**General Physics eJournal 0**

**Introduction to Electronics Tools**

**Instructions:**

As you watch the tutorial video, answer the questions, follow along with the activities, and insert pictures of your work as requested in the eJournal. Submit your eJournal report by uploading the completed WORD or PDF document to our class Learninghub site. If the Learninghub site is down, email the completed report file directly to a lab TA.

**Preliminaries:**

* Title:
* Name(s):
* Date:
* Time In & Out:

**Part 1 – Intro to Circuits:**

Explain briefly the difference between series and parallel circuits.

**Part 2 – Multimeter:**

If you wanted to measure 9V with your multimeter, what voltage range/setting would you need to turn the mode dial to (assuming manual ranging)?

When you use a multimeter to measure the current flowing through a circuit, should you connect it in series or parallel? Why is this choice important (i.e. what could happen if you do it incorrectly)?

**Part 3 – Breadboard:**

Explain briefly how a breadboard is wired inside. What holes/sections are connected to each other?

**Part 4 – Battery:**

No questions here. Batteries are simple enough!

**Part 5 – Capacitor:**

For a polarized capacitor, how can you tell which side/lead is positive and which is negative?

**Part 6 – Resistor:**

Look through the resistors in your lab kit to find the 470 Ω (yellow, violet, brown, gold) and   
5.1 kΩ (green, brown, red, gold) resistors. Use your multimeter to measure the actual resistance. Record these values in the table below. Include appropriate units.

**Table I: Nominal and Measured Resistor Values**

|  |  |  |
| --- | --- | --- |
|  | **Nominal Resistance** | **Measured Resistance** |
| **Resistor 1** | 470 Ω |  |
| **Resistor 2** | 5.1 kΩ |  |

Why must you remove the resistor from the circuit before measuring its resistance?

Insert a picture of the breadboard with your two-resistor series circuit (voltage divider).

*Insert labeled image of two-resistor breadboard circuit*

**Part 7 – Potentiometer:**

What happens to the resistance across the potentiometer pins as the knob is turned?

**Part 8 – LED:**

How do you determine which leads on the LED are positive and negative?

Why is it always important to put a resistor in series with an LED?

Insert a picture of the breadboard with your basic LED circuit (battery, LED, and resistor in series).

*Insert labeled image of LED breadboard circuit*

**Part 9 – Adjustable LED Circuit:**

**If you are running out of time at this point, just watch the rest of the video but don’t build the final circuit. You will need to build this circuit for several of the later labs but if you are low on time, you can skip building it for now.**

Insert a picture of the breadboard with your adjustable LED circuit (battery, potentiometer, resistor, and LED).

*Insert labeled image of adjustable LED breadboard circuit*