

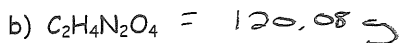
Percent Composition Worksheet

1. Calculate the percent composition of each of the following.



$$\frac{\text{Fe}}{55.85 \text{ g Fe}} \times 100 = \boxed{34.43\% \text{ Fe in FeCl}_3}$$

$$\frac{\text{Cl}}{106.35 \text{ g Cl}} \times 100 = \boxed{65.57\% \text{ Cl in FeCl}_3}$$



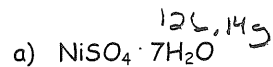
$$\frac{\text{C}}{24.02 \text{ g C}} \times 100 = \boxed{20.00\% \text{ C in C}_2\text{H}_4\text{N}_2\text{O}_4}$$

$$\frac{\text{H}}{4.04 \text{ g H}} \times 100 = \boxed{3.36\% \text{ H in C}_2\text{H}_4\text{N}_2\text{O}_4}$$

$$\frac{\text{N}}{28.02 \text{ g N}} \times 100 = \boxed{23.34\% \text{ N in C}_2\text{H}_4\text{N}_2\text{O}_4}$$

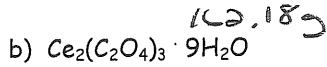
$$\frac{\text{O}}{64.00 \text{ g O}} \times 100 = \boxed{53.30\% \text{ O in C}_2\text{H}_4\text{N}_2\text{O}_4}$$

2. Calculate the percentage of water in each of the following hydrates.



$$\frac{126.14 \text{ g H}_2\text{O}}{280.9 \text{ g NiSO}_4 \cdot 7\text{H}_2\text{O}}$$

$$\boxed{44.91\% \text{ H}_2\text{O in NiSO}_4 \cdot 7\text{H}_2\text{O}}$$



$$\frac{162.18 \text{ g H}_2\text{O}}{706.48 \text{ g Ce}_2(\text{C}_2\text{O}_4)_3 \cdot 9\text{H}_2\text{O}}$$

$$\boxed{22.96\% \text{ H}_2\text{O in Ce}_2(\text{C}_2\text{O}_4)_3 \cdot 9\text{H}_2\text{O}}$$

3. Calculate the percent composition of a compound if a 9.016 g sample contains 3.940 g of phosphorous and 5.076 g of oxygen.

$$\frac{\text{P}}{3.940 \text{ g P}} = \boxed{43.70\% \text{ P in Compound}}$$

$$\frac{\text{O}}{5.076 \text{ g O}} = \boxed{56.30\% \text{ O in Compound}}$$

4. A 150.00 g sample of a compound containing carbon, hydrogen, and nitrogen was decomposed. It was found that the sample yielded 75.75 g of carbon and 66.30 g of nitrogen. What is the percent composition of the compound?

$$H = 7.95 \text{ g}$$

$$\begin{array}{r} \underline{C} \\ 75.75 \text{ g C} \\ \hline 150.00 \text{ g} \end{array}$$

$$\boxed{50.50\% \text{ C}}$$

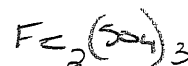
$$\begin{array}{r} \underline{H} \\ 7.95 \text{ g H} \\ \hline 150.00 \text{ g} \end{array}$$

$$\boxed{5.30\% \text{ H}}$$

$$\begin{array}{r} \underline{N} \\ 66.30 \text{ g N} \\ \hline 150.00 \text{ g} \end{array}$$

$$\boxed{44.20\% \text{ N}}$$

5. A sample of a hydrate of iron (III) sulphate was heated and the following data was recorded:



| | |
|--|---------|
| Mass crucible and iron (III) sulphate hydrate | 32.19 g |
| Mass crucible | 27.19 g |
| Mass of iron (III) sulphate after first heating | 30.78 g |
| Mass of iron (III) sulphate after second heating | 30.75 g |

Crucible? ←

Crucible? ←

3.59 g

3.56 g End

Calculate the percentage of water in the hydrate.

$$\text{Initial Mass of Hydrate} : 32.19 \text{ g} - 27.19 \text{ g} = 5 \text{ g Hydrate}$$

$$- 3.56 \text{ Anhydrous} \\ \hline 1.44 \text{ g H}_2\text{O}$$

$$\frac{1.44 \text{ g H}_2\text{O}}{5 \text{ g Hydrate}}$$

$$= \boxed{28.80\% \text{ H}_2\text{O} \text{ in Hydrate}}$$

6. A sample of a hydrate of aluminum sulphate was heated and the following data was recorded:

| | |
|--|---------|
| Mass crucible and aluminum sulphate hydrate | 33.31 g |
| Mass crucible | 21.31 g |
| Mass of aluminum sulphate after first heating | 27.50 g |
| Mass of aluminum sulphate after second heating | 27.47 g |

12 g Start

6.16 g End

Calculate the percentage of water in the hydrate.

$$\frac{5.84 \text{ g H}_2\text{O}}{12 \text{ g Hydrate}}$$

$$= \boxed{48.67\% \text{ H}_2\text{O} \text{ in Hydrate}}$$

$$12 - 6.16 = 5.84 \text{ g H}_2\text{O} \text{ in Hydrate}$$