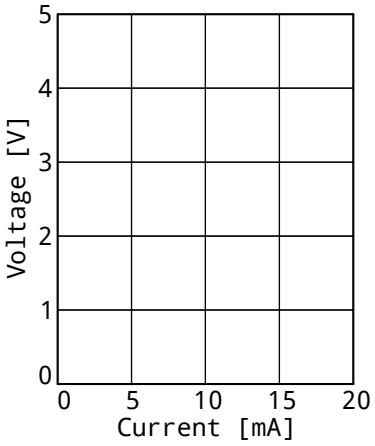
Worksheet: Resistance Practice

1. Complete the table by computing the current at the corresponding voltages for the given resistance values. Then plot each of the points on the graph. Finally, for each of the resistor values, draw the line that represents the function of voltage versus current.

		Voltage [V]			
		1V	2V	3V	4V
Resistance [Ω]	200Ω	5mA			
	300Ω	3.3mA			



The astute student may have realized that Ohms law shows that for a resistor, which has a constant resistance, the graph of voltage versus current is a straight line with the slope equal to the resistance, R.

$y = mx + b$ $V = R \cdot I$

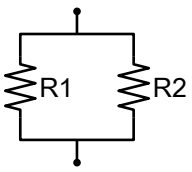
2. Measure each of the following to three significant digits, then perform the calculation.

a) Measure the resistance of your skin by squeezing the tip of one multimeter lead in one hand and the other multimeter lead in the other hand. Record your measurement in the box to the right.

b) Measure the resistance of a 1MΩ resistor by using your finger to squeezing each lead of the resistor against a different multimeter lead.

c) Measure the resistance of the same 1MΩ resistor by placing it into your solderless breadboard and measuring it without any contact with your skin.

d) Using the value measure in (a) as R1 and the value measured in (c) as R2, calculate the equivalent resistance of these to resistors in parallel. Compare this value to the value you measured in (b).



e) Perform the same calculation as you did in (d), except with R1 = 10kΩ

Note: Holding the resistor while measuring resistance will affect lower values of resistance less than it will affect higher values of resistance.

3. Write *Kirchhoff's Current Law* on the line below.

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4. Write *Kirchhoff's Voltage Law* on the line below.

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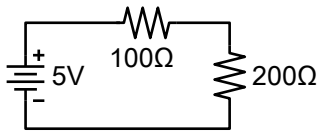
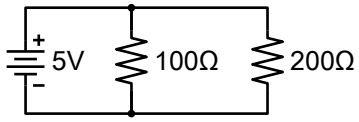
Worksheet: Resistance Practice

5. For each circuit, calculate the current that flows from the power supply. Show all steps in each calculation, including the formulas used. Express three significant digits and use standard unit prefixes so the answer magnitude will be in the range [1, 1000).

a)



b)



a)