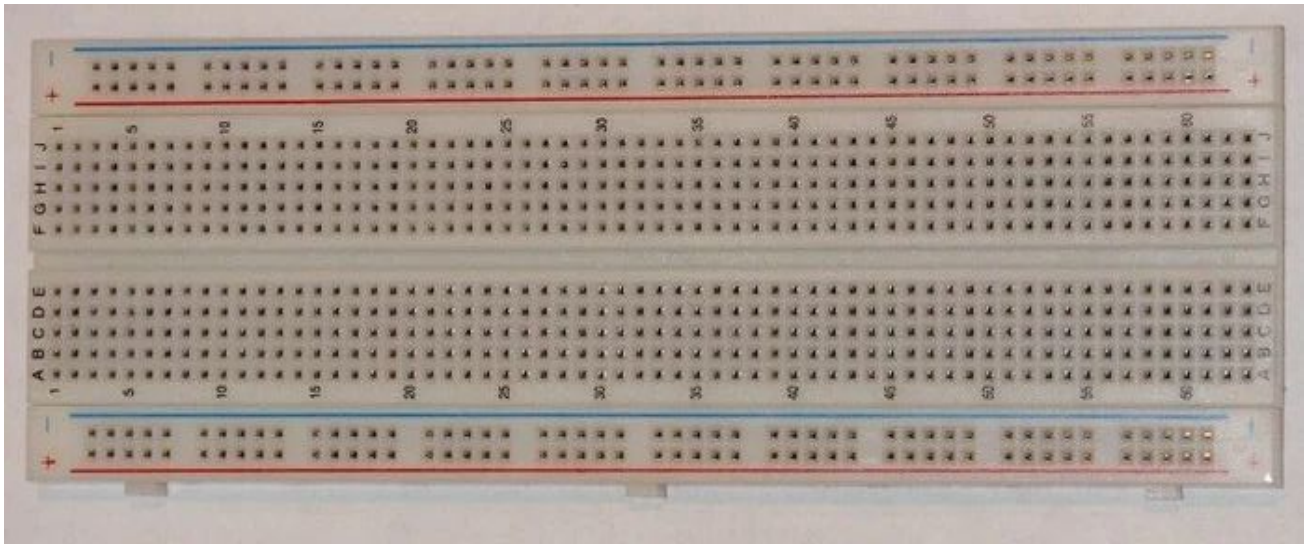
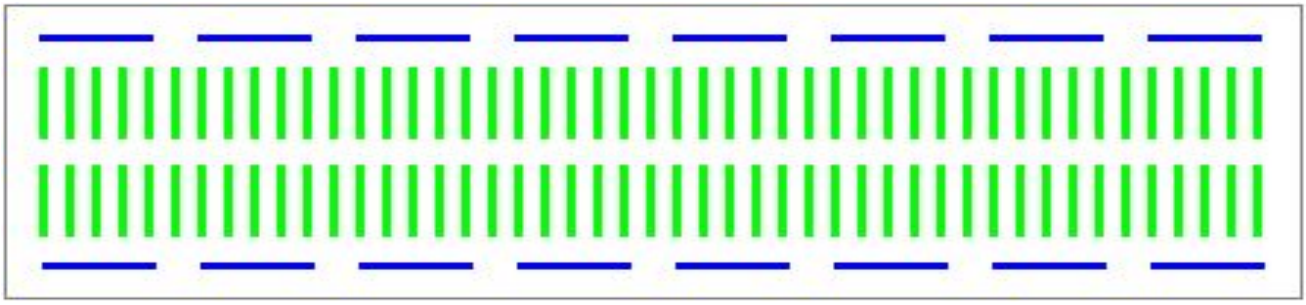
**Part 0 - Breadboard Basics**

