Ohm’s Law & the Bread Board

Go to: <http://www.education.rec.ri.cmu.edu/products/electronics/lessons/ohmslaw/ohmslaw.html>

Follow the directions in each section of the activity and Do them with your own breadboard and materials as you go along.

Questions:

11-1 Which columns and rows are connected together on the breadboard?

11-2 Name an example of a voltage source and a load.

12-1 Is the circuit currently closed?

12-2 What color do we use for the positive terminal, and what color for the negative terminal?

What is a Circuit?

What two components of a circuit will we be using?

Draw and label the schematic diagram for your circuit.

13-1 Is there a difference between the calculated voltage and the measured? Explain.

13-2 Why did we set the meter to DCVolts?

13-3 Why was the max DCV set to 20V? What happens if you set it to 2000m? 200? 1000?

13-4 Does polarity matter on the meter when measuring Voltage?

Challenge – measure the Voltage of at least 3 other batteries and record their values here.

What unit is voltage measured in?

15-1 True or False – You must measure current across the resistor to measure current in a circuit.

Use Ohm’s Law to calculate what the current value should be. ΔV = I x R (use measured voltage and R = 470Ω)

15-2 Why is this measured current different from the calculated value?

What direction does current flow in?

14-1 Should the power be off when connecting this circuit? Why?

14-2 If the color bands of the resistor said it was a 470Ω resistor, why is the measured value on the multimeter a different value?

Our resistor has what color band after the yellow, purple and brown one? When you get through tab 13 – state what this color band means and what the range of acceptable resistance is for this resistor.

What happens to the current if the resistance in the circuit is increased?

Get at least three different resistors. Write or draw the color code on them and state the nominal resistance value for each.

What is the current in this lesson unit? Show your work.

Collect Voltage and resistance data on 3 circuits using 3 different resistors using the same battery (but remember the voltage will change as you use it!) Calculate the amperage in each situation Make your own data table on a separate sheet of paper.

Collect Voltage and resistance data on 3 circuits using 3 different batteries and the same resistor. Calculate the amperage in each situation. Make your own data table.