

Galaxies

Textbook pages 356–363

Before You Read

How many stars do you think there are in the universe? Record your ideas on the lines below and explain how you chose your answer.



Mark the Text

Summarize

As you read this section, highlight the main point in each paragraph. Then write a short paragraph summarizing what you have learned.



Reading Check

1. What is a galaxy?

What is a galaxy?

A galaxy is a huge group of stars, gas, and dust that is held together by gravity. There might be as many as several billion galaxies in the universe and each galaxy might contain billions of stars. Our own star, the Sun, is part of a galaxy we call the Milky Way galaxy. A **nebula** is a dense cloud-like collection of gas and dust in space. Some nebulae (plural of nebula) are places where stars are born. ✓

What kinds of galaxy shapes are there?

Galaxies are classified as one of three basic shapes: spiral, elliptical, and irregular.

◆ **Spiral galaxies:** If you could look down at a spiral galaxy from above, it would look like a pinwheel. If you could look at it from the side, along its edge, it would look like a plate with a ball in the centre. Spiral galaxies have lots of gas, dust, and young stars. Our own Milky Way galaxy is a spiral galaxy.



Spiral galaxy

- ◆ **Elliptical galaxies:** An ellipse has the shape of a flattened circle. Elliptical galaxies come in a variety of shapes that range from a perfect sphere to a stretched-out sphere, like a football. Astronomers think that over half of all galaxies in the universe are elliptical. The stars in elliptical galaxies are the oldest stars in the universe, and there is very little gas and dust.



Elliptical galaxy

- ◆ **Irregular galaxies:** Galaxies that do not have any regular type of shape like a sphere or a pinwheel are called irregular galaxies. Irregular galaxies have lots of gas and dust, which are the building blocks of stars.



Irregular galaxy

How are star clusters different from galaxies?

Star clusters are groups of stars that are found within galaxies. There are two main types of star clusters. Globular clusters are collections of 100 000 to 1 000 000 stars held together by gravity. These groups of stars are arranged in spherical shapes. Open clusters, on the other hand, are collections of up to a few thousand stars. These stars tend to be roughly the same age. ✓

✓ Reading Check

2. What is a star cluster?

Name _____

Date _____

Use with textbook pages 356–360.

Inside a galaxy

Vocabulary

billion	Milky Way
dust	nebula
elliptical	open
galaxy	spiral
gas	star clusters
globular	stars
gravity	thousand
irregular	

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

1. A galaxy is a huge group of _____, _____, and _____ that is held together by _____.
2. There might be as many as several _____ galaxies in the universe and each galaxy might contain more than a _____ stars.
3. A(n) _____ is a dense cloud-like collection of gas and dust in space.
4. If you could look down at a _____ galaxy from above, it would look like a pinwheel.
5. The Sun is part of the _____ galaxy, which is a type of _____ galaxy.
6. A(n) _____ galaxy has the shape of a flattened circle.
7. Galaxies that do not have any regular type of shape are called _____ galaxies.
8. _____ and _____ are the building blocks of stars.
9. Groups of stars within galaxies are called _____.
10. _____ clusters are collections of 100 000 to 1 000 000 stars arranged in spherical shapes.
11. _____ clusters are collections of up to a few thousand stars that are roughly the same age.

Use with textbook pages 358–359.

All about galaxies

Answer the questions below.

1. What is a galaxy?

2. What are the three basic shapes of galaxies?

3. What type of galaxy is the Milky Way?

4. Which type of galaxy contains the oldest stars in the universe?

5. What is found in an irregular galaxy?

6. What is the percentage of galaxies that are elliptical, approximately?

7. What are the two types of star clusters?

8. How do the two types of star clusters differ?

Name _____

Date _____

Use with textbook pages 358–359.

Galaxy shapes

Draw a diagram that represents each of the galaxy shapes. Next to each diagram, briefly describe the characteristics of that type of galaxy.

Spiral galaxy

Diagram:

Description:

Elliptical galaxy

Diagram:

Description:

Irregular galaxy

Diagram:

Description:

Name _____

Date _____

Use with textbook pages 356–360.

Galaxies

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

Term	Descriptor
1. _____ elliptical galaxy	A. ranges in shape from a perfect sphere to an elongated but flattened ellipse
2. _____ galaxy	B. distinct formations of stars in a galaxy
3. _____ irregular galaxy	C. looks somewhat like a pinwheel
4. _____ nebula	D. not shaped like a sphere or a pinwheel
5. _____ spiral galaxy	E. a collection of a few thousand stars
6. _____ star clusters	F. a cloud of gas and dust in space
	G. enormous collection of gases, dust, and billions of stars held together by gravity

Circle the letter of the best answer.

7. Earth's Sun is found in what type of galaxy?
- A.** elliptical
 - B.** irregular
 - C.** spiral
 - D.** nebula
8. Which type of galaxy holds the oldest stars in the universe?
- A.** spiral
 - B.** elliptical
 - C.** irregular
 - D.** star clusters

9. What holds globular clusters of stars together?
- A.** gravity
 - B.** mass
 - C.** collision
 - D.** rotation
10. Star clusters vary in the number of stars they contain. What is the approximate range for the number of stars found in an open cluster?
- A.** fewer than 10
 - B.** a few thousand
 - C.** 1000 to 1 000 000
 - D.** 100 000 to 100 000 000
11. Astronomers think that over half of all galaxies in the universe are
- A.** elliptical
 - B.** irregular
 - C.** spiral
 - D.** spherical
12. Which is true of the Milky Way galaxy?

I.	has the shape of a flattened circle
II.	from above it looks like a pinwheel
III.	has lots of young stars
IV.	from the side it looks like a plate with a ball in the centre

- A.** I, II, and III only
- B.** I, III, and IV only
- C.** II, III, and IV only
- D.** I, II, III, and IV