https://www.instructables.com/id/Breadboards-for-Beginners/

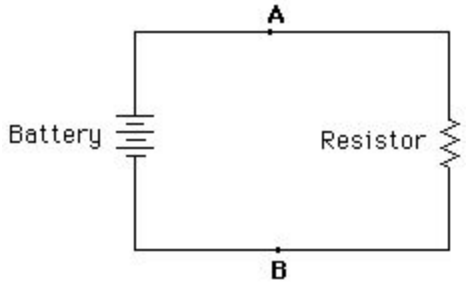


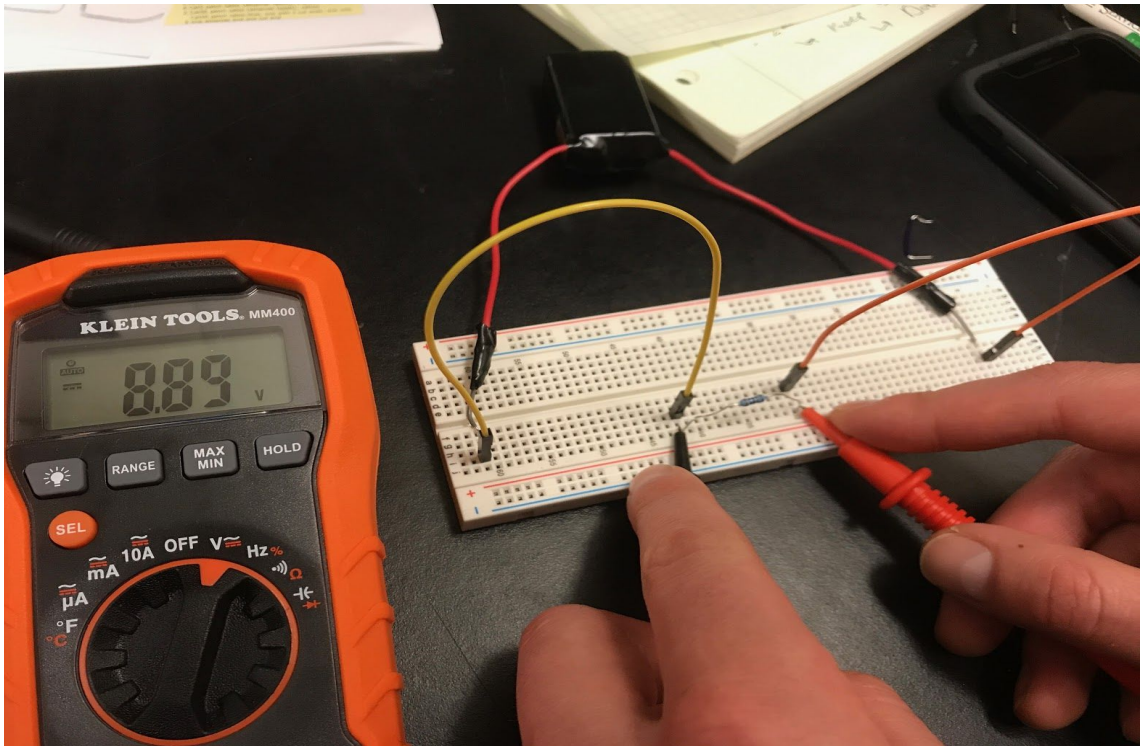
- Basic unconnected breadboard.



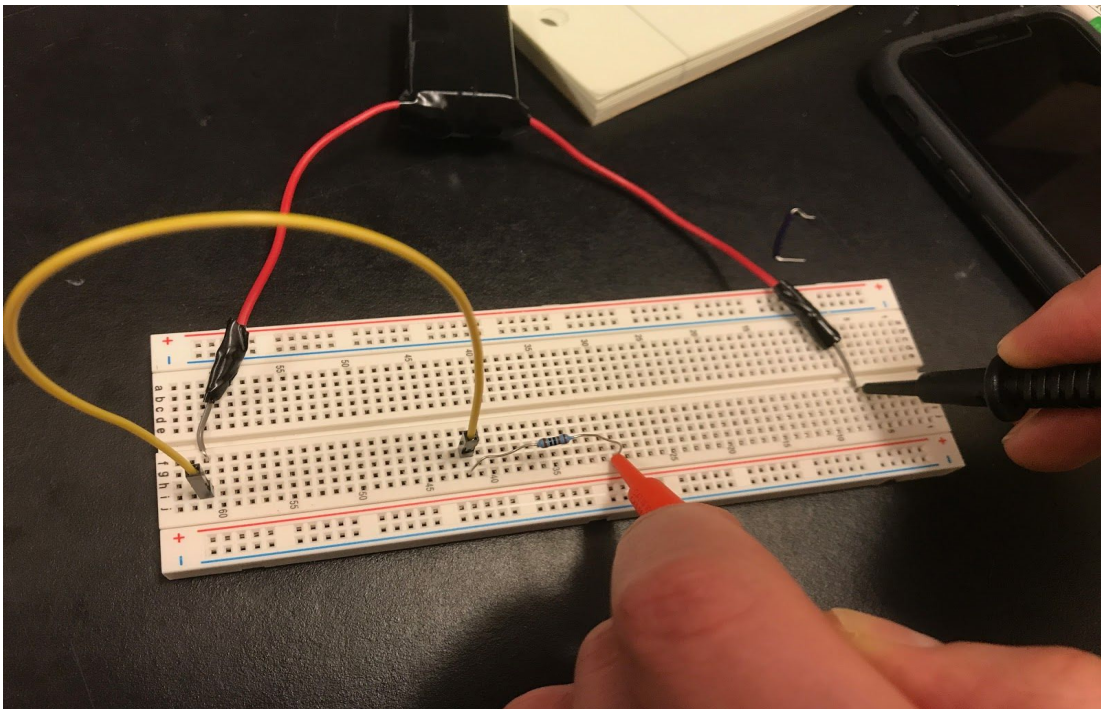
- Schematic of connections in the breadboard. The blue lines are the power rails (ignore them). The green lines are the connections on the main board.
- To get a connection between two components, they must be wired so that they share a common green line.
- You can get connections across green lines by using wires.
- Note that there is a gap running along the centre of the board, separating the two sets of green lines (top and bottom). To connect across that gap, you would also use a wire.

