

Using a Star Map

In this activity, you will learn how to use a star map. Star maps show the constellations and bright stars in the sky that are visible from either the northern or southern hemispheres at a certain time of the year. Although some star maps are specific to each month, the star map you will use can be used throughout the year and is specific to the northern hemisphere. See “Using Star Maps” on page 605 in the Skills Handbook.

SKILLS MENU

● Questioning	● Performing
● Hypothesizing	● Observing
● Predicting	● Analyzing
● Planning	● Evaluating
● Controlling Variables	● Communicating

Purpose

To determine how the stars of the Big Dipper can be used to locate other constellations in the northern hemisphere.

Equipment and Materials

- star map (to be provided by your teacher)
- ruler

Procedure

Part A: Circumpolar Constellations

1. Look at the Big Dipper in Figure 1. Using a ruler, draw lines on your star map to join the stars that create the image of the Big Dipper.
2. Look at the Little Dipper in Figure 1. On your star map, draw in the lines for the Little Dipper. Label the star at the tip of the handle “Polaris.” Polaris is also called the North Star because you need to face toward the North Pole in order to see it.
3. On your star map, locate the two stars of the Big Dipper that are farthest from the handle. These two stars are called pointer stars because they can be used to point toward other constellations. Using the pointer stars, draw a straight dashed line to Polaris.
4. Continue your dashed line until you reach Cassiopeia, a constellation that resembles a stretched out M or W (Figure 1(c)). Join the stars of Cassiopeia.
5. Label all three constellations on your star map. Check with your teacher to make sure that you have labeled your star map correctly so far.
6. There are several other constellations that are visible in the Canadian night sky during different seasons (Figure 2). On your star map, locate the three stars in the constellation Orion that make up the imaginary hunter’s belt. Draw in this constellation. Orion can be seen most easily during the month of December. Label the stars Rigel and Betelgeuse within Orion too.

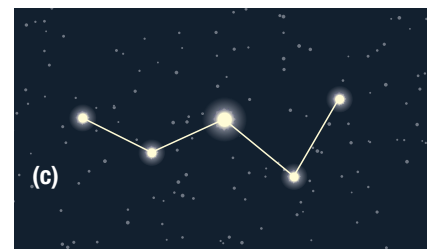
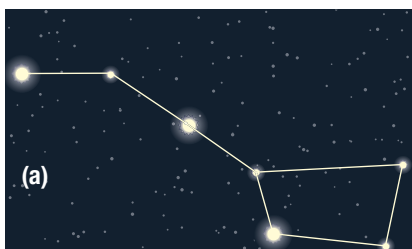


Figure 1 (a) The Big Dipper (b) The Little Dipper (c) Cassiopeia

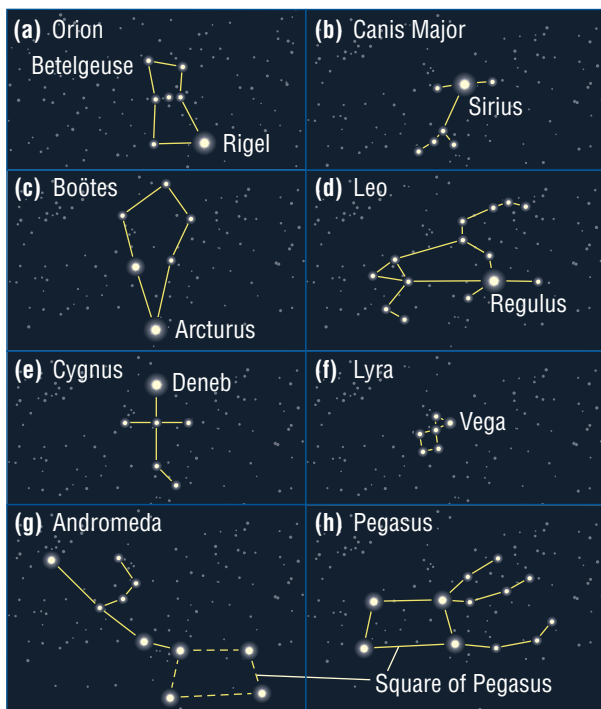


Figure 2




7. Draw a dashed line to show how you would use Orion's belt to locate the brightest star in the night sky, Sirius. Draw Canis Major, the constellation that contains Sirius.
8. Locate and draw the constellation Boötes on your star map. To find Boötes, first look for the star Arcturus, which is part of this constellation. Draw a dashed line to show how you would use the handle of the Big Dipper to find Arcturus.
9. Draw the constellation Leo on your star map. Leo contains the star Regulus. Draw dashed lines to show how you would use two stars of the Big Dipper as pointer stars to Regulus.
10. The three bright stars Deneb, Vega, and Altair form the Summer Triangle. Join them with dashed lines. Deneb and Vega are in the constellations Cygnus and Lyra. Draw these constellations on your star map.
11. Draw the lines for the remaining constellations in Table 2 on your star map. Follow the order of the constellations as they appear in Table 2. For each constellation, use a dashed line from another constellation. When you have finished locating and

drawing all the constellations, show your teacher your map and explain how you used pointer stars. You will share your results with the class.



Part B: Locating the Constellations of the Zodiac

12. You will notice there are still many unlabelled constellations on your star map. These are the zodiac constellations. They are visible during specific months, and the planets can be seen passing through them. You have already labeled one of the zodiac constellations, Leo. There are 11 more for you to find. The months in which they are best viewed are shown in the margin of the star map. Starting with Leo, move in a counterclockwise direction and label the rest of the zodiac constellations as follows: Virgo, Libra, Scorpius, Sagittarius, Capricornus, Aquarius, Pisces, Aries, Taurus, Gemini, and Cancer.

Analyze and Evaluate SKILLS HANDBOOK 3.B.6., 3.B.7.

- (a) Which constellations are visible from Canada in all seasons? 
- (b) Using your star map, identify two constellations that you can see from Canada during each of the four seasons. 
- (c) Describe how you used pointer stars in the Big Dipper to find three other constellations. 

Apply and Extend SKILLS HANDBOOK 3.B.6., 3.B.7.

- (d) Look at your star map again. Can you find any other uses for pointer stars? Draw these uses with dashed lines, and describe them. 
- (e) To locate the constellations at night, you stand facing north and hold the star map with the current month at the top. Why do you hold the star map this way? 

UNIT TASK Bookmark

How can you apply what you learned about using a star map in this section to the Unit Task described on page 446?