WORKSHOP 1A NAME:_____

SIGNIFICANT FIGURES, SCIENTIFIC NOTATION, BASIC MATH

1. How many significant figures are in each of the following quantities?
   a. 0.00062 kg _____ b. 0.720 in _____ c. 4.15070×10^3 lb _____

   d. 0.3012 m^3 _____ e. 1×10^{-5} km_____ f. 3897.9 ft _____

2. Complete the following table

SCIENTIFIC NOTATION	DECIMAL NOTATION
4.32×10^7	
	0.00097
6.063×10^{-5}	
	1120

3. Round off the following quantites to **TWO** significant figures **AND** write them in scientific notation.
   a. 32,175,000 nm_____ b. 0.00000078654 kg _____

   c. 0.04721 m _____ d. 8751 cm^3 _____

4. Round off the following quantites to **THREE** significant figures **AND** write them in scientific notation
   a. 0.0277654 mg _____ b. 1,267,598 g _____

   c. 89,975 L _____ d. 0.00098122 km _____

5. Round off the following quantites to **FOUR** significant figures **AND** write them in scientific notation
   a. 2,669,987 mL _____ b. 0.00564432 g _____

   c. 18779 cm _____ d. 0.000000999877 kg _____

6. Math. Express each answer in the with the correct significant digits, in scientific notation and the proper units.
   a. An empty crucible has a mass of 25.70 g. After some sodium bicarbonate is added, the mass is 28.855 g. What is the mass of sodium bicarbonate in the crucible? _____

   b. A solution is prepared by adding 1.77 grams of sodium nitrate, 2.4 grams of potassium chloride and 0.973 grams of ammonium nitrite to 255 grams of water. Calculate the total mass of the solution? _____

c. According to the Law of Conservation of Mass and using the chemical reaction below, if 23.1 grams of ammonium nitrate, NH_4NO_3, reacts to form 12.7 grams of dinitrogen monoxide, N_2O, how many grams of water must also be formed?
$NH_4NO_3 \rightarrow N_2O + H_2O$ _____

d. 8.36×10^6 cm + 1.320×10^7 cm = _____

e. 9.370×10^{-5} kg – 2.25×10^{-6} kg = _____

f. $(7.844 \times 10^5 \text{ mm})(1.7639 \times 10^3 \text{ mm})(5.8311 \times 10^{-7} \text{mm})$ = _____

g. $(8.84 \times 10^2 \text{ in})(6.763 \times 10^4 \text{ in}^2)$ = _____

h. $\dfrac{259.22 \text{ g} - 23.9 \text{ g}}{(3.76 \times 10^5 \text{ cm})(8.312 \times 10^4 \text{ cm}^2)}$ = _____

i. $\left(\dfrac{(2.521 \text{ ft})(13.51 \text{ ft})}{2.78 \text{ s}^2}\right) + 0.31 \text{ ft/s}^2$ = _____

j. $\dfrac{5.16 \times 10^{-5} \text{ s}}{(7.532 \times 10^5 \text{ s})(7.5883 \times 10^3 \text{ s})}$ = _____

k. $\dfrac{2.456 \times 10^3 \text{ lbs} - 8.34 \times 10^2 \text{ lbs}}{1.22 \times 10^4 \text{ in}^2}$ = _____