

# Galaxies

## Chapter 12

**G**alaxies are enormous collections of stars, gas and dust held together by gravity. The typical galaxy contains one hundred billion stars and is separated from other galaxies by vast regions of nearly empty space. Astronomers now estimate that there are more than one hundred billion major galaxies in the observable universe. Galaxies fit into three major categories: elliptical, spiral and irregular.



Spiral galaxy M83 Robert Gendler & Stephanie Guisard NASA

### **Galaxies**

Galaxies range in size from dwarf galaxies with as few as ten million stars to giant galaxies with over a trillion stars. The stars all rotate around a central mass in their nucleus or central disk.

Scientists are now studying dark matter that appears to account for more than 90% of a galaxy's mass. Dark matter is not well understood by scientists and is the subject of a lot of current research. Recent research suggests that black holes may exist in the center of most if not all galaxies.

### **Classification of galaxies by Edwin Hubble**

Historically galaxies have been classified by their apparent shape. Edwin Hubble, for whom the Hubble Space Telescope was named, created a classification that is in use today. Elliptical galaxies are type *E*. Elliptical galaxies that are round are given an E0

Name \_\_\_\_\_

Date \_\_\_\_\_

# Galaxies

## Quiz 12

### Fill in the blanks using words from the Word Bank

1. Giant \_\_\_\_\_ galaxies are often found at the core of galaxy clusters.
2. The three major types of galaxies are elliptical, \_\_\_\_\_ and irregular.
3. The galactic \_\_\_\_\_ contain more gas, dust, and young stars than other parts of the galaxy.
4. The Milky Way and the Andromeda Galaxy are a \_\_\_\_\_ system of two giant spiral galaxies.
5. Galaxies range in size from dwarf galaxies with as few as ten million stars to giant galaxies with over one \_\_\_\_\_ stars.
6. \_\_\_\_\_ holds together galaxies that are enormous collections of stars, gas, and dust.
7. The typical galaxy contains one hundred billion stars and is separated from other galaxies by vast regions of nearly empty \_\_\_\_\_.
8. The Milky Way, our local galaxy, is a \_\_\_\_\_ spiral galaxy.
9. Scientists are now studying dark matter that appears to account for more than 90% of a galaxy's \_\_\_\_\_.
10. The \_\_\_\_\_ galaxy is approximately 100,000 light years in diameter and estimated to contain two billion stars.

### Word Bank

barred	elliptical	discs	mass	binary
trillion	Milky Way	space	spiral	gravity

# Galactic Mobile

## Activity 12

### Introduction

Galaxies are groupings of stars. Almost all stars are found in galaxies. Telescopes can look into deep space and see billions of galaxies. Astronomers have found galaxies come in many different shapes and sizes. In this activity, you will be creating a mobile with twelve typical galaxies found in outer space.



Galaxy mobile

### Materials

- ◆ Cardboard
- ◆ Construction paper
- ◆ Glitter or felt pens
- ◆ Scissors
- ◆ String
- ◆ Glue
- ◆ Scotch tape
- ◆ Copies of the galaxies

### Directions

1. Copy the pictures of the galaxies onto blank paper.
2. Cut around the outside edges of each galaxy pattern. Leave approximately  $\frac{1}{2}$  inch space around the outside lines so you can tape and cut the patterns from the construction paper.
3. Tape the galaxy patterns to different colors of construction paper.
4. Cut through both the pattern and the construction paper at the same time when cutting out your galaxies.
5. Be sure and do not cut off the information about each galaxy when you are cutting out the galaxies.
6. Decorate both sides of the construction paper galaxies with glitter or felt pens.
7. Carefully tie a length of string around the arm of a galaxy.
8. Tape other end of the string to bottom side of the cardboard.
9. Tie string to the top of the cardboard to hang your mobile.

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