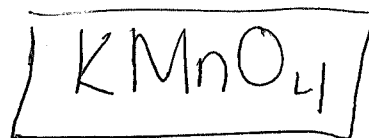


11. Determine the empirical formula for the compound using the data listed below.
24.74% potassium, 34.76% Manganese 40.50% oxygen

$$\frac{24.74\text{g K}}{1} \left(\frac{1\text{mol K}}{39.10\text{g K}} \right) = \frac{0.632\text{mol}}{0.632\text{mol}} = \boxed{1}$$

$$\frac{34.76\text{g Mn}}{1} \left(\frac{1\text{mol Mn}}{54.94\text{g Mn}} \right) = \frac{0.632\text{mol}}{0.632\text{mol}} = \boxed{1}$$

$$\frac{40.50\text{g O}}{1} \left(\frac{1\text{mol O}}{16.00\text{g O}} \right) = \frac{2.53\text{mol}}{0.632\text{mol}} = \boxed{4}$$



12. The empirical formula of a compound is PdH_2 . What is the molecular formula of the compound if the molar mass is 216.8 g/mol?

Empirical	Molecular
PdH_2	Pd_2H_4
108.4 g/mol	216.8 g/mol

13. The empirical formula of a compound is CH_2 . What is the molecular formula of the compound if the molar mass is 114.26 g/mol?

Empirical	Molecular
CH_2	C_8H_{18}
14.03 g/mol	114.26 g/mol

14. Determine the molecular formula of a compound that contains 30.45% Nitrogen and 69.55% Oxygen. The molar mass of the compound is 92.02 g/mol.

$$\frac{30.45\text{g N}}{1} \left(\frac{1\text{mol N}}{14.01\text{g N}} \right) = \frac{2.17\text{mol}}{2.17\text{mol}} = \boxed{1}$$

$$\frac{69.55\text{g O}}{1} \left(\frac{1\text{mol O}}{16.00\text{g O}} \right) = \frac{4.35\text{mol O}}{2.17\text{mol}} = \boxed{2}$$

Empirical	Molecular
NO_2	N_2O_4
46.01 g/mol	92.02 g/mol

15. Determine the molecular formula of a compound that contains 56.36 grams of oxygen and 43.64 grams of phosphorous. The molar mass of the compound is 283.9 g/mol.

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$$\frac{56.36\text{g O}}{1} \left(\frac{1\text{mol O}}{16.00\text{g O}} \right) = \frac{3.52\text{mol}}{1.4\text{mol}} = \boxed{2.5}$$

$$\frac{43.64\text{g P}}{1} \left(\frac{1\text{mol P}}{30.97\text{g P}} \right) = \frac{1.4\text{mol}}{1.4\text{mol}} = \boxed{1}$$

EF	MF
P_2O_5	P_4O_{10}
114.94	283.9

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