Name: ....   **Grade 8 Section:** _____

Series and Parallel Circuits Lab Investigation

Objectives

- **To make a series circuit**
- **To measure the current and voltage in series circuits**
- **To calculate the resistance of components**
- **To make a parallel circuit**
- **To measure the current and voltage in parallel circuits**
- **To calculate the resistance of components**

You will need:

1. Lamps
2. Wires
3. Cell or battery
4. Switches

Safety

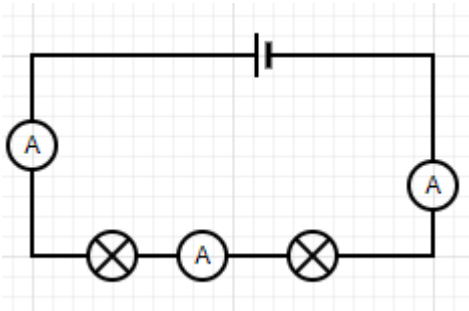Take care when using electricity.

Background

- You need a complete circuit for components to work.
- Circuits with a single loop are called series circuits. Circuits with more than one loop are called parallel circuits.
- $V = I \times R$

Procedure 1:

1. Build a series circuit with two bulbs as indicated by the following circuit diagram.

2. Add a switch you can turn each bulb on and off.
3. Draw a circuit diagram of this circuit. Describe how it works.

4. Put the ammeter in each of the positions as shown in the diagram and write down the reading on the ammeter in the table
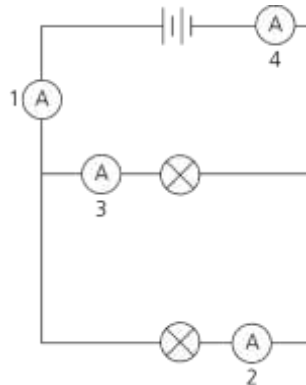
Ammeter Position	Reading on the ammeter (A)
1	
2	
3	

5. Calculate the resistance of each lightbulb.

Lightbulb	Voltage (V)	Current (A)	Resistance (Ω)
1			
2			

Procedure 2:

1. Build a parallel circuit with two bulbs as indicated by the following circuit diagram.

2. Add a switch in each branch so that you can turn each bulb on and off independently.
3. Draw a circuit diagram of this circuit. Describe how it works.

4. Put the ammeter in each of the positions as shown in the diagram and write down the reading on the ammeter in the table

Ammeter Position	Reading on the ammeter (A)
1	
2	
3	
4	

5. Calculate the resistance of each lightbulb.

Lightbulb	Voltage (V)	Current (A)	Resistance (Ω)
1			
2			

Conclusion:

1) Describe the relationship between voltage and current? (When voltage increases/decreases what happens to the current)

   Voltage increases current will increase.

2) Describe the relationship between resistance and current? (When resistance increases/decreases what happens to the current)

   Resistance increases current will decrease.

3) How does energy get lost in circuits?

   Through heat

4) If the length of the wires increases what do you think will happen to the current?

   It will increase because resistance will increase (think of it like friction in the wire).

5) Which type of circuit consumes the life of the battery faster? Explain your answer.
   Parallel because each branch will get the same voltage which means the battery will be depleted faster.