

Name Date Class

(Unit 1 Chapter 2, Activity 3)

## Defining Characteristics of the Electric-Charge Interaction

**1.** The electric-charge interaction occurs when a "charged" object is near another "charged" or "uncharged" object.

Normally, objects are uncharged, but when they are prepared in special ways (like rubbing a balloon against your hair or pulling apart two pieces of tape), they may become charged. When objects are charged, they can have one of two different kinds of charge.

**2.** Evidence for the electric-charge interaction between a charged object and an uncharged object is that the two objects move towards each other. When the charged object is turned around, the two objects still move towards each other.

*What specific observation(s) did you make that provides the evidence for the first sentence? In which experiment was this observation(s) made?*

**3.** The evidence for an electric charge interaction between two objects of the same kind of charge is that the two objects move away from each other, and when one object is turned around the two objects still move away from each other. This observation is sometimes summarized as "like charges repel."

*What specific observation(s) did you make that provides this evidence? In which experiment was this observation(s) made?*

**4.** Electric current arises from the flow of electric charges inside the conducting wires and other parts in a circuit. Scientists believe that only the negative charges (electrons) inside the conductors move. They are repelled from the negative end and are attracted to the positive end of a cell. Therefore, the negative charges move around the circuit from the negative end to the positive end of a cell.

*What specific observation(s) did you make that provides this evidence? In which experiment was this observation(s) made?*

**5.** Both metal and non-metal objects can be involved in the electric-charge interaction.

*Which experiment supports this idea? What is the evidence?*

## Additional Ideas

***Two types of electric charge:***

By engaging in a large number of experiments and discussions, scientists have agreed that all matter consists of two kinds of electric charges. They have named these two types "positive" and "negative." The positive charges are protons, and the negative charges are electrons. (There are also "neutral" particles, that are neither positively nor negatively charged, and they are called neutrons.) A typical object contains a huge number of positive and negative charges, but normally there are exactly equal numbers of each. In that case all the negatives and positives balance out and entire object is said to be "uncharged."

***How uncharged objects become charged:***

Sometimes when you rub objects together (like rubbing a balloon against your hair), or pull them apart (like pulling apart two pieces of tape), you can cause some of the negative charges to move from one object to the other. In that case, the two objects become electrically charged. The object that ends up with extra negative charges is said to be "negatively charged" and the object that lost some of its electrons is said to be "positively charged."