Chapter 7 The Night Sky

What You Will Learn

In this chapter, you will learn how to...

- **describe** different views of the night sky, as well as reasons why various cultures studied objects and events in the night sky
- **explain** the causes of the seasons, the phases of the Moon, solar and lunar eclipses, the tides, and comets
- **describe** the major and minor components of the solar system
- **discuss** some Canadian contributions to the study of the solar system and the technology used to study space

Why It Matters

Studying space helps us better understand and appreciate our own planet. It also helps us understand our place in the universe.

Skills You Will Use

In this chapter, you will learn how to...

- **determine** the location, appearance, and motion of some of the objects in the night sky
- **gather** and **record** data on the properties of some of the objects in the night sky
- **compare** and **contrast** properties of objects in the night sky

People have been watching the night sky for thousands of years. Every season, the same groupings of stars appear. Occasionally, there is a change in the night sky, such as a "falling star." Many different cultures have noticed certain star patterns and have used them to create stories, trying to understand their place in the universe.

Activity 7-1

Create Your Own Constellation

Constellations are star patterns that represent different people and objects in the night sky. Many cultures have their own stories about what the constellations represent. For example, the constellation shown here is Leo, the lion. According to Greek mythology, Hercules slayed a gigantic lion. As a thank you to Hercules, the Greek gods placed the lion in the sky. Does the star pattern look like a lion to you? In this activity, you will create your own constellation and a story to go with it.

Leo, the lion

Materials

- blank paper
- coloured markers

Procedure

1. Use the following questions to plan your constellation:
   - What object, animal, or person will your constellation represent?
   - What shape will your constellation be, and how many stars will it have?
   - Will your constellation be visible all year long or only in a certain season?
2. Name your constellation.
3. Write a story about your constellation, and draw a picture of it.
4. Trade constellation stories and pictures with your classmates.

Questions

1. Do your interpretations of your classmates' constellations match their stories?
2. Why do you think different cultures created stories about the constellations?

Study Toolkit

These strategies will help you use this textbook to develop your understanding of science concepts and skills.
To find out more about these and other strategies, refer to the Study Toolkit Overview, which begins on page 561.

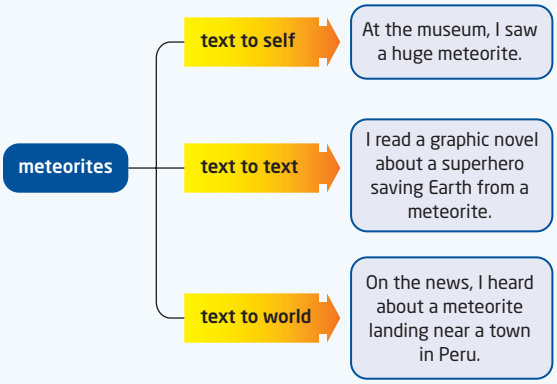
Reading Effectively

Making Connections to Prior Knowledge

You may already know some facts about the universe, from reading other texts, from the news, or from your own experiences. This prior knowledge can help you understand new information in this chapter. As you read, ask yourself these questions:

- What personal experience does this remind me of? (connect text to self)
- What else have I read about this? (connect text to text)
- What have I heard about meteorites lately? (connect text to world)

You can use a **concept map** like the one below to organize your connections to prior knowledge.



Use the Strategy

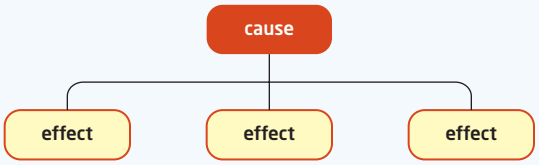
Think of what you know about Earth's moon. Make some connections to your prior knowledge about this topic. Then draw a concept map to show the connections.

Organizing Your Learning

Identifying Cause and Effect

Non-fiction text sometimes explains *why* something happens (the cause), or what happens *as a result of* something (the effect). Some causes can have multiple effects, such as in the following passage: "The impact [cause] produced an explosion [effect] with energy equivalent to approximately 1000 atomic bombs. This amount of energy probably generated hurricane-force winds [effect] up to 40 km from the impact site. Falling rock [effect] resulting from the impact would have destroyed everything within a 10 km radius."

You can use a **graphic organizer** like the one below to identify causes that have multiple effects.



Use the Strategy

Turn to the section titled "Asteroid and Meteorite Impacts" on page 302. Draw a cause-and-effect graphic organizer to show the multiple effects of the object that entered Earth's atmosphere above Siberia.

Word Study

Word Origins

Some English words originated from words in ancient languages, such as Greek and Latin. One strategy for figuring out the meaning of a new word is to study its origin. For example, if you know that *helios* means Sun in Greek, you might figure out that *heliocentric* means "centred around the Sun."

Use the Strategy

1. Think about the word *geocentric*. *Geo* comes from the Greek word for Earth. Predict what *geocentric* means.
2. Apply this strategy to other unfamiliar words as you read through this chapter.