

Universe Lesson Six

Circumpolar Constellations

Standard IV: Students will understand the scale size, distance between objects, movements, and apparent motion (due to Earth's rotation) of objects in the universe and how cultures have understood, related to and used these objects in the night sky.

Objective 2: Describe the appearance and apparent motion of groups of stars in the night sky relative to Earth how various culture have understood them.

Indicator a: Locate and identify stars that are grouped in patterns in the night sky.

1. Read about constellations. (Reading #1: Constellations) Have a discussion about the reading.
2. Tell the students that today they are going to learn about circumpolar stars and circumpolar constellations. Have them read about circumpolar stars. (Reading #2: Circumpolar Stars and Circumpolar Constellations.) Have a discussion about the reading.
3. These are stars that are found around the Polaris (North Star). As you know, Polaris is always in the North and it stays in the same position. That is because the axis of Earth is pointed directly at this star.
4. These circumpolar stars around Polaris seem to go around Polaris in a circular motion because of the rotation of Earth. It is really the rotation of Earth that makes these stars seem to go around Polaris.
5. Try this activity.
 - a. Stand up and look up. Find something this is directly above you.
 - b. By keeping your body in the spot, turn counterclockwise.
 - c. Notice that the object stays in the same spot.
 - d. Notice that the objects out farther seem to go around in a circle as you are turning around.
 - e. This is the same thing that you see when Earth is turning.
6. Some of these stars that are seemingly circling Polaris are part of some major constellations. These constellations are that are circumpolar are: Cassiopeia, Ursa Major (Big Dipper), Ursa Minor (Little Dipper), Cepheus, and Draco. They are in the northern sky. These constellations can be seen by 9:30 p.m. any night of the year (earlier in the winter).

7. Copy off the circumpolar constellations (Cassiopeia, Ursa Major (Big Dipper), Ursa Minor (Little Dipper), Cepheus, and Draco) found with the #2 Reading.
8. Have the students get out their Star Wheels or print out their own at this website:
http://www.lawrencehallofscience.org/do_science_now/starwheels. Then click on: English – Northern Hemisphere Star Wheel.

Note: The Sky Wheel is free to print off from this website by each student. If it is printed off by the teacher and copied for students, permission to do so would need to be acquired. It is best for the students to print their own from the above website.

9. Have the students find Polaris on their Star Finder and color it red.
10. By looking at the pictures of the circumpolar constellations, have the students find them on their Star Finders and color them all the same color.
11. Have the students notice how these constellations circle Polaris. They are seen all year in the northern part of the sky because they revolve around the North Star.
12. Make replicas of Cassiopeia, Ursa Major, Ursa Minor, Cepheus, and Draco on some black bulletin board paper and put them on the bulletin board under the title of Circumpolar Constellations.
13. Go to Google and find out the myths about these constellations. Just type in the constellation and then type in myth behind it and the myths of each will come up.
14. Have them take their papers home to see if they can find them outside.