LOCATING THE BIG DIPPER
Activity F-2
Grade Level: 3-9

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What’s This Activity About?
Once students can identify at least one constellation in the sky, their confidence with nighttime observing increases dramatically. Perhaps the easiest constellation to find in the northern hemisphere is Ursa Major, with its familiar seven-starred pattern, the Big Dipper. The Dipper is visible year round (although it is low against the northern horizon in late autumn and early winter after sunset), and its two pointer stars, Dubhe and Merak, can be used to locate Polaris, the North Star.

This activity will help students identify the Dipper and the North Star easily, with a simple all-year clock. It also calls attention to the changing position of constellations about the North Star during the evening and over a year.

What Will Students Do?
Students create a Dipper-Finder clock and use it to match the orientation of the Big Dipper to the season and time. The Dipper-Finder shows only the Dipper and the North Star to help students easily find the constellation.

Tips and Suggestions
- The Dipper-Finder is not intended to replace a more complete star chart. In the next activity in this section, “Star Clocks,” students create a more realistic, detailed map of the northern stars.
- Give serious consideration to starting all students out with the Dipper-Finder first, especially if they have not had much experience observing the evening skies.

What Will Students Learn?

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LOCATING THE BIG DIPPER

Children will start feeling at home with the stars and will become interested in observing them further when they realize that they can easily find the Big Dipper on a clear night. The Big Dipper, in turn, will help them locate a very important star for finding their way, Polaris. The Dipper finder to be made in this activity will tell them in what general region of the northern sky to look for the Big Dipper at any hour of the night throughout the year. As they use it, they will see how the Dipper appears to move around the Pole Star.

STUDENT PREPARATION

GRADE LEVEL
Elementary

CONTENT BACKGROUND
Some familiarity with Big Dipper and its shape; understanding of the Earth’s rotation.

FACTS AND CONCEPTS
• The Big Dipper appears to move in the sky from hour to hour.
• The Big Dipper appears to change its position from month to month.
• The pointer stars in the Big Dipper point toward the North Star (Polaris).

MATERIALS
Pattern for Dipper finder and accompanying directions for constructing and using it (see Dipper finder pattern at end of activity), brad, rubber cement, scissors.
PROCEDURES

1. Review rotation of the Earth, shape of Big Dipper and the usefulness of this star configuration in finding the North Star and the directions north, east, south, and west.

2. Ask students to construct the Dipper finder, using the materials given to them.

3. Let students practice setting and orienting the Dipper finder for various dates and hours of night until they become familiar with its operation.

FOLLOW-UP ACTIVITIES

1. Each student should take his or her Dipper finder home and use it to locate the Dipper and North Star in the night sky.

2. The Dipper finder is large enough to include more stars. Ask students to plot the Little Dipper, Cassiopeia, and Draco on their Dipper finders from the sky at night. On the next school day, they should check their success with a star chart.

3. At upper elementary levels, guide students in using their Dipper finders and the Big Dipper to tell the time of night.

EVALUATION SUGGESTIONS

Evaluate student performance in the follow-up activities, and the understanding they exhibit in using the Dipper finder.

NOTE:

For Dipper finder pattern used in the activity, see following page.
This Dipper Finder will show you the correct position of the Big Dipper at any hour for any month throughout the year.

1. Cut out the circle and rectangle.

2. Place the circle on top of the rectangle and fasten with a brad through the North Star (Polaris).

3. Set the month to the correct time and then go outside and find the Big Dipper.

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