ANSWER KEY.

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Percent Composition

Chemistry | ANSWER KEY

% element = mass of element ÷ molar mass of compound × 100%. Give formula answers to two decimal places. For lab data, divide by the sample mass and use sig figs. Check that percents add to 100%.

1. Find the percent composