

Name : Date :

Percent Composition Practice Problem

Write the formula for each compound and determine its percent composition.

1. ammonium sulfite _____

2. aluminum acetate _____

3. copper (II) hydroxide _____

4. zinc phosphate _____

5. Iron (III) carbonate _____

6. ammonium sulfide _____

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Answers

Write the formula for each compound and determine its percent composition.

1. ammonium sulfite $(\text{NH}_4)_2\text{SO}_3$

Molar mass of $(\text{NH}_4)_2\text{SO}_3 = 116.15 \text{ g}$

N: $2 \times (14.01 \text{ g}/116.15 \text{ g}) \times 100 \% = 24.1\%$

H: $8 \times (1.01 \text{ g}/116.15 \text{ g}) \times 100 \% = 6.9\%$

S: $1 \times (32.07 \text{ g}/116.15 \text{ g}) \times 100 \% = 27.6\%$

O: $3 \times (16 \text{ g} /116.15 \text{ g}) \times 100 \% = 41.3\%$

2. aluminum acetate $\text{C}_6\text{H}_9\text{AlO}_6$

Molar mass of $\text{C}_6\text{H}_9\text{AlO}_6 = 204.11 \text{ g}$

C: $6 \times (12.01 \text{ g}/204.11 \text{ g}) \times 100 \% = 35.3\%$

H: $9 \times (1.01 \text{ g}/204.11 \text{ g}) \times 100 \% = 4.4\%$

Al: $1 \times (26.98 \text{ g}/204.11 \text{ g}) \times 100 \% = 13.2\%$

O: $6 \times (16 \text{ g} /204.11 \text{ g}) \times 100 \% = 47.1\%$

3. copper (II) hydroxide $\text{Cu}(\text{OH})_2$

Molar mass of $\text{Cu}(\text{OH})_2 = 97.56 \text{ g}$

Cu: $(12.01 \text{ g}/97.56 \text{ g}) \times 100 \% = 65.1\%$

O: $2 \times (16 \text{ g} /97.56 \text{ g}) \times 100 \% = 32.8\%$

H: $2 \times (1.01 \text{ g}/ 97.56 \text{ g}) \times 100 \% = 2.1\%$

4. zinc phosphate $\text{Zn}_3(\text{PO}_4)_2$

Molar mass of $\text{Zn}_3(\text{PO}_4)_2 = 386.08 \text{ g}$

Zn: $3 \times (65.38 \text{ g}/386.08 \text{ g}) \times 100\% = 50.78\%$

P: $2 \times (30.97 \text{ g}/386.08 \text{ g}) \times 100\% = 16.04\%$

O: $8 \times (16.00 \text{ g}/386.08 \text{ g}) \times 100\% = 33.15\%$

5. Iron (III) carbonate $\text{Fe}_2(\text{CO}_3)_3$

Molar mass of $\text{Fe}_2(\text{CO}_3)_3 = 291.73 \text{ g}$

Fe: $2 \times (55.85 \text{ g}/291.73 \text{ g}) \times 100\% = 38.29\%$

C: $3 \times (12.01 \text{ g}/291.73 \text{ g}) \times 100\% = 12.35\%$

O: $9 \times (16 \text{ g}/291.73 \text{ g}) \times 100\% = 49.36\%$

6. ammonium sulfide $(\text{NH}_4)_2\text{S}$

Molar mass of $(\text{NH}_4)_2\text{S} = 68.142 \text{ g}$

N: $2 \times (14.00 \text{ g}/68.142 \text{ g}) \times 100\% = 41.1\%$

H: $8 \times (1.008 \text{ g}/68.142 \text{ g}) \times 100\% = 11.8\%$

S: $(32.065 \text{ g}/68.142 \text{ g}) \times 100\% = 47.1\%$