

Galaxies - Activities (Ages 12-15)



Today we are going to investigate:

- What a galaxy is
- Other galaxies in the Universe
- The shapes of galaxies

Activities

1

Galaxies are massive collection of billions of stars and clumps of gas and dust held together by gravity. The Sun is one of hundreds of billions of stars in a galaxy called the Milky Way. Galaxies are separated by huge distances, often a million light years or more. Astronomers estimate there are more than 200 billion galaxies in the observable Universe. If we look outside the Milky Way, we can see other galaxies.

Question:

Do you think other galaxies will look bright or dim in the sky?

2

As they are so far away most other galaxies are too faint to see without a telescope but you can see some of them in Night Sky. The closest large galaxy to us is the Andromeda Galaxy. Open Night Sky, and find the constellation Andromeda. (Tip: you can locate constellations with the Search function). Look for the Andromeda Galaxy. When you find it zoom in on the galaxy to see it more clearly.

Question:

What shape does the Andromeda Galaxy seem to be?

Circle Sphere Ellipse

3

The Andromeda Galaxy appears as an ellipse in the sky but it is actually a flat spiral shape inclined at an angle to our line of sight. Use Search to find another spiral galaxy called Messier 51 (M51) in the constellation Canes Venatici. Again, zoom on the galaxy to clearly see it.

Question:

From what direction are we looking at the M51 galaxy?

Side on Face on At an angle



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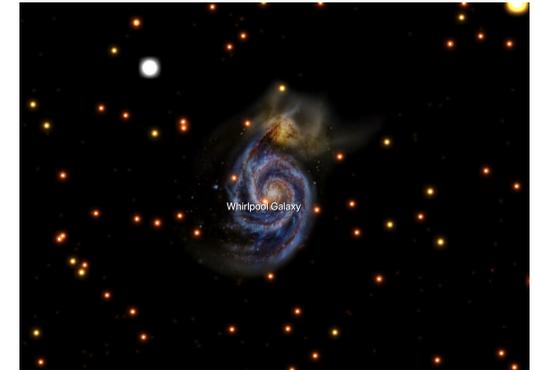
- 4 Messier 51, the Andromeda Galaxy and the Milky Way are all spiral galaxies. If you could go far outside the Milky Way and look down on it, our galaxy would look very like Messier 51.

Galaxies come in different shapes and astronomers use the shapes of galaxies to classify them. About a third of galaxies are spirals, many of the other galaxies are elliptical, some are spherical. Spherical and elliptical galaxies look “fuzzy” and never have a spiral shape. Some other galaxies are called “irregular” as they look rather shapeless.

Question:

Search for these galaxies in Night Sky and classify them by shape. Choose from **Irregular**, **Spiral** or **Elliptical**.

- a) Messier 81
- b) the Large Magellanic Cloud
- c) Messier 49
- d) Messier 101
- e) Messier 87



What we have discovered:

- Galaxies are clusters of billions of stars, dust and gas
- Astronomers classify galaxies by their shape
- The Milky Way is a spiral galaxy