



Lesson 1: Create-A-Constellation

For centuries, people in all parts of the world have looked at stars. The patterns of the stars have reminded them of familiar objects or characters from stories. Different cultures have associated mythological creatures and stories with different constellations of stars. By associating groups of stars with a character from a story, it made it easier to remember where star patterns were located in the sky.

This activity allows students to create their own constellations and stories from a given pattern of stars and compare them to what other cultures have seen in the same pattern.

Concepts

Constellations are stars that have been grouped to suggest important cultural objects, animals, characters or people.

Objectives

Students will:

- define the term “constellation” as a pattern made from a group of stars;
- use a common pattern of stars to design a constellation; and,
- write a short myth about their constellation.

Materials

- Create-A-Constellation pattern
- Overhead transparency of Create-A-Constellation pattern
- Pencil
- Astronomy Notebook

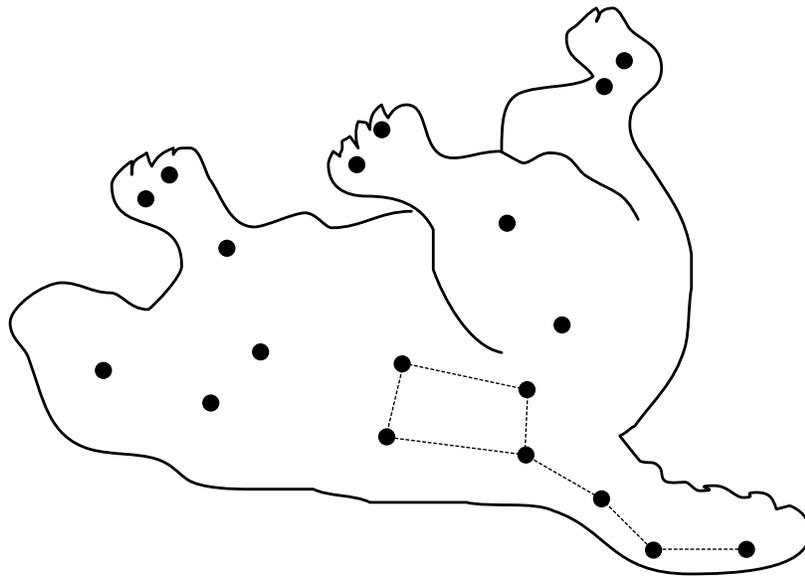
Procedure

Advanced Preparation

Duplicate copies of the Create-A-Constellation star pattern sheet for each student. Make an overhead transparency of the Create-A-Constellation pattern.

1. Ask students to name some constellations they’ve heard of or observed. Discuss with them how they think the constellations got their names. Define the term *constellation*. (See Background Information for a definition.)
2. Distribute copies of the Create-A-Constellation pattern to each student. Have students observe the star pattern from any and all possible directions.
3. Have students draw figures or objects using some or all of the stars in the star pattern.
4. Have students write in their Astronomy Notebooks a brief story about their figures and how they came to be found in the stars.

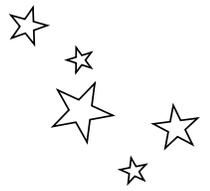
5. Share student-created stories and drawings to emphasize how different people see different figures in the same pattern. The students' stories and drawings can be posted on the bulletin board or put together in a class book.
6. Relate to the students that just as different people in the class saw different figures in the star patterns, so have various cultures when looking at the stars in the night sky. The pattern of stars on the Create-A-Constellation sheet represents an actual star pattern visible in the night sky.



7. Using the overhead projector, show students where the Big Dipper is found in the Create-a-Constellation star pattern. This pattern is actually the constellation of Ursa Major. Astronomers do not consider the Big Dipper as its own constellation because it is part of a larger grouping of stars. If possible, draw the rest of the illustration of the bear.
8. Read stories (found on the following pages) from different cultures based upon this same star pattern. Students may wish to illustrate these cultural stories using the Create-a-Constellation pattern sheet.

Teacher Note: After completing Lesson 2, have students use their Star Finders to determine the motion of Ursa Major throughout the year. They will notice that it seems to circle closely to the North Star but is always visible in the night sky in the Northern Hemisphere. How does this movement relate to some of the stories from different cultures?