**Part 1 - Simple Circuit**

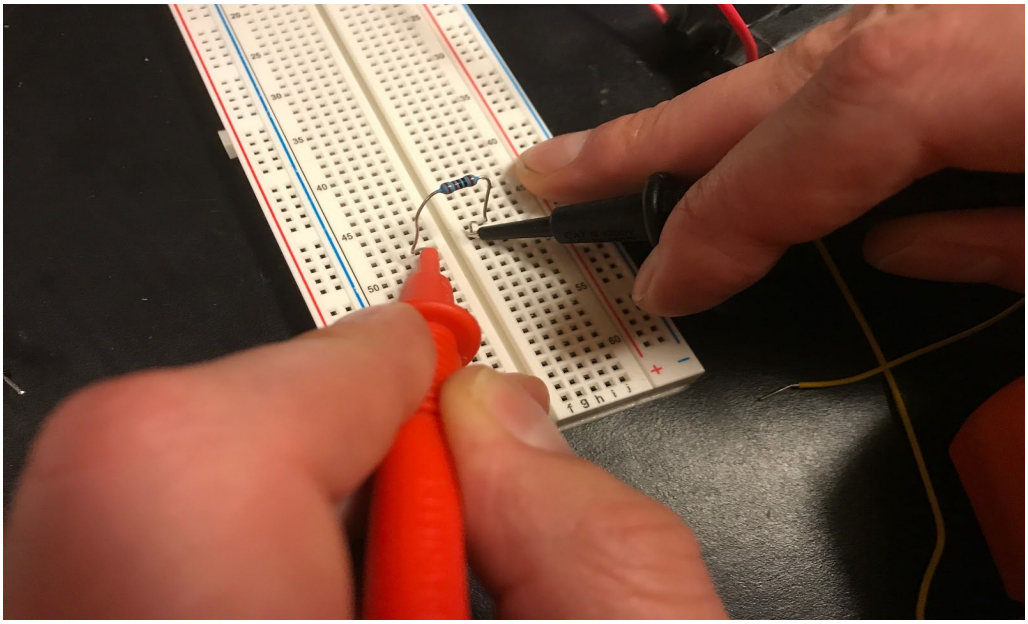



- Measuring the voltage across the resistor. The circuit is completed with the male-to-male wires. Note that the prongs of the multimeter are in contact with both legs of the resistor. The dial should be set to the “V” setting.

