

# Electric Charges

## Getting Ready...

- Where does electricity come from?
- Why does the dryer make your cotton socks stick to your silk shirt, but not to each other?
- Is there a difference between the electricity in a storm cloud and the electricity in a flashlight?



The slow-moving Pacific electric ray can catch fast-moving fish by stunning them with an electric shock.

**I**magine that you are scuba diving in the ocean near Vancouver Island. In the glow of your flashlight you see a Pacific electric ray gliding through the water. Watch out! The electric ray can produce an electric shock strong enough to knock a full-grown person unconscious. It might seem strange that an animal is able to produce electricity. But did you know that your own body possesses electric charges? In fact, so does every person and object around you. You probably know that you are using electricity when you turn on your flashlight. However, you don't usually see the effects of electric charges in your body and the ordinary objects in your classroom or home.

In this chapter, you will find out more about what we mean by “electricity” in ordinary objects that you don't think of as being electric. You will use objects in your classroom to study how electric charges behave. You will learn about two types of electricity, static and current, and will see how each can be used to perform useful tasks.



### What You Will Learn

In this chapter, you will learn

- how to charge objects with electricity
- how electric charges behave
- why some materials conduct electricity while others do not
- the difference between static electricity and current electricity

### Why It Is Important

- You use electricity every day.
- When you understand what electricity is, you can learn to control and work with it.
- Understanding how electricity works will help you stay safe around it.

### Skills You Will Use

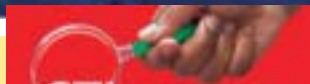
In this chapter, you will

- build a model to show the electric charges in an atom
- observe the effect of the interaction of electric charges
- classify electric charges
- classify objects as insulators and conductors
- observe what happens when electric charges flow



This lightning over Vancouver is a dramatic example of electricity in action.

## Starting Point **ACTIVITY 4-A**



### Balloon Buddies

What to Do



Group Work

1. Inflate a balloon and tie it off. With a marker, gently draw a face on it so that the face will be right side up when you hang the balloon from its knot.
2. Using tape and string, attach the balloon from the ceiling so that it hangs at the same level as your head. This is your balloon buddy.
3. Rub the balloon's face with a wool cloth.
4. Walk past the balloon without touching it. Using pictures or words, **record** what happens in your science notebook.
5. Touch the face of the balloon several times with your hand. Make sure you touch the whole face. Now walk past it and **record** your findings.
6. Make a second balloon into a balloon buddy. Hang it close to the first one. Make sure they are facing each other. Rub the face of both balloons with the wool cloth. **Record** how the two balloons behave.

### What Did You Find Out?

1. Compare your group's results with those of the rest of your class. As a class, try to explain each of your observations.
2. Think about other situations in which objects stick to each other or to other objects without glue or tape. What do those situations have in common with this activity?