9. As an extension, have students research other constellations. Try to find different cultural stories and myths for the same star group.



Ursa Major Myths from Around the World

Greek

The God Zeus often changed himself into various animals to carry out his designs upon mortal women. To hide the nymph Callisto from the wrath of his wife, Hera, Zeus changed her into a bear. This saved Callisto from Hera's anger, but introduced her to other dangers—now earthly hunters could take her for a common bear and attempt to kill her. One such hunter was named Actas, who saw the bear Callisto, drew his bow and prepared to shoot her. Now this was an awful situation, made horrifying by the fact that Actas was the son of Callisto. To prevent matricide, Zeus took both mother and son and placed them together in the sky as the Big and Little Bear. According to Ovid, Zeus swung the creatures by their tails to do this, and that accounts for the fact that both Big and Little Bears happen to have abnormally long tails.

According to another Greek myth, the sky is made up of soft, pliable glass. Nailed to this glass is a bearskin, held in place by seven nails. The seven points make up the Big Dipper.

In another tale, Zeus got mad at a poor earthly bear, picked it up by its tail, twirled it over his head and tossed it into the sky.

To Homer, this constellation was both a bear and a “wain” (a wagon). He placed the bear upon the shield of Achilles, described in detail in one of the books of the Iliad.

Iroquois

Once upon a time in a strange and distant land (New York State), some Indians were chasing a bear through the forest. The Indians ran into three giants who, angered by the chase, attacked and killed all but three of the Indians. Suddenly, the three surviving Indians and the bear were transported into the sky, where the chase continues to this day. The four stars in the cup of the dipper form the bear, and the three stars in the handle represent the three Indians. The one closest to the bear carries a bow to shoot the bear with, the next one carries a pot to boil the bear in, and the last Indian carries wood to light the fire. The Indian who carries the pot is the star Mizar, and his pot is Mizar's faint companion star, Alcor.

Zuni Indians

For most of the year, the great bear guards the western lands from the frozen gods of the north. In the winter, however, the bear goes into hibernation, leaving the land to be ravaged by the frozen breath of the ice gods. The bear wakes in spring—his growling is to be heard in the spring thunder—and drives the frozen gods back to the north, where they belong.

Housatonic Indians

The big bear hibernates every winter in the cave known to the Greeks as the Corona Borealis. Three Indian warriors find the bear asleep and attack it. The bear wakes up in agony and takes off in a mad dash across the sky, with the three Indians in hot pursuit. It is the tableau of this chase that we see when we gaze into the sky—the four stars on the cup form the bear

and the tail stars are the three Indian warriors. The chase lasts for quite some time; finally, around October, the Indians catch up with their quarry. The lead Indian takes his spear and stabs the bear. Although the creature doesn't die, it bleeds profusely and the blood falls out of the sky and onto the leaves of the trees. And that's why leaves turn bright red in the fall.

Basque

Once upon a time in the land of the Basques, two thieves robbed a man of two oxen. Enraged, the man sent his servant, his housekeeper and his dog out to chase the thieves and recover the oxen. After a long wait, the man lost his patience and chased after the thieves himself. As punishment for his impatience, the man was taken up into the sky along with all the other elements of the story. The first two stars in the cup of the dipper are the two oxen, the other two stars are the two thieves; in the handle of the dipper are the servant, the housekeeper and the master, who is the final star. The dog is the faint star Alcor.

Chinese

Chinese astronomers called this constellation the "Jade Balance of Fate." Chinese peasants called it the "Grain Measure."

Arabian

The Arabians saw a coffin and mourners in this constellation. The four stars of the cup form the coffin; the mourners, sons of the deceased, are the three stars in the handle. The three stars here are following the North Star, seeking vengeance, for it is that star that killed their father.

German

To the Germans, who had much first-hand experience with bears, this constellation was not a bear. It was a "Grosse Wagen" (big wagon.)

English

King Arthur was said to live in the portion of the sky marked by the Big Bear. This conception became transferred in later times to "King Arthur's Chariot" slowly circling the pole. The Irish refer to this group of stars as "King David's Chariot."

Create-a-Constellation