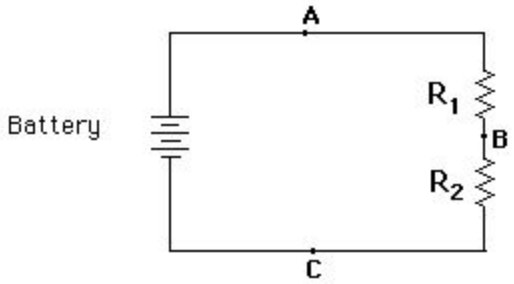


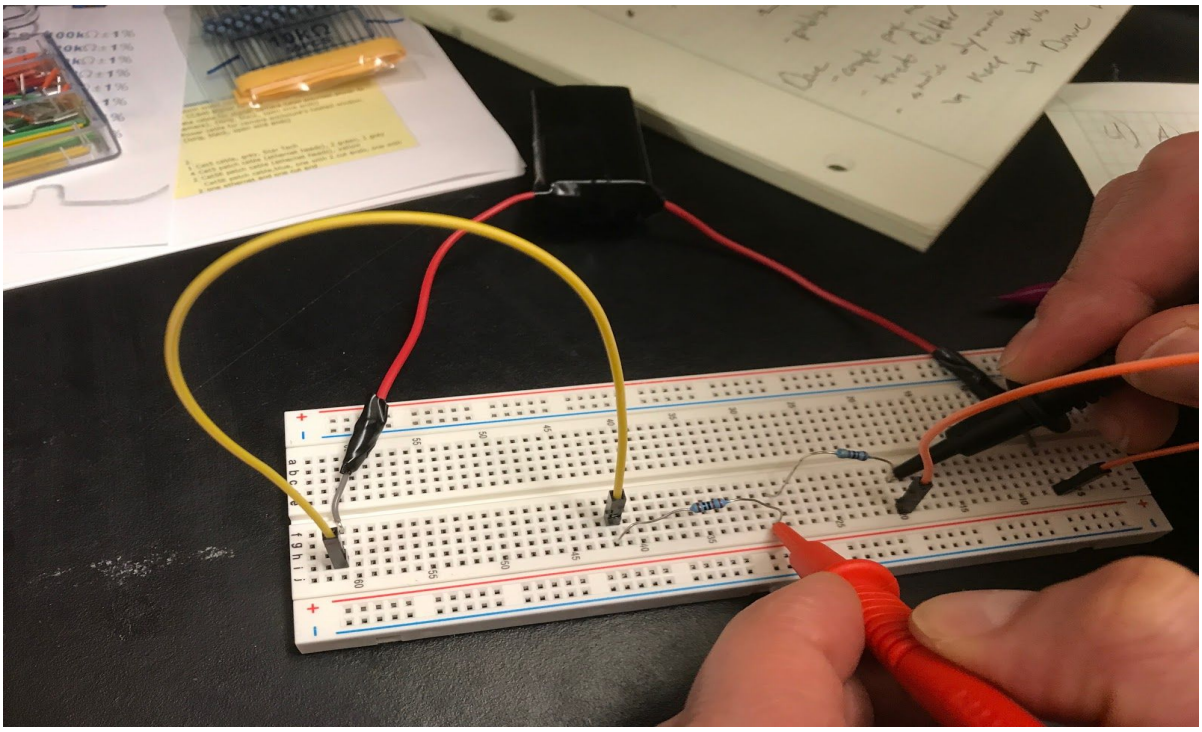
- Measuring the current on one side of the resistor; note that the prongs of the multimeter complete the circuit (i.e. orange male-to-male wire was removed). The dial should be set to the “mA” setting.



