CHAPTER 12

Exploring Gas Laws

You are probably used to sharing scientific ideas and observations with your classmates as you work in pairs or in small groups. If you are familiar with Internet chat rooms and e-mail, you may even share your ideas with people around the world. Sharing scientific ideas is an essential part of scientific discovery. Back in the early nineteenth century, the ideas that led to the complete gas laws were shared between colleagues in much the same way that you share scientific ideas with your classmates.

During the nineteenth century, scientists across Europe organized *academies*, or science societies. (This practice still exists today.) Belonging to an academy allowed much more communication among scientists. They read the papers and reports that other scientists had published, wrote letters, and held meetings to discuss ideas. They worked together to develop many important theories and laws, including the gas laws.

In this chapter, you will study more of the gas laws. Although these laws were discovered almost 200 years ago, they are still accepted today. You will learn how the gas laws allow you to solve many problems involving gas behaviour. You will also learn about some of the modern applications and technological advances associated with the gas laws. You will have a chance to test the gas laws through your own experiments and to compare your results with those of early scientists. Finally, you will learn about some of the gas reactions that occur in our atmosphere.

How did sharing scientific observations lead to the gas laws?

Chapter Preview

Concepts and Skills You Will Need

Before you begin this chapter, review the following concepts and skills:

- manipulating equations algebraically, and applying them to solve problems (Chapter 11, section 11.4)
- using correct significant digits in problem solving (Chapter 1, section 1.2)
- converting an amount in grams to an amount in moles, and then to a number of atoms or molecules (Chapter 5, section 5.3)
- solving stoichiometry problems, including writing balanced equations (Chapter 4, section 4.1 and Chapter 7, section 7.1)