

Name: \_\_\_\_\_

# Let There Be Light!

**Materials:**

- 4- UFO balls (*The small ping-pong balls with metal on them.*)
- 4- foil strips
- 3- small light bulbs
- 3- light bulb holders
- 2- D-cell batteries
- 2- battery holders
- 4- connective wires

**Directions:** Work together as a group to perform all challenges below. Answer each question fully and in complete sentences. When you reach the stop sign, raise your hand. If ALL group members have finished, the instructor will initial your notebooks and move you onto the next task.

1. Make the "UFO ball" (the small ping-pong ball with the metal strips) light up and make a noise.
  - a. Why did the ball light up? How did you make it do so?
  
2. Using the foil and a battery, light one small light bulb.
  - a. Draw two arrangements which worked and two which didn't work. Use simple lines to represent the pieces of foil.
  
3. Using the bulb sockets, battery holders, and wires, try to light the bulb with one battery.
4. Include a 2<sup>nd</sup> bulb in your arrangement.
5. Can both bulbs be lit at the same time? If so, draw the arrangement which will allow two bulbs to light at once.



**Extension:**

The circuits you created above can be classified into 2 categories: parallel and series circuits. Parallel circuits allow the removal of one or more bulbs, while series circuits do not. Label your circuits from number 6 on the previous challenge as either parallel or series.

10. Make all 4 of your UFO balls light up at once. Did you use a parallel or a series circuit?

11. What, in a circuit, do your group members represent? (E.g.: battery, bulb, wire, etc...)

12. Use the same arrangement to light all four UFO balls, but instead of touching the device to the group members' skin, touch it to their shirt. Did the UFO ball light up?

13. Why or why not? Explain your observations.

Most materials fall into one of 2 categories: insulators and conductors. Conductors conduct electricity, while insulators insulate against electricity, keeping it from flowing through a material.