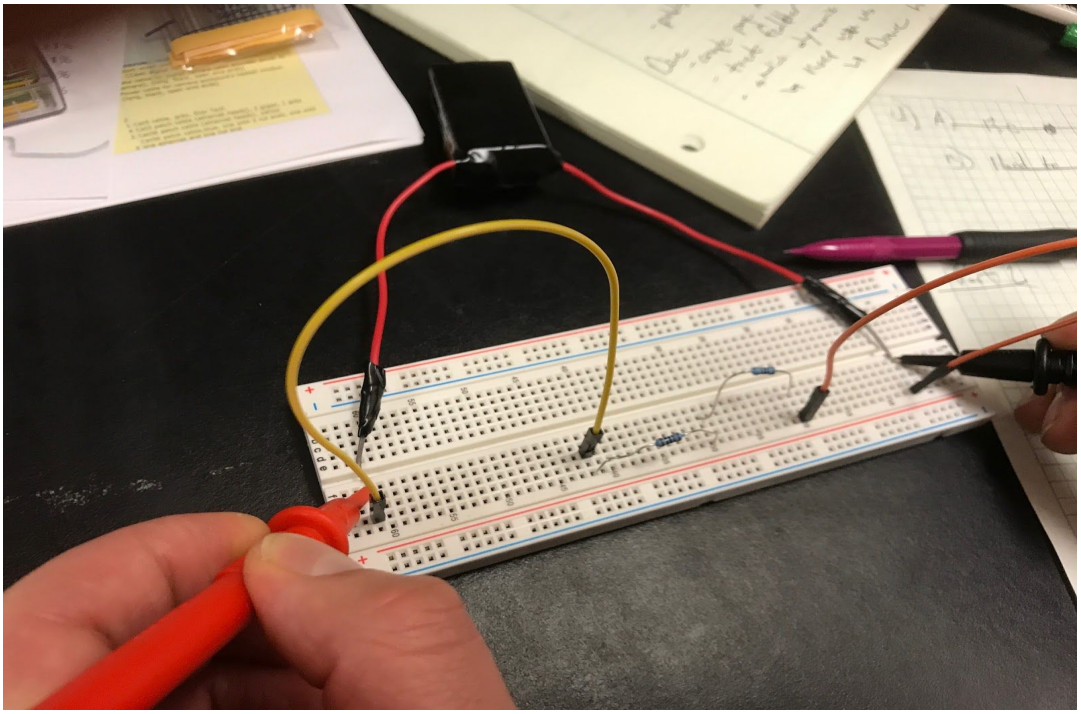
- Measuring the resistance of a resistor. The dial on the multimeter should be set to the Ω setting. Note that the resistor is not part of any circuit (the multimeter itself provides the voltage across the resistor).

**Part 2 - Voltage Divider**



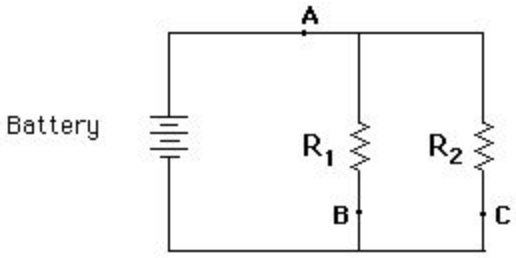
- Measuring the voltage across one resistor. The circuit is completed with the male-to-male wires. Note that the prongs of the multimeter are in contact with both legs of the resistor. The dial should be set to the “V” setting.

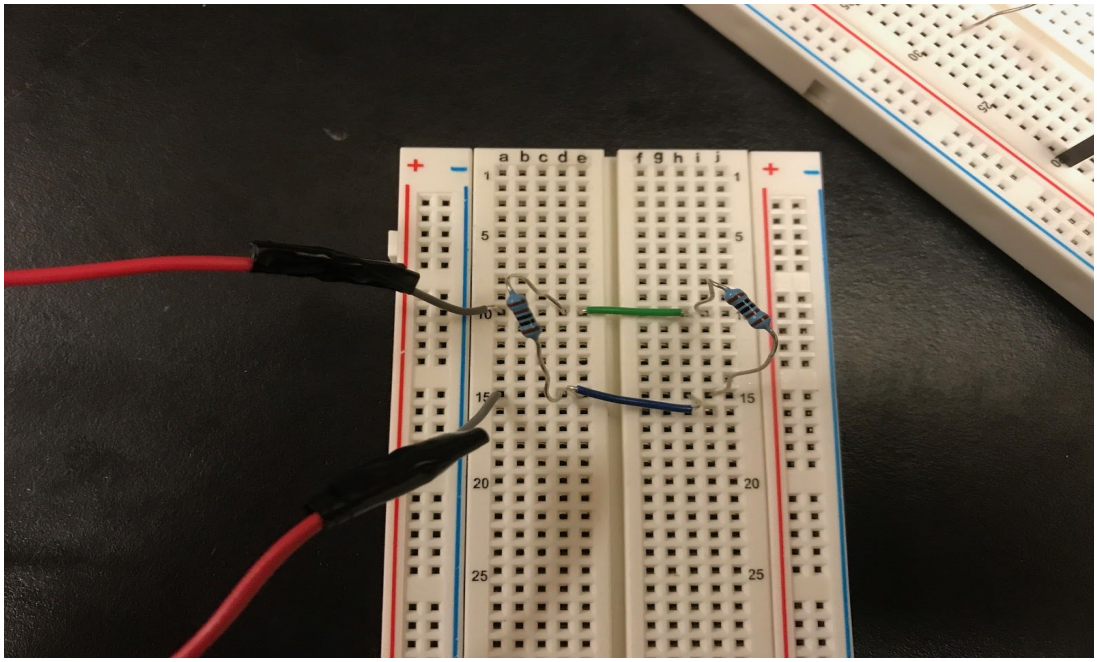


- Measuring the voltage across both resistors. Would you get the same reading if you placed the red prong on the left leg of the left resistor, and the black prong on the right leg of the right resistor? What about the red prong on the right side of the yellow wire, and the black prong on the left side of the orange wire? (If you're not sure, try it out!)

