

Name _____ Date _____

II. Exploring Kinds of Circuits

Objective: We will use our knowledge of electric circuits to create and analyze different pathways that can light several bulbs at once.

1. **Explore:** Take 5 minutes to explore the sim and build a working circuit. Draw your successful circuit below and label the electricity source and receiver.

2. **Turn and Talk:** Share your working circuit with your partner.

- Is there more than one way to create a working circuit?
- What do working circuits require?



Inquiry Question: Can you light several bulbs brightly with one battery?

3. Complete the following table by creating, drawing, and observing circuits that meet the criteria.

Create a circuit using...	Drawing of your circuit:	Did the bulb or bulbs light?		Observations brightness? speed of electrons?
		Yes	No	
1 bulb, 1 battery, 3 wires		Yes	No	
2 bulbs, 1 battery, 3 wires		Yes	No	
2 bulbs, 1 battery, 4 wires		Yes	No	
Try that one again: Make a <i>different</i> circuit using 2 bulbs, 1 battery, 4 wires		Yes	No	

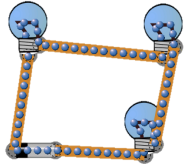


4. **Turn and Talk:**

- Were you able to create a circuit that lights 2 bulbs brightly?
- How is this kind of circuit different from circuits with 2 dimly lit bulbs or 1 bulb?

5. Circuit A is a working circuit that uses 3 bulbs and 1 battery. The electrons flow throughout the circuit, but the bulbs do not light brightly. They're so dim you can hardly tell that they are lit!

Circuit A:



Without the sim, design a circuit that lights 3 bulbs brightly using only 1 battery. Draw your circuit below.

6. **Turn and Talk:** In Circuit A, what would happen if one of the light bulbs burned out or broke? What about in the circuit you designed?



7.

Type of Circuit	What it is	What it looks like
_____ Circuit	a circuit that has one pathway for electricity to flow from the source to all receivers	
_____ Circuit	a circuit that has individual pathways from the source to each receiver	

8. Imagine you work for a company that designs strings of Christmas lights. Which type of circuit would be the best design to use? Why? Use evidence from your investigation to support your choice.
