

# Electronics Equipment Familiarization I

Name \_\_\_\_\_ ID \_\_\_\_\_

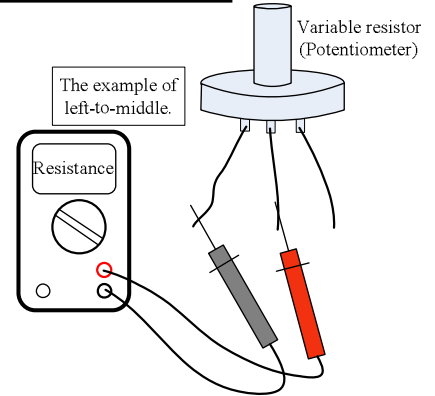
Partners \_\_\_\_\_

Date \_\_\_\_\_ Section \_\_\_\_\_

**Do not set the multimeter to “Current Mode” unless you are sure that you will not exceed the maximum current for the fuse.**

- Variable Resistor (Potentiometer):** Record the resistance values measured between the various connector strips for the control positions indicated. (For each trial, please check the units on the multimeter,  $k\Omega$  or  $\Omega$ , carefully.)

**The position of the knob may not be exact as indicated below. Try to divide into 8 roughly by following the indicated angles.**



CCW  $\equiv$  Counter Clockwise; and CW  $\equiv$  Clockwise

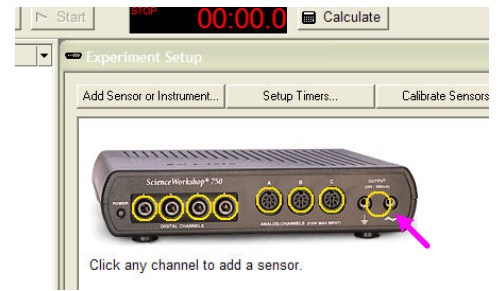
	left-to-middle	middle-to-right	left-to-right
full CCW	_____	_____	_____
45 degree	_____	_____	_____
90 degree	_____	_____	_____
135 degree	_____	_____	_____
180 degree	_____	_____	_____
225 degree	_____	_____	_____
270 degree	_____	_____	_____
315 degree	_____	_____	_____
full CW	_____	_____	_____

◇ **Question 1:**

For the top-to-middle and middle-to-bottom positions, the resistance increases toward the direction of the arrow. However, for top-to-bottom, it does not change. Do the results make sense?

## 2. DC Voltages:

Turn on a DC power supply or start up Datastudio. Click the place where the arrow indicates. Make sure which wire should be connected to the ground terminal.



- **With a multimeter**

Indicated in the power supply	Measured by multimeter
1 volt	
3 volt	
5 volt	

- **With an oscilloscope**

Oscilloscope instructions:

- ① Select either CH1 or CH2 for the connection of the cable.
- ② Clip the wires by the probes; and the black probe has to be hooked to the ground.
- ③ Adjust the VOLT/DIV knob to display the measured voltage.

Which axis is for time or voltage?

What is the knob, VOLT/DIV, about?

What is the knob, TIME/DIV, about?

After applying a DC voltage

Describe what you obtain in the display of oscilloscope for the different voltages.

## 3. AC or Sinusoidal Voltages:

Turn on a function generator or start up Datastudio, and select **sine** wave. **The frequency should be properly high enough (more than 50 Hz).**

- **With a multimeter**

Indicated in the power supply	Measured by multimeter
1 volt	
3 volt	
5 volt	

- **With an oscilloscope:** The black terminal must be ground.

Peak-to-peak voltages

Indicated in the power supply	Measured peak-to-peak vol. ? DIV × ? V/DIV = ?	The peak-to-peak ÷ 2
1 volt		
3 volt		
5 volt		

◇ **Question 2:**

Is the last column equal to the first one?

Root mean square voltages

Indicated in the power supply	(The above peak-to-peak ÷ 2) ÷ $\sqrt{2}$
1 volt	
3 volt	
5 volt	

◇ **Question 3:**

Are the calculated results above equal to ones you obtained by multimeter?

Periods and frequencies

Indicated in the power supply	Measured periods. ? DIV × ? t/DIV = ?	Frequencies calculated from the measured periods (1/T)
300 Hz		
1000 Hz		
2000 Hz		

◇ **Question 4:**

Are the results in the third column similar to the ones in the first column?

**Try other voltage functions, such as square wave, triangular wave, etc. Also sketch them.**

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