PRACTICE

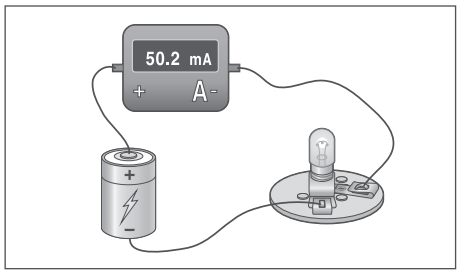
Activity 4: The Electric-Circuit Interaction

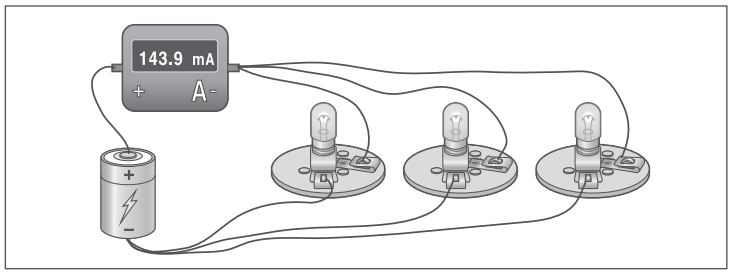
Name Date Class

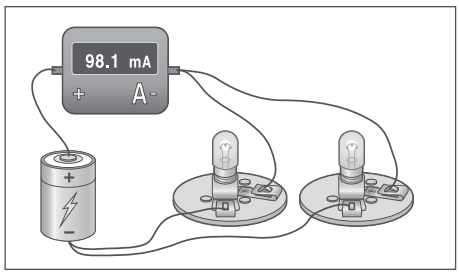
A group of students was investigating electric circuits. They were interested in finding the answer to the following question:

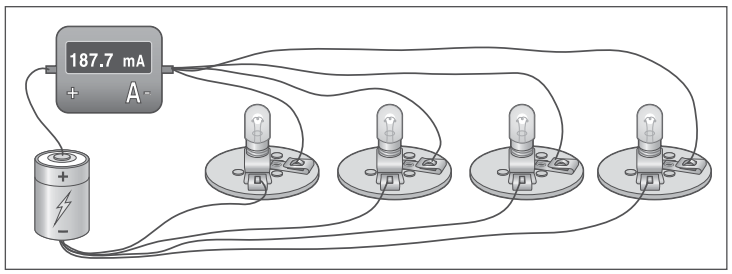
Experiment: *What is the relationship between the number of bulbs connected in separate loops and the electric current in the circuit?*

To find out, they did an experiment using the computer-based simulator. They set up four circuits as shown in the diagrams below. Each circuit had a battery connected to an ammeter (to measure electric current) and to one or more bulbs in separate loops. All bulbs were identical.









They recorded the readings of the ammeter in a table.

Table: Number of Bulbs Connected in Separate Loops versus Amount of Electric Current

Number of Bulbs	Value of Electric Current (mA)
1	50
2	98
3	144
4	188

To answer Questions 1–3, choose from the following responses:

- the number of bulbs
- the number of batteries
- the number of wires
- the value of the electric current

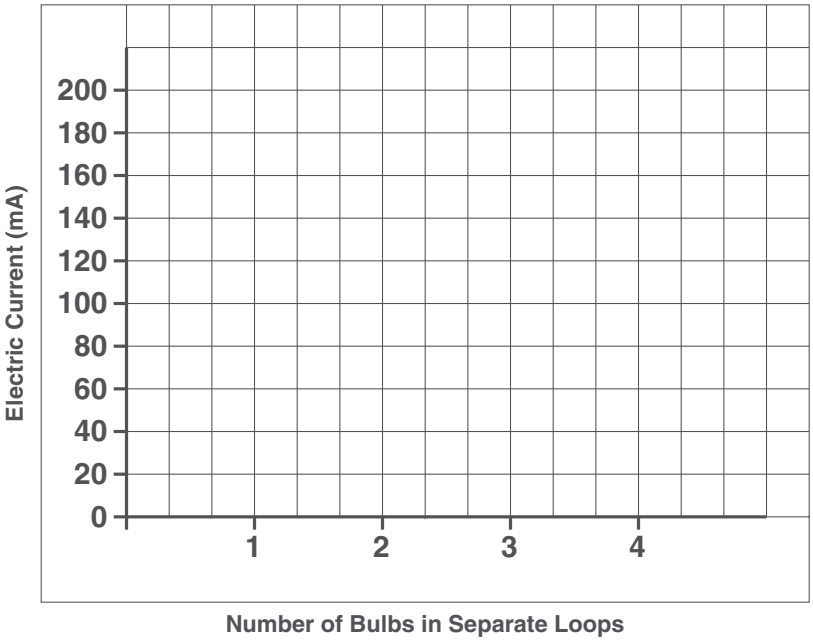
1. What is the *responding variable* in this experiment? _____

2. What is the *manipulated variable* in this experiment? _____

3. Which variables are *controlled* (kept the same) during the experiment?

_____

4. Draw a *bar graph* to represent the data presented in the table.



5. Write the *experiment conclusion* and *reason* by completing the following statements:

As the number of bulbs in separate loops increases, the value of the electric current in the circuit _____. The reason is that _____

_____

_____

_____

Make sure that your conclusion is valid with good reasons. That is:

- Your reasons include only evidence, not opinions.
- Your reasons include all the data, not just part of the data.