IEEE's Hands on Practical Electronics (HOPE)

Week 2: Voltage, Current, Resistance

Objective:

Learn to use the Digital Multimeter (DMM)

Warnings:

Always OPEN a circuit when measuring a current. Put the DMM between the two places where you want to measure the current.
Always measure resistances after you REMOVE the battery from the circuit.

Materials:

1 breadboard you built last week
1 9V Battery
1 1kΩ resistor

Directions:

1. Measure the Voltage across the resistor as shown in Diagram 1

2. OPEN the circuit and measure the current as shown in Diagram 2

3. REMOVE batteries from the circuit and measure the resistance as shown in Diagram 3

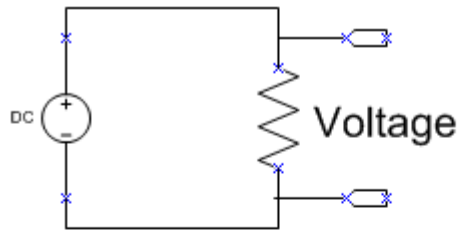


Diagram 1

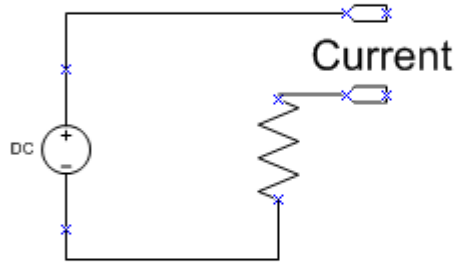


Diagram 2

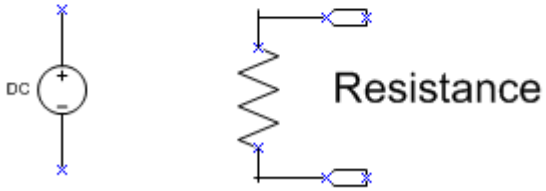
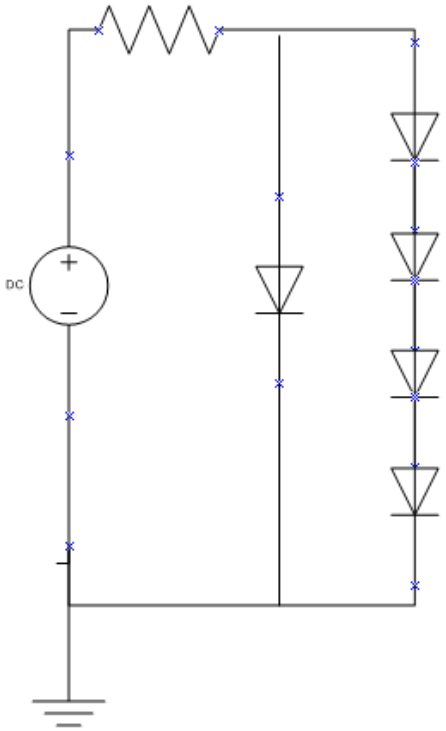


Diagram 3

Part 2:

Use your board from last week and make the following circuit.



Questions:

1. Measure the voltage across the 4 LEDs and the single LED and record their values:

2. How do these two measurements compare?

3. What did you notice about the brightness of the LEDs?
   - The 4 LED's in a row:
   -
   - The 1 LED not in the row of 4:
   -

The difference between the 4 LED's in a row and the 1 not in that row.