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Warm-Up | Star Systems and Galaxies

Lesson Question

Lesson Goals

Explore how the universe is organized.

Describe star systems.

Distinguish the major types of _____.

Words to Know

Write the letter of the definition next to the matching word as you work through the lesson. You may use the glossary to help you.

_____	eclipsing binary	A. a group of two or more stars
_____	light-year	B. a large collection of stars, gas, and dust held together by gravity
_____	star system	C. the distance that light travels in one year
_____	galaxy	D. a star system with two stars
_____	binary star	E. a star system in which one star occasionally blocks light from another

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Stars

Stars are huge spheres of gas. They are characterized by:

- color.
- _____.
- size.
- _____.
- brightness.

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Star Systems

Most stars belong to groups of two or more stars called **star systems**.

- _____ **stars** have two stars.
  - One is often much brighter than the other.

Even if astronomers cannot see the dimmer star, they often can detect it due to the effects of its _____.

- The dim star causes the bright star to wobble.
- The dim star may pass in front of the bright star; this is called an _____ **binary**.

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Star Clusters

Larger groupings of stars are called star clusters.

- All the stars in a given star cluster form from the same _____.
  - They form around the same time.
  - They are about the same _____ from Earth.

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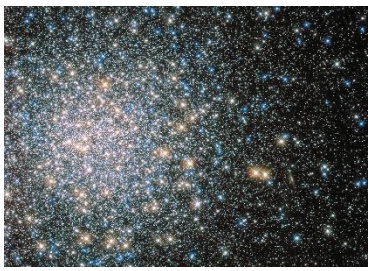
Types of Star Clusters

The two major types of star clusters are open clusters and globular clusters.





[ ] clusters are loose and disorganized. They contain no more than a few thousand stars.

[ ] clusters are tightly packed groups of older stars. They may contain more than a million stars.

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Galaxies

A **galaxy** is a large collection of [ ], gas, and [ ] held together by gravity.

- Classified into three types based on [ ]
- Separated by huge distances called [ ], the distance that light travels in one year
  - One light-year is equal to 9.46 trillion kilometers (5.88 trillion miles).

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Spiral Galaxies

A spiral galaxy is shaped like a pinwheel. A spiral galaxy:

- has a [ ] in the center.
  - Contains mostly old [ ] stars
- has arms that curve in a spiral pattern.
  - Contain young blue and blue-white stars
  - Are the site of active star formation
- contains much [ ] and dust.

Spiral galaxies may be normal or barred.



[ ] spiral galaxies have arms that start close to the center.



[ ] spiral galaxies have a bar through the middle. The arms extend from that bar.

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The Milky Way Galaxy

The Milky Way galaxy contains billions of _____ and our _____ system.

- 100,000 light-years across

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Elliptical Galaxies

An elliptical galaxy may be football-shaped, egg-shaped, or round. An elliptical galaxy:

- has almost no _____ and _____ between stars.
- has no new stars being formed.

Irregular Galaxies

As the name suggests, irregular galaxies have irregular shapes. Irregular galaxies:

- are _____ than other types of galaxies.
- contain much dust and gas.
- contain many _____ stars.

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Summary | Star Systems and Galaxies

Lesson Question

How is the universe organized into systems and galaxies?

Answer

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Review: Key Concepts

- Most stars belong to groups of two or more stars called star [ ].
- Large groupings of stars are called star [ ].
  - Open clusters are loose, disorganized, and contain no more than a few thousand stars.
  - Globular clusters are tightly packed and may contain more than a million old stars.
- A galaxy is a large collection of stars, gas, and dust held together by [ ]. Galaxy shapes include:
  - spiral.
  - elliptical.
  - irregular.

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Use this space to write any questions or thoughts about this lesson.

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