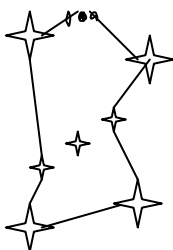


STAR GAZING



BENCHMARK and TASK

SC.E.2.2.1 The student knows that, in addition to the Sun, there are many other stars that are far away.

- The student identifies the sun as a medium-sized star located near the edge of our galaxy which also contains billions of other stars.

KEY QUESTION

What is a constellation?

BACKGROUND INFORMATION

Astronomers estimate that there are about 1,000 million **galaxies** (swirling, massive clusters of solar systems) in the **universe** and that each galaxy contains about 100,000 million **stars**! A star is a huge, hot ball of burning **gas** that radiates light and heat. Our sun is just one of those stars, located near the edge of our galaxy, the Milky Way.

Stars have been a great source of wonder for thousands of years. Some of the best stories ever told came from the heavens. Ancient people would imagine lines between various stars so that groups of stars took on different shapes, such as animals, people and objects. Stories about the stars were passed from generation to generation. Over time the stories may have changed, but the star groupings are generally the same.

A **constellation** is a particular area of the sky that contains a particular set of stars. There are 88 recognized constellations. Most of the constellations can be seen from earth's **equator**, although even at that location, not all of them can be seen. This occurs because the earth blocks the view of part of the sky. Constellations always form the same shape, but from our view on earth their positions in the night sky change throughout the year because of the earth's rotation on its **axis** and its revolution around the sun. Some of the familiar constellations are: the Big Dipper (Ursa Major), Cassiopeia, the Little Dipper (Ursa Minor), Aquarius, and Orion (The Hunter).

MATERIALS

Per group

- | | |
|---|----------------|
| 1 cardboard toilet tissue tube | 1 black marker |
| 1 flashlight | scissors |
| 1 circle of black construction paper – the size of the tube opening | glue |
| 1 push pin | masking tape |
| 1 cardboard circle – the size of the tube opening | |
| 1 constellation pattern (black dots on white copy paper the size of the tube opening) | |

Teacher

transparencies of well-known constellations
chart paper with the names of some familiar constellations
constellation viewer
light source

TEACHING TIPS

1. Set a time for students to visit the media center and also have resource material on constellations available in the classroom.
2. Locate pictures showing some of the well-known constellations and prepare a few transparencies.
3. Prepare ahead of time:
 - Make your own constellation viewer to use as a model.
 - Cut one small circle of black construction paper for each group – the size of the toilet tissue tube opening.
 - Cut one cardboard circle for each group – the size of the toilet tissue tube opening.
 - Cut one small piece of white copy paper for each group – the size of the toilet tissue tube opening.

ENGAGE

Ask: *What does an astronomer do?* (An astronomer conducts scientific investigations of objects in space.) Tell students that for this activity they will become astronomers as they study stars and constellations.

EXPLORE

1. Share a transparency showing some of the constellations. Point out several well-known ones and trace their shapes with your finger.
2. Explain that constellations always form the same shape, but that from our view on earth their positions in the night sky change throughout the year because of the earth's rotation on its axis and its revolution around the sun.
3. Show students the posted sheet of chart paper with some well-known constellations listed. Tell the students that as a group they should choose one constellation to research. Once they have decided, they should mark the constellation they have chosen on the chart. Students also should feel free to choose a constellation not on the list.
4. Allow time for groups to visit the media center to gather information (e.g., how the constellation was named, the shape of the constellation, how to locate it, the number of stars).
5. When the research is completed, instruct students to make a constellation viewer of their chosen constellation:
 - Show students your constellation viewer model.
 - Students will need: 1 black marker, masking tape, glue, 1 cardboard toilet tissue tube, a push pin, and pre-cut circles of black construction paper, white copy paper, and cardboard.
 - Have students create their constellation pattern by making black dots on the small piece of white paper the size of the cardboard tube opening.

- Have students place the constellation pattern over a circle of black construction paper and tape it in place temporarily with transparent tape. Place this over the cardboard circle and use a push pin to carefully punch out the constellation pattern.
- Remove the tape and the constellation pattern.
- Put some glue around one end of the cardboard tube and then place the circle of black construction paper over the glue, patterned side up. Stand the tube on this end until the glue dries.
- Use masking tape to label the tube with the name of the constellation.
- Have students use the viewers by holding the tube with the patterned end toward the light source while looking through the open end. Then encourage them to swap viewers and view other constellations.

EXPLAIN

What is a star? (A star is a huge, hot ball of burning gas that radiates light and heat.)

What is a constellation? (A constellation is a particular area of the sky that contains a particular set of stars.)

Why do constellations appear to move? (Constellations always form the same shape, but from our view on earth their positions in the night sky change throughout the year because of the earth's rotation on its axis and its revolution around the sun.)

EXTEND/APPLY

1. Have each group shine a flashlight through the viewer and project their constellation onto the screen as they present to the class some information about the constellation they studied.
2. Ask students to do some stargazing at home. On a starry evening, they should stand in a spot so that a bright star is just above a certain marker (e.g., tree, post). Note the star's position. Return to the exact spot in an hour and the star will probably have moved quite a distance because the earth is rotating around its axis.

EXTENSION

Visit the planetarium at the Orlando Science Center.