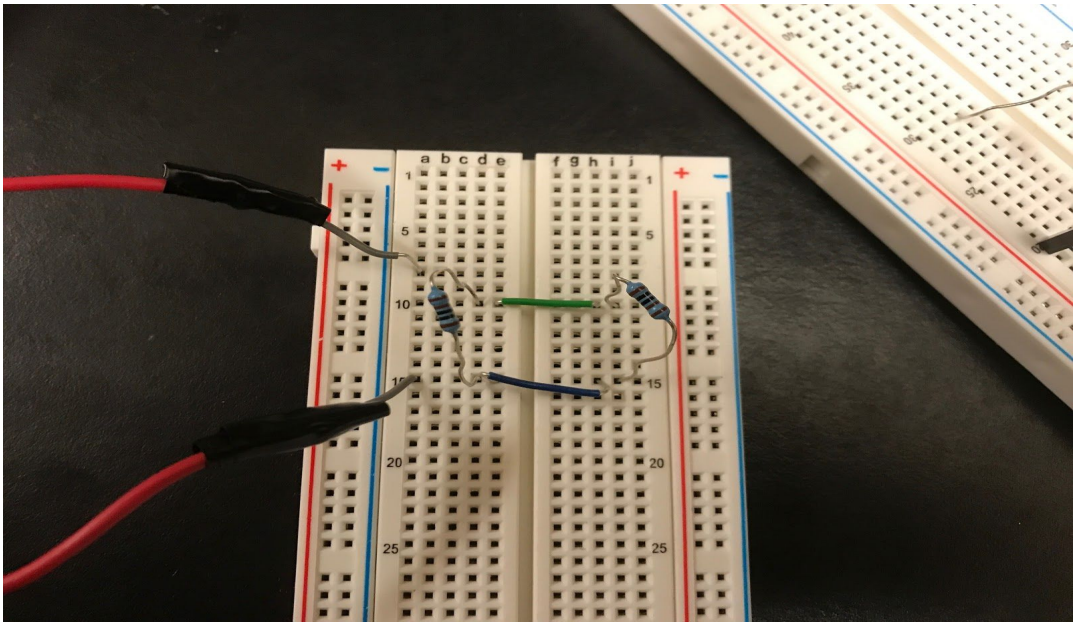
- To measure the current at a particular section, break the circuit at that section and then put the prongs of the multimeter in series to complete the circuit.

