# OSCILLOSCOPE WORKSHEET

1. **Power** On! Did you plug in both the signal generator and oscilloscope first? _____
   Don't forget the power buttons or switches.

2. **Intensity** - Did you need to turn the intensity knob clockwise? _____

3. Find the Channel #1 controls and set the switch to the middle or ground (**GND**) position. Can you see the ground line? _____

4. Use the **vertical position knob** to find and center the ground line. Is the ground line all the way across the screen or to one side? _____

5. Use the **horizontal position knob** to make the ground line run all the way across the screen. Is the line sharp and thin? _____

6. Lower the intensity if necessary and use the **focus** knob to make the ground line sharp and thin. Are the subdivision marks along the x- and y-axes showing clearly? _____

7. Use the **illumination knob** to display the viewing screen's markings. Is the oscilloscope probe connected to the lead from the signal generator? _____

8. Make sure the **black alligator clips** are attached to each other. Did you make sure you did <u>not</u> put "plastic" in the mouth of the red alligator? _____

9. Now go to the Channel #1 controls and raise the switch from GND to **AC** (alternating current). Can you see a nice sine wave yet? _____

10. Find the Channel #1 controls and turn the **volt/division knob** to scale the voltage to fit the screen. Does the **amplitude or output knob** of the **signal generator** need to be turned up? _____

11. Find the **time/division knob** and turn this to spread the sine wave across the viewing screen. Unclick the two or three VAR knobs (at least two are yellow) by turning them to the left. Then lock in place by turning them clockwise to the right. (Do not mess with these knobs again except to check that they are locked in.)

12. What is the **frequency** of the signal according to the read-out and/or dial setting of the signal generator? Call this $f_1$ = _____**Hz**

13. $V_{PP}$ or **peak-to-peak voltage**
(Careful! A subdivision dash mark shows .2 or 1/5 of a box or division.)
(a) How many boxes or divisions high (peak-to-trough) is the signal? _____ div
(b) What is the setting for the volt/divsion knob? _____volt/div?
(c) Now multiply (a) and (b) to get $V_{PP}$ = _____ V

14. T or the **time period**
(Careful! The time/division knob is in **ms** (milli- or $10^{-3}$ sec) and $\mu$**s** (micro- or $10^{-6}$ sec.)
(a) How many divisions wide (peak-to-peak) is one complete cycle? _____ div
(b) What is the setting for the time/division knob? _____sec/div?
(c) Now multiply (a) and (b) to get T = _____ sec
(d) Since T = 1/f ,our oscilloscope reading tells us that $f_2$ = _____Hz

15. Assuming the signal generator's indicated frequency ($f_1$) is correct, find the **% error** of $f_2$ with $f_1$.

$$\frac{|f_2 - f_1|}{f_1} \cdot 100 = \text{_____}\% \text{ error}$$