Battery and Bulb Investigations Name:_____

Simple Experiments in Electricity

Today you will be investigating how to connect "batteries" and light bulbs to make the bulbs light in different ways. (The word "battery" technically means more than one electrochemical cell and what we typically call a "AA battery" is only a single cell, so it's really a "AA cell" which becomes a "battery" when used in conjunction with other cells. We won't make a big deal of this though—just wanted you to know.)

Equipment Needed:

2 D cells	2 blue light bulb sockets
1 AA cell	2 blue D cell holders
2 flashlight bulbs	4 red *or* black wires (with some alligator clips)

Please do not return equipment in a haphazard way—the same person that obtains the equipment is responsible for returning it—in the same or better condition!

Do <u>not</u> connect more than two cells with our flashlight bulbs—the tiny filaments inside will melt and break.

Procedure

1) Take *one* D-cell (not in its blue holder), *one* wire, and *one* bulb (not in the blue socket) and make the bulb light. Draw a diagram of the working configuration below.

2) Take one AA-cell, one wire, and one bulb (not in the blue socket) and make the bulb light. Draw a diagram of the working configuration below.

What do you notice about the brightness of the bulb now as compared in step 1? (Repeat step 1 if necessary.)

What does this suggest about the two types of cells?

3) Now using one D-cell (in its blue holder), one bulb (in its blue socket), and some wires make the bulb light. Make a diagram of the configuration below, but use a different symbol for the light bulb in its socket. See symbol below:

4) Using one D-cell (in its blue holder) and two bulbs (in their blue sockets), find two configurations that make the bulbs light and describe which one yields brighter bulbs. Make diagrams of the configurations below and do your best not to cross the wires in your diagram—check with your diagrams with your teacher.

5) Using two D-cells (in their blue holders) and one bulb, make the bulb light in two ways, describe which way makes the bulb brighter and make diagrams of each. (Hint: the blue holders are designed to be connected in different ways.)

6) Ask your teacher about using the multimeters to measure Voltage and Current in a circuit before returning your materials. The same person that obtained the equipment should return it in the same or better condition.