**Part 3 - Circuit in Parallel**

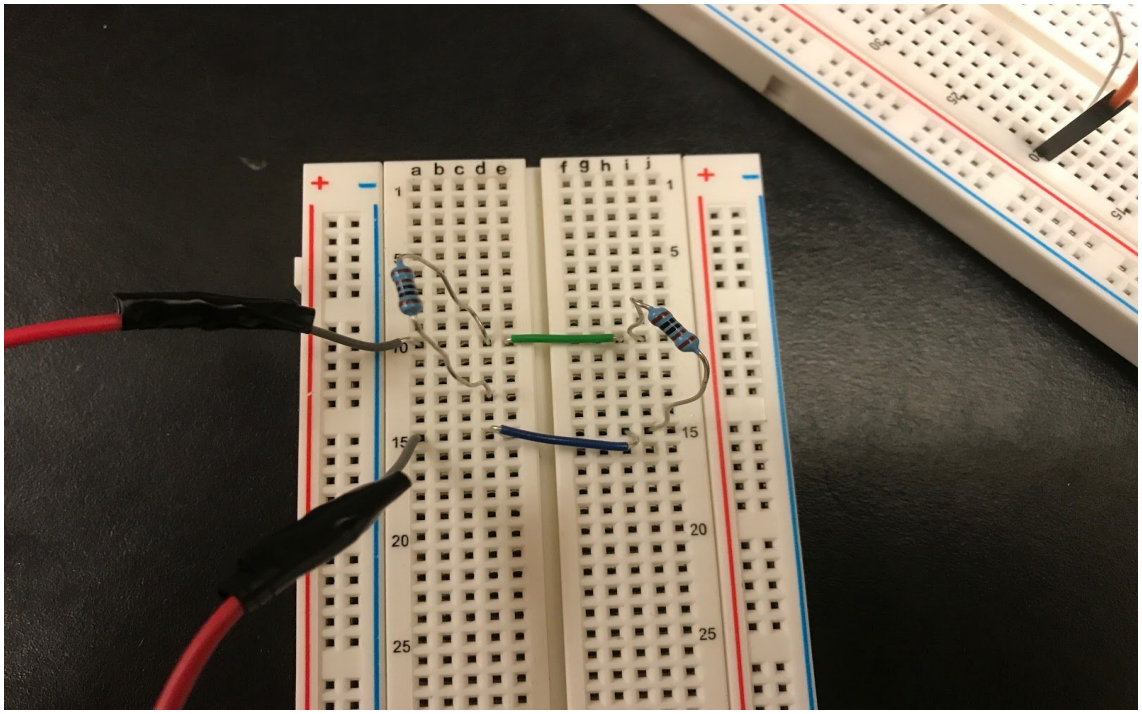




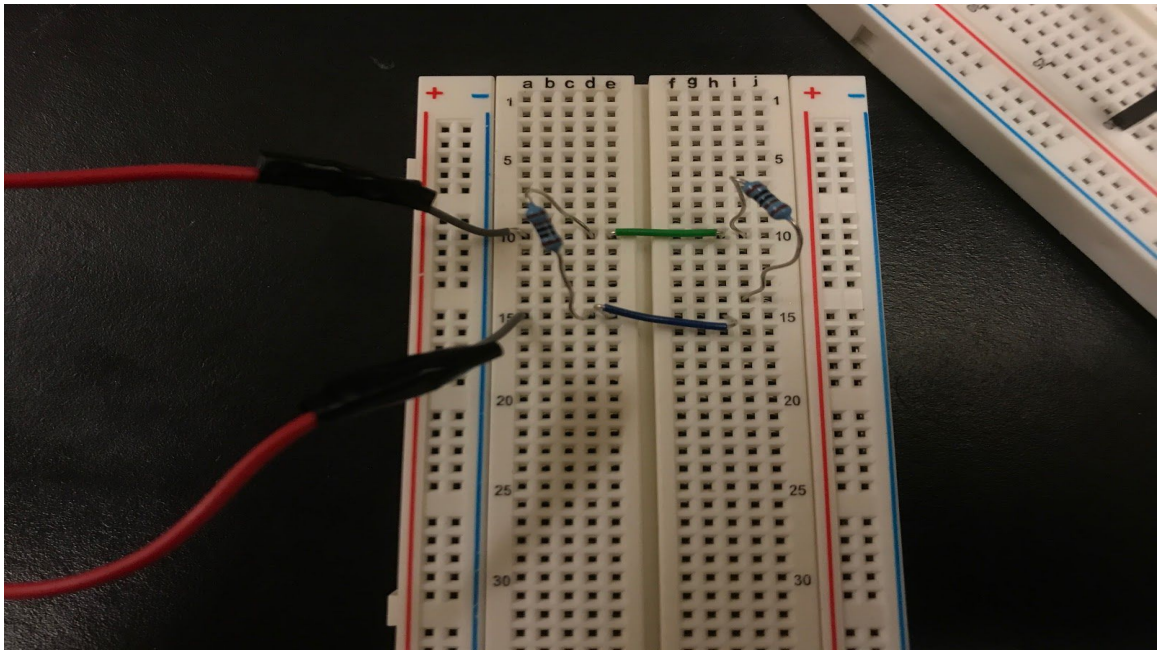
- Completed parallel circuit.



- Note that the top battery wire was moved so that it’s no longer in the same row as the leftmost resistor; the circuit is broken. You can then measure the current at A by connecting the multimeter prongs in series between the battery and the left resistor.

