Name: _____   Chem 10, Section: _____

Lab Partner: _____   Experiment Date: _____

Lab Report: Introducing Measurements in the Laboratory

Part A: Measuring the Dimensions of Regular Geometric Shapes

Experimental Data

Shape	Dimensions	Measurement	# Significant Figures
Rectangle	Length		
	Width		
Circle	Diameter		

Data Analysis

1) Perform the conversions indicated below. Show your work, and report your answers in scientific notation.

a. Convert the measured rectangle length to pm.

b. Convert the measured circle diameter to km.

2) Calculate the areas of your rectangle and circle in cm^2. Show your work, and report your answers to the correct number of significant figures.

a. Area of rectangle

b. Area of circle

3) Convert the area of your circle to μm^2. Show your work, and report your answer in scientific notation.

Experimental Data

Measuring Device	Volume Measurement	# Significant Figures
100-mL Beaker		
100-mL Graduated Cylinder		

Data Analysis

1) Compare your volume measurements in the table above. Which instrument, the beaker or the graduated cylinder, provides the more precise measurement? Explain.

2) Convert the volume of water obtained using the graduated cylinder to hm^3. Show your work, and report your answer in scientific notation.

Part C: Measuring the Mass of Solids

Experimental Data

Table 1 – Mass of an Erlenmeyer Flask

Measuring Device	Mass Measurement	# Significant Figures
Triple-Beam Balance		
Electronic Balance		

Table 2 – Weighing by Difference

	Mass Measurement	# Significant Figures
Mass of Empty Beaker		
Mass of Beaker + Sugar		

Data Analysis

1) Compare your mass measurements obtained for the Erlenmeyer flask in Table 1. Which balance, triple-beam or electronic, provides the more precise measurement? Explain.

2) Consider the data you obtained in Table 2.

a. Calculate the mass of sugar weighed out. Show your work.

b. Circle one: When performing the above calculation, <u>significant figures / decimal places</u> are the primary consideration.

3) Perform the conversions indicated below. Show your work, and report your answers in scientific notation.

a. Convert the mass of the sugar weighed out to fg.

b. Convert the mass of the sugar weighed out to Gg.

Part D: Measuring the Melting Point of an Unknown Solid

Experimental Data

Unknown Compound ID Code: _____

Measured by	Melting Point	# Significant Figures
Group 1: You and your partner		
Group 2		
Group 3		
Group 4		
Average Value		

Data Analysis

1) Using the average value above, identify your unknown compound (see Procedure, Part D, #7).

   Name of Compound: _____   True Melting Point: _____

2) Which of the measured melting points recorded in the table was the most accurate? Explain.

3) Calculate the percent error between the experimental melting point that *you and your partner* measured and the substance's true melting point. Report your answer to the correct number of significant figures.

4) Perform the temperature conversions indicated below. Show your work, and report your answers to the correct number of significant figures.

a. Convert the <u>true</u> melting point of your compound to K.

b. Convert the <u>true</u> melting point of your compound to °F.