

## Hands-On Lab - Learning Kit Module 1 - RESULTS

Your Name: \_\_\_\_\_ Date \_\_\_\_\_

Turn *this* sheet in after reviewing your finished module with the Instructor  
Keep ALL Instruction Sheets

### MEASURING THE RESISTANCE OF A RESISTOR

Measure the resistance of a resistor marked 1K $\Omega$  (1000 ohms, *brown black red gold*).

1a. What value of resistance do you measure? \_\_\_\_\_ Ohms

Measure the resistance of this resistor after inserting into the Breadboard.

1b. Repeat your resistance measurement (J1 to J6) \_\_\_\_\_ Ohms

### MEASURING THE RESISTANCE OF MULTIPLE RESISTOR CIRCUITS

Measure the resistance of two series 1K $\Omega$  resistors on the breadboard.

1c.) Resistance of two 1K $\Omega$  resistors in series (J1 to H11) \_\_\_\_\_ Ohms

Measure the resistance of two parallel 1K $\Omega$  resistors on the breadboard.

1d.) Resistance of two 1K $\Omega$  resistors in parallel (J1 to J6) \_\_\_\_\_ Ohms

Measure the resistance of four series 1K $\Omega$  resistors on the breadboard.

1e.) Resistance of four 1K $\Omega$  resistors in series (J1 to H21) \_\_\_\_\_ Ohms

**DO NOT REMOVE THE RESISTORS! – Instructor Check Point 1A**

### MEASURING THE VOLTAGE OF THE AC ADAPTER

Plug your “9V” cube adapter into the Power Module on the Breadboard and then into 120VAC. Measure the ‘Unloaded’ voltage between the Red and Blue ‘bus’ tie points using the Multimeter’s 20 V range (upper left) – should be very close to 5 volts.

1f.) 9V cube adapter *unloaded voltage* (5V expected without a load) \_\_\_\_\_ volts

### VOLTAGE DIVIDER PROOF

Measure the voltage drop across each of the 1K $\Omega$  resistors in Figure 1.6:

1g1.) R<sub>1</sub>: J1 to J6: \_\_\_\_\_ volts      1g3.) R<sub>3</sub>: J11 to J16: \_\_\_\_\_ volts

1g2.) R<sub>2</sub>: H6 to H11: \_\_\_\_\_ volts      1g4.) R<sub>4</sub>: H16 to H21: \_\_\_\_\_ volts

### MEASURING RESISTOR VOLTAGE LOADING EFFECTS

Measure the *loaded output voltage* keeping the RED lead at F1 and connecting the BLACK wire to F21, I16, I11 and I6:

1h1.) A “four series 1K $\Omega$  resistor = 4000 $\Omega$  load”, BLACK at F21: \_\_\_\_\_ volts

1h2.) A “three series 1K $\Omega$  resistor = 3000 $\Omega$  load”, BLACK at I16: \_\_\_\_\_ volts

1h3.) A “two series 1K $\Omega$  resistor = 2000 $\Omega$  load”, BLACK at I11: \_\_\_\_\_ volts

1h4.) A “1K $\Omega$  resistor = 1000 $\Omega$  load”, BLACK at I6: \_\_\_\_\_ volts

1h5.) Does adding voltages 1g1 though 1g4 equal the voltage of 1h1? (Yes \_\_ No \_\_?)

**DO NOT REMOVE THE RESISTORS! – Instructor Check Point 1B**