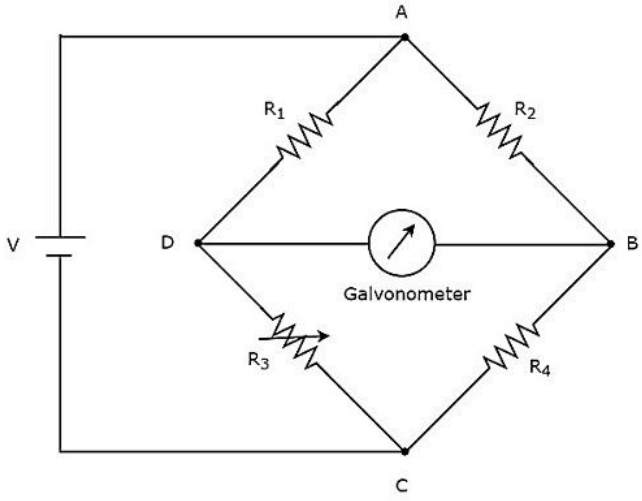


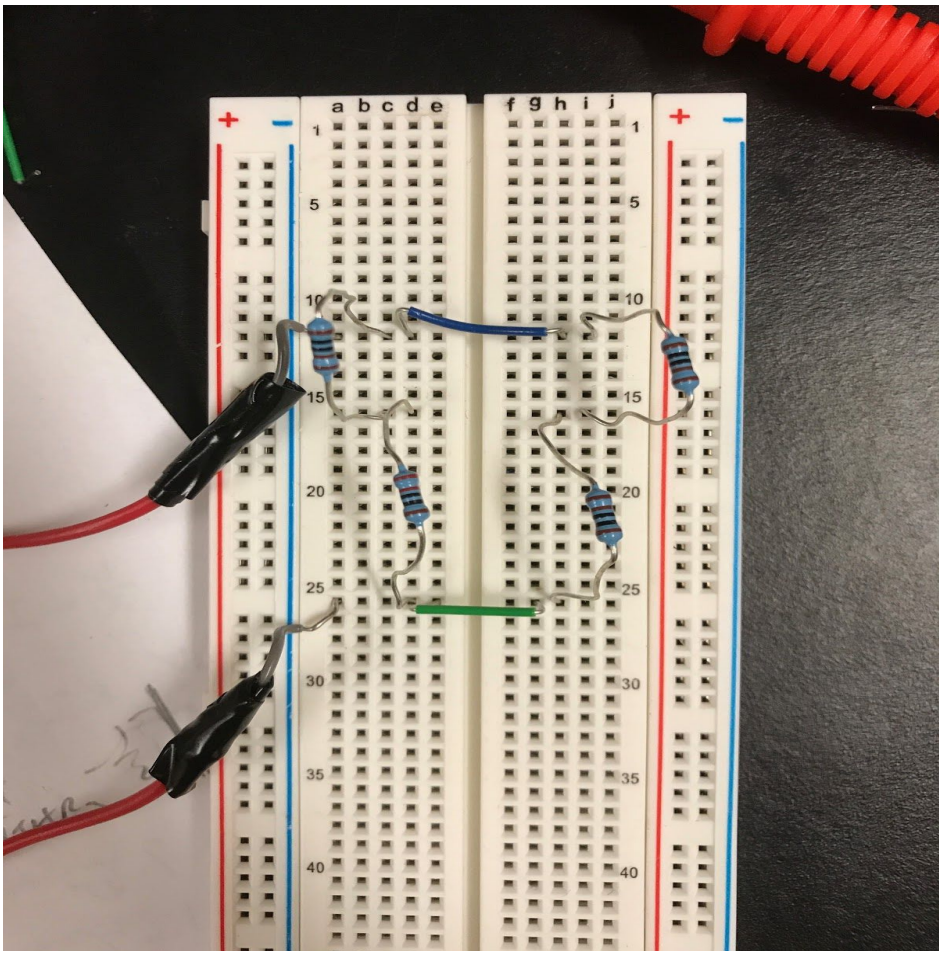

- Note that the bottom leg of the leftmost resistor was moved so that it's no longer in the same row as the blue jumper wire and the other end of the battery. You can measure the current at B by connecting the multimeter between the bottom leg and the blue wire.




- Note that the bottom leg of the rightmost resistor was moved so that it's no longer in the same row as the blue jumper wire. You can measure the current at C by connecting the multimeter between the bottom leg of the rightmost resistor and the blue wire.

**Part 4 - Bridge Circuit**




- Bridge circuit, completed. Note that the bottom left resistor should be the unknown (**Green**) resistor.