Unit 6 Test Review

1 mol = (P.T)g 🡨 molar mass

1 mol = 22.4 L

1 mol = 6.02 x 1023 Particles

 (atoms, molecule, formula unit)

$\% composition= \frac{part}{whole} x 100$

$n=\frac{molecular formula mass}{empirical formula mass} or n= \frac{MFM}{EFM}$ Mole

1. Determine the molecular mass for disulfur tetroxide.
2. Determine the formula mass for nickel (III) chloride.
3. What is the percent composition of carbon tetrachloride, CCl4?
4. How many grams of sulfur are in 5.82 g of Iron (III) sulfate?
5. Calculate the mass of CO2 gas if there are 12.2 L present.
6. How many molecules of H2O are present in 4.77 g of H2O? (Molar mass = 18.02 g/mol)
7. What is the empirical formula of laughing gas, which is 63.6 % N and 36.4 % O?
8. A compound was found to contain 49.98 g carbon and 10.47 g hydrogen. If the molecular mass of the compound is 58.00 g/mol, what is the molecular formula?
9. Answer the following for **iron (II) phosphate**:
	1. How would you write the formula for the above:
	2. How many total atoms are in one formula unit for the compound above?
	3. How many total ions are in one formula unit for the compound above?
	4. What is the formula mass for the compound above?
10. Answer both A and B:
	1. Calculate the percent composition of glucose (C6H12O6)
	2. If there are 125 grams of glucose in a sample, how many grams of oxygen are there?
11. Convert the following using dimensional analysis:

 5.86 grams CO2 to molecule of CO2

Name the three types of particles and tell when they are used.

1. Convert the following using dimensional analysis:

64.2 liters He to atoms of He

What temperature and pressure conditions are required to use the molar volume conversion? \_\_\_\_\_\_\_\_\_\_\_\_\_

What state of matter is required to use the molar volume conversion? \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Convert the following using dimensional analysis:

84.5 liters Cl2 to grams Cl2

1. Which of the following are empirical formulas and which are molecular formulas?

C14H18N2O5 C6H14 C6H12O6 CH2O H2O2

1. . Ascorbic acid (vitamin C) contains 40.92% carbon, 4.58% hydrogen, and 54.50% oxygen by mass. What is the empirical formula of ascorbic acid?
2. A hydrocarbon has the empirical formula CH2 and a molar mass of 84 g/mol. Determine the molecular formula.