

Name _____

Calculations Ditto

A. What is the formula weight of each of the following?

- 1.) Ne _____ 2.) Lithium _____
- H_2O 3.) Water _____ 4.) Hydrogen peroxide _____ H_2O_2
- 5.) F_2 _____ 6.) Chlorine gas _____ Cl_2
- NH_3 7.) Ammonia _____ 8.) $Fe(OH)_2$ _____
- 9.) $(NH_4)_3PO_4$ _____ 10.) $MgSO_4 \cdot 7 H_2O$ _____

B. How many moles are in each of the following?

- 1.) 16 grams of O_2 _____ 2.) 100 grams of Ne _____
- 3.) 54 grams of water _____ 4.) 20 grams of $CaCO_3$ _____
- 5.) 3.0 grams of Al_2S_3 _____

C. How many grams are in each of the following?

- 1.) 4.2 moles of H_2 _____ 2.) 10. moles of Ar _____
- 3.) 0.50 moles of NaCl _____ 4.) 0.100 moles of $FeBr_2$ _____
- 5.) 5.0 moles of CO_2 _____

D. How many molecules are in each of the following?

- 1.) 2.0 moles of CO _____ 2.) 0.25 moles of CCl_4 _____
- 3.) 10. moles of H_2S _____ 4.) 0.5 moles of BF _____

E. How many molecules are in each of the following?

- 1.) 180 grams of H_2O _____ 2.) 0.71 grams of Cl_2 _____
- 3.) 100 grams of Ne _____ 4.) 4.0 grams of NaOH _____

F. At STP, how many liters are occupied by:

- 1.) 0.5 moles of He _____ 2.) 5.0 moles of H_2 _____
- 3.) 2.0 moles of N_2 _____

G. At STP, how many moles are occupied by:

- 1.) 56 liters _____ 2.) 2.24 liters _____
3.) 44.8 liters _____

H. At STP, what is the mass of:

- 1.) 22.4 liters of $\text{H}_2(\text{g})$ _____ 2.) 33.6 liters of $\text{O}_2(\text{g})$ _____
3.) 44.8 liters of $\text{He}(\text{g})$ _____

I. At STP, what is the volume of:

- 1.) 28 grams of $\text{N}_2(\text{g})$ _____ 2.) 3.2 grams of $\text{O}_2(\text{g})$ _____
3.) 12 grams of $\text{He}(\text{g})$ _____

J. At STP, what is the volume in liters of:

- 1.) 6.02×10^{23} atoms of $\text{Ne}(\text{g})$? _____
2.) 6.02×10^{23} atoms of $\text{He}(\text{g})$? _____
3.) 12.04×10^{23} atoms of $\text{H}_2\text{O}(\text{g})$? _____

K. How many molecules are contained in the following volumes at STP?

- 1.) 22.4 liters of $\text{N}_2(\text{g})$ _____ 2.) 44.8 liters of $\text{H}_2(\text{g})$ _____
3.) 11.2 liters of $\text{He}(\text{g})$ _____

L. Calculate the percent by weight of each of the following.

- 1.) % Ca in $\text{Ca}(\text{OH})_2$ _____ 2.) % Cl in NaCl _____
3.) % O in CaCO_3 _____ 4.) % O in $\text{Cu}(\text{OH})_2$ _____
5.) % N in NH_4NO_3 _____ 6.) % water in $\text{Fe}(\text{NO}_3)_3 \cdot 6 \text{H}_2\text{O}$ _____
7.) % water in $\text{Na}_2\text{CO}_3 \cdot 9 \text{H}_2\text{O}$ _____

M. Calculate the empirical formula given the information below.

- 1.) 26.7 % Cl, 73.3 % Pt _____
2.) 42.1 % Cl, 57.9 % Pt _____

3.) 63.6 % N, 36.4 % O _____

4.) 75.8 % As, 24.2 % O _____

N. Calculate the Molecular formula in each case.

1.) In M-3 above, the molecular weight is 44 g/mol. _____

2.) A compound consists of 80 % carbon and 20 % hydrogen and the molecular weight is 30 g/mol. _____

3.) The empirical formula of a compound is CH_2 and the molecular weight is 70 g/mol. _____
