|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| Lab not complete, Questions not answered | Lab mostly complete. Questions answered with some errors or incomplete answers | Lab complete. Questions answered correctly and fully. | Lab completed. Questions answered with connections to previous ideas or other topics |

 **Electric Cells in Series and Parallel**

**Purpose:** To investigate the voltage and current properties of electric cells when connected in series and parallel in a circuit.

**Materials:**

* Two D-Cells
* Wires
* One Light bulb
* Voltmeter
* Ammeter

**Procedure:**

1. Draw a schematic diagram using one D-Cell, the light bulb, the ammeter and the voltmeter. Connect the ammeter and voltmeter to measure the current and voltage used in the light bulb.
2. Connect the circuit you just drew. Complete the table with the correct values.

|  |  |  |
| --- | --- | --- |
| 1 D-Cell and light bulb | **Voltage:** Volts (V) | **Current:** Amperes (A) |
| Measured Values |  |  |

1. Draw a schematic diagram using two D-Cells in series. Connect the series D-Cells to the light bulb, the ammeter and the voltmeter. Connect the ammeter and voltmeter to measure the current and voltage used in the light bulb.
2. Connect the circuit you just drew. Complete the table with the correct values.

|  |  |  |
| --- | --- | --- |
| 2 series D-Cells and light bulb | **Voltage:** Volts (V) | **Current:** Amperes (A) |
| Measured Values |  |  |

1. Draw a schematic diagram using two D-Cells in parallel. Connect the series D-Cells to the light bulb, the ammeter and the voltmeter. Connect the ammeter and voltmeter to measure the current and voltage used in the light bulb.
2. Connect the circuit you just drew. Complete the table with the correct values.

|  |  |  |
| --- | --- | --- |
| 2 parallel D-Cells and light bulb | **Voltage:** Volts (V) | **Current:** Amperes (A) |
| Measured Values |  |  |

**Questions:**

1. How did the voltage of the series cells compare to the cell on its own? How did the voltage of the parallel cells compared to one cell on its own?
2. How did the current of the series cells compare to the cell on its own? How did the current of the parallel cells compared to one cell on its own?
3. If you wanted to increase the voltage in a circuit, should you put multiple cells in series or parallel? What if you wanted to increase the current?