

NAME _____ DATE _____ Lab-1b Punch List

Ohm's Law: what the letters mean

I	V or E	R
Current in Amps or milli-Amps	used interchangeably for Volts	Resistance in Ohms Ω
$I = E / R$	$E = IR$	$R = E / I$

1. Measure the Battery Voltage No Load (LED not connected)... $V_{NL} =$ _____ V.
2. Use the Multi-Meter to measure Resistance..... $R_{mm} =$ _____ Ω .
3. Calculate Resistance using the Color-Code card included in the tool kit, plugging the colors and numbers into the table below...

1 st band	2 nd band	3 rd band	4 th band if applicable	Tolerance precious metal band	TOTAL

NOTE-1: There are two types of resistors:

- Non-precision have 4 bands total, with manufacturing tolerances of 5% and above.
- Precision Resistors have 5 bands, with manufacturing tolerances of 1% and below.

4. Measure V_{NL} , then connect the LED and Resistor to take these measurements:

V_{NL}	V_{FL}	V_R	V_{LED}	I_R (see NOTE-2)
Battery, no load	Battery, full load	Volts across resistor	Volts across LED	Current through resistor and LED

NOTE-2:

- Switch the Multi-meter to 20 Milli-Amps (mA), break the connection between the resistor and the LED. Insert the loose end of the resistor into the bread board to facilitate the probe-poking measurement. (You'll know you've done it right when the LED comes on.)
- If the current is off-scale then switch the red probe to **A**.
- .001 Amps = 1 milli-Amp

Calculate >>	Resistance	V_{R-cal}	$I_R -cal$
Choose formula	Using V_R and I_R	Using R_{mm} and I_R	Using R_{mm} and V_R
Plug numbers into formula >>			
Answer >>			

5. Add a capacitor in Parallel with the Battery. Add "+" and "-" symbols to the schematic to indicate polarity.
6. How does the capacitor change the way the circuit works?

Without Capacitor, _____

With Capacitor, _____