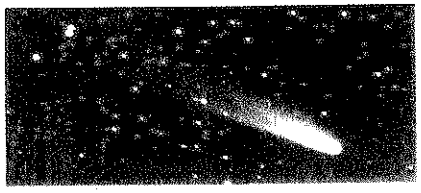
_____

16-9 What are other objects in the solar system?

Objectives ▸ Identify the features of asteroids and comets. ▸ Compare meteoroids, meteors, and meteorites.

TechTerms

- **asteroid** (AST-uh-royd): large chunk of rock that orbits the sun
- **comet:** body made up of rock, dust, gases, and ice that orbits the sun
- **meteor** (MEE-tee-or): piece of rock or metal that enters the earth's atmosphere
- **meteorite** (MEE-tee-or-ite): piece of rock or metal that hits the earth's surface
- **meteoroid** (MEE-tee-or-oyd): piece of rock or metal that orbits the sun



Asteroids Between Mars and Jupiter, a large group of rocks orbit the sun. These rocks are called **asteroids** (AST-uh-royds). The region between Mars and Jupiter is called the asteroid belt. Asteroids are sometimes called minor planets, but they are not round like planets. They look more like chunks of broken rock. There are three kinds of asteroids. One kind is made up mostly of carbon. A second kind consists of iron and nickel. A third kind of asteroid contains silicon. The largest asteroid, Ceres, is about 1000 km in diameter. Most asteroids, however, are smaller than 10 km in diameter.

Locate: Where are asteroids found?

Comets Like planets and asteroids, **comets** also are members of the solar system. Comets orbit the sun in long ellipses. Comets are made up of rock, ice, and frozen gases. A comet has three parts. The core, or nucleus, of a comet is made up of rock and ice. The core is surrounded by a cloud of gas and dust. This cloud is the coma. The nucleus and coma form the head of the comet.

The most spectacular part of a comet is its tail. The tail forms as the comet comes near the sun. The tail is made up of glowing gas and dust streaming out from the head. A comet's tail always points away from the sun.

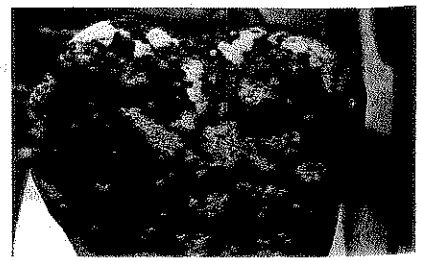
Name: What are the nucleus and coma of a comet called?

Meteoroids Smaller pieces of rock and metal called **meteoroids** (MEE-tee-or-oyds) orbit the sun. Most meteoroids are smaller than a grain of sand. Larger meteoroids may have been formed by collisions between asteroids.

Have you ever seen a shooting star streaking through the sky? These shooting stars are **meteors** (MEE-tee-ors). Meteors are meteoroids that enter the earth's atmosphere. As meteors fall through the atmosphere, friction heats them. They glow brightly and burn up.

Some meteors are large enough to reach the earth's surface. Meteors that strike the earth's surface are called **meteorites** (MEE-tee-or-ites). A meteorite may leave a large crater when it strikes the earth. Barringer Crater, in Arizona, was created when a large meteorite struck the earth 50,000 years ago.

Name: What is a meteoroid that enters the earth's atmosphere called?



Name _____ Class _____ Date _____

16–9 What are some objects in the solar system?

Lesson Review

Complete the following.

1. A large chunk of rock that orbits the sun is an _____.
2. A body made up of rock, dust, gases, and ice that orbits the sun is a _____.
3. A piece of rock or metal that strikes the earth's surface is a _____.
4. A piece of rock or metal that enters the earth's atmosphere is a _____.
5. Most asteroids are located between _____.
6. There are _____ kinds of asteroids.
7. Asteroids are made up of carbon, iron and nickel, or _____.
8. Comets orbit the sun in long _____.
9. The center of a comet is called the _____.
10. The nucleus and coma form the _____ of a comet.
11. Large meteoroids may have been formed by collisions with _____.
12. A meteorite may leave a large _____ when it strikes the earth.

Skill Challenge

Skills: *diagraming, identifying*

Draw the orbit of a comet on Figure A. Then label the parts of the comet shown in Figure B.

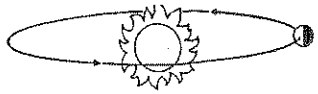


Figure A

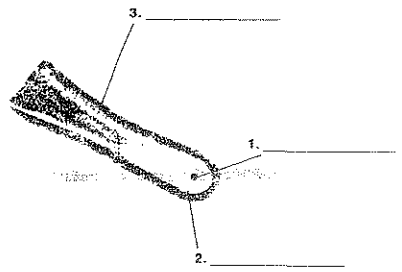


Figure B