Experiment 1
DATA SHEET

Name: _____

Section: _____

ALWAYS INCLUDE UNITS WITH EVERY VALUE!

A. Measurement of Length

Object	Estimated Diameter	Diameter by Ruler	Diameter by Caliper (TRUE)	% Error of Estimate	% Error of Ruler Measurement
disc 1					
disc 2					
disc 3					
sphere 1					
sphere 2					
sphere 3					

B. Measurement of Mass

Object	Estimated Mass	Mass by Spring Scale	Mass by Triple Beam Balance	Mass by Electronic Balance (True)	% Error of Estimate	% Error of Spring Scale Measurement	% Error of Triple Beam
unknown 1							
unknown 2							
unknown 3							

C. Measurement of Time

Estimate of Time	Stopwatch Time (TRUE)	Time Measured On Clock	Stopwatch Time (True)	% Error of Estimated Time	% Error of Watched Time	Reflex Time
30 sec		30 sec				

Experiment 1
DATA SHEET

D. Calculation of Area and Volume

Object	Calculated Area
disc 1	
disc 2	
disc 3	

Object	Calculated Volume
sphere 1	
sphere 2	
sphere 3	

QUESTIONS

1. What was the purpose of this experiment?

2. What determines the accuracy with which a measurement can be made?

3. What is the standard unit for length, mass and time in the MKS metric system?

4. Why are units important when reporting the result of a measurement?

5. An object is estimated to be 2.5 cm long. When measured with a Vernier caliper its true length is determined to be 2.47 cm. What is the percent error of the estimated value?

6. Complete the following calculations using the explanation of significant figures given below.

- When **multiplying and dividing** several quantities, the number of significant figures in the final answer is the same as the number of significant figures in the quantity with the least amount of significant figures that is being multiplied.
- When **adding and subtracting** several quantities, the number of decimal places in the result should equal the smallest number of decimal places of any term in the sum.

Given: x = 12.24 y = 5400 z = 11.572

Determine: x * y * z = _____

x + z = _____

7. Consider the results of your reflex time measurement. What accuracy, in fractions of seconds, can you claim for the stop watch?