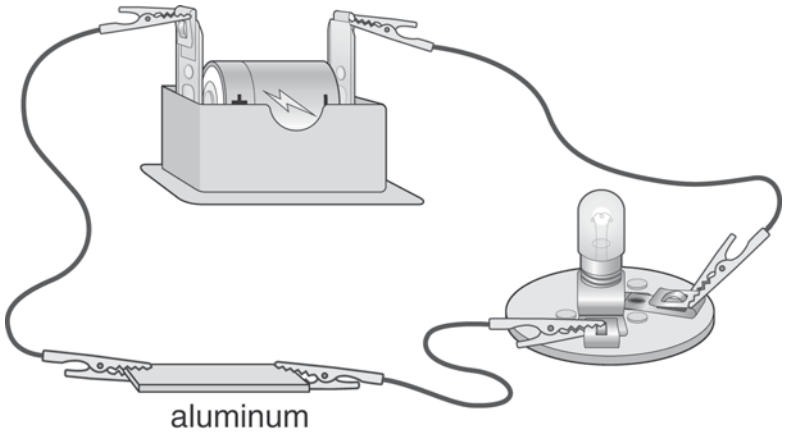
RECORD SHEET

Activity 6: Characteristic Properties

Name Date Class

Key Question

We Think



1. If you replaced the piece of aluminum with a piece of a different metal that had the exact same size, would the bulb glow more brightly, less brightly, or exactly the same? Why do you think so?

Explore Your Ideas

Experiment 1: What is the relationship between the length of a wire and the brightness of a bulb in a circuit?

Table 1: Length of Wire and Bulb Brightness	
Wire Material	**Brightness of the Bulb When the Length of Wire Decreases**
Nichrome	
Copper	

1. What is the relationship between the length of a nichrome wire between the connecting leads and the brightness of the bulb in the circuit? Be sure to include your evidence.

2. What is the relationship between the length of a copper wire and the brightness of the bulb in the circuit? Be sure to include your evidence.

Experiment 2: What is the relationship between the length of a wire and the electric current in a circuit?

Table 2: Length of Wire and Electric Current*		
Wire Material	**Wire Length (cm)**	**Electric Current (mA)**
Nichrome	40	419
	20	591
	10	743
	5	853
Copper	40	979
	20	990
	10	995
	5	997

** All other variables that influence the interaction are kept constant.*

3. What is the relationship between the length of a nichrome wire and the amount of electric current in a circuit? Include your evidence from Table 2.

4. What is the relationship between the length of a copper wire and the amount of electric current in a circuit? Include your evidence.

5. Does the amount of electric current in the circuit depend on the type of material of the wire? What is the evidence?

Make Sense of Your Ideas

Table 3: Electrical Conductivity of Different Wires*

Wire Material	Electric Current (mA)
Aluminum	991
Brass	979
Copper	995
Nichrome	743
Steel	801
Tin	996

** All other variables that influence the interaction are kept constant.*

1. Which kind of wire material is the best conductor of an electric current? Justify your answer using information in Table 3.

2. Which kind of wire material is the worst conductor of an electric current? Justify your answer using information in Table 3.

Our Consensus Ideas

The key question for this activity is:

What is a characteristic property of wires?

1. Write your answer for this key question.

2. Write the class consensus ideas about the key question.

3. Write examples of activities and experiments in this chapter that provided practice in applying the scientists' ideas. Record these on the *Scientists' Consensus Ideas: Properties of Objects and Materials* form.