

5. Calculez la masse molaire et le pourcentage de composition de chacun des composés suivants.

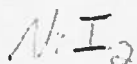
a. Sulfure d'aluminium



$$\text{Al} : 2 \times 26,982 \text{ g/mole} = 53,964 \text{ g/150,159}$$

$$\text{S} : 3 \times 32,065 \text{ g/mole} = 96,195 \text{ g/150,159}$$

b. Iodure de nickel (II)



$$\text{Ni} : 1 \times 58,693 \text{ g} = 58,693 / 312,493 = 18,78\% \text{ Ni}$$

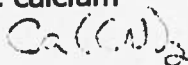
$$\text{I} : 2 \times 126,909 = 253,8 / 312,493 = 81,22\% \text{ I}$$

$$\text{Al} = 35,94\%$$

$$\text{S} = 64,06\%$$

$$150,159 \text{ g/mole}$$

c. Cyanure de calcium



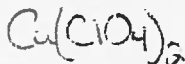
$$\text{Ca} : 1 \times 40,078 = 40,078 \text{ g} = 43,43\% \text{ Ca}$$

$$\text{C} : 2 \times 12,001 = 24,002 \text{ g} = 26,06\% \text{ C}$$

$$\text{N} : 2 \times 14,007 = 28,014 \text{ g} = 30,42\% \text{ N}$$

$$92,094 \text{ g/mole}$$

d. Perchlorate de cuivre (II)

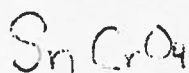


$$\text{Cu} : 1 \times 63,546 \text{ g} = 63,546 \text{ g} / 262,444 \text{ g/mole} = 24,21\% \text{ Cu}$$

$$\text{Cl} : 2 \times 35,453 \text{ g} = 70,906 \text{ g} / 262,444 \text{ g/mole} = 27,02\% \text{ Cl}$$

$$\text{O} : 8 \times 15,999 \text{ g} = 127,992 \text{ g} / 262,444 \text{ g/mole} = 48,77\% \text{ O}$$

e. Chromate d'étain (II)



$$\text{Sn} : 1 \times 118,71 = 118,71 = 50,58\% \text{ Sn}$$

$$\text{Cr} : 1 \times 51,996 = 51,996 = 22,15\% \text{ Cr}$$

$$\text{O} : 4 \times 15,999 = 63,996 = 27,27\% \text{ O}$$

$$234,702 \text{ g/mole}$$

6. Quelle est la différence entre la formule empirique et la formule moléculaire? (1)

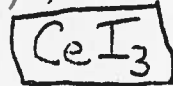
F_e = Formule qui indique le rapport le plus simple entre les éléments dans le composé

F_m = Formule qui indique le vrai nombre d'atomes dans un composé

7. Déterminez la formule empirique d'un composé qui contient les quantités des éléments suivants.

a. 1,67g de Ce et 4,54g de I. $\frac{1,67g \text{ Ce} | 1 \text{ mole}}{140,12g} = 0,011918 / 0,011918 = 1$

$\frac{4,54g \text{ I} | 1 \text{ mole}}{126,90g} = 0,035776 / 0,011918 = 3$



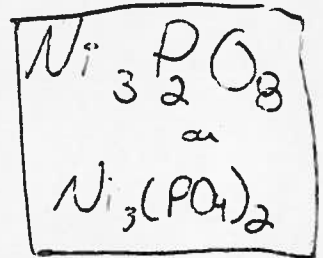
b. 7,22g de Ni, 2,53g de P, et 5,25g de O

$\frac{7,22g \text{ Ni} | 1 \text{ mole}}{58,693g} = \frac{1,23}{0,123} / 0,08168 = 1,5$

$\frac{2,53g \text{ P} | 1 \text{ mole}}{30,974g} = 0,08168 / 0,08168 = 1$

$\frac{5,25g \text{ O} | 1 \text{ mole}}{15,999g} = 0,328146 / 0,08168 = 4$

$\times 2$

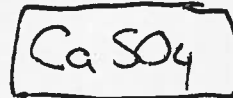


c. 0,295g de Ca, 0,236g de S, 0,469g de O

$\frac{0,295g \text{ Ca} | 1 \text{ mole}}{40,078g} = 0,00736 / 0,00736 = 1$

$\frac{0,236g \text{ S} | 1 \text{ mole}}{32,065g} = 0,00736 / 0,00736 = 1$

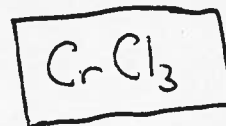
$\frac{0,469g \text{ O} | 1 \text{ mole}}{15,999g} = 0,029314 / 0,00736 = 4$



d. 32,8% de Cr et 67,2% de Cl

$\frac{32,8g \text{ Cr} | 1 \text{ mole}}{51,996g} = 0,6308 = 1$

$\frac{67,2g \text{ Cl} | 1 \text{ mole}}{35,453g} = 1,95048 = 3$

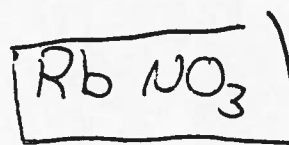


e. 58,0% de Rb, 9,50% de N, 32,5% de O

$\frac{58g \text{ Rb} | 1 \text{ mole}}{85,468g} = 0,6786 / 0,6786 = 1$

$\frac{9,5g \text{ N} | 1 \text{ mole}}{14,007g} = 0,67823 / 0,6786 = 1$

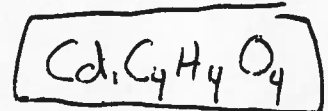
$\frac{32,5g \text{ O} | 1 \text{ mole}}{15,999g} = 2,03137 / 0,6786 = 3$



f. 49,2% de Cd, 21,0% de C, 1,75% de H, et 28,0% O

$\frac{49,2g \text{ Cd} | 1 \text{ mole}}{112,41g} = 0,43768$ $\frac{1,75g \text{ H} | 1 \text{ mole}}{1,0079g} = 1,748$ $\frac{1,748}{0,43768} = 4$

$\frac{21,0g \text{ C} | 1 \text{ mole}}{12,011g} = 1,748$ $\frac{28g \text{ O} | 1 \text{ mole}}{15,999g} = 1,750$ $\frac{1,750}{0,43768} = 4$



g. 42,6% de Ni et 57,4% de Se

$\frac{42,6g \text{ Ni} | 1 \text{ mole}}{58,693g} = 0,7258 / 0,7258 = 1$

$\frac{57,4g \text{ Se} | 1 \text{ mole}}{78,96g} = 0,7269 / 0,7258 = 1$

