Significant Figures

Significant Figures: Digits in a measurement that can be determined accurately plus one that is estimated and is therefore uncertain.
-All non-zero digits are always significant
446= sig figs
-Zeros:
#1-Zeros at the beginning of numbers(are never significant)
=0.678-3 sig figs
#2-Zeros b/n non-zero digits are always significant
=706-3 sig figs
#3- Zeros at the end of numbers are only considered sig figs if there is a decimal point in the number or at the end of the number
=760-2 sig figs
=760.0-4 sig figs
Exact Numbers: Numbers that are counted not obtained using measuring devices have infinite sig figs.(Most conversion factors are exact numbers)
Scientific Notation: For values written in Scientific notation, the digits in the coefficient (numbers without an exponent).
=1.500*10^4-4 sig figs
Scientific notation in Conversion rules
#1=Move the decimal point to the position so one non-zero digit is to the left of the decimal point
#2=If the decimal point is moved to the right, the exponent is positive
#3=If the decimal point is moved to the left, the exponent is negative

Rounding Adding,Subtracting,Dividing,Multiplying

Rounding using Sig Figs
-5 or greater will round up to the next digit
-4 or less will be rounded down
=1234.5 to 4 sig figs-1235
Calculating using Sig Figs
Multiplication/Division
#1= Answer should have the same number of significant as the measurement with the fewest sig figs
=1.35*0.04-0.0536-0.05 (Least number has 1 sig figs so you round the answer to 1 sig fig)
Addition/Subtraction
#1=The answer should have the same number of decimal places as the least precise measurement (Look at the place value of the least precise)
=1.34+2.3=3.64-3.6 (10^{th} is the least so answer should only go up to the 10^{th}

Density and Percent Error

Density
Mass/Volume= Density
Intensive physical property: Doesn't change with increase in amount.
Volume
Liquids=ml
Solids=cm^3
Percent error
Quantitative comparison of the experimental value to the correct or accepted value. % error is negative when experimental is smaller than actual.
% Error=(Experiment-Actual Value/Actual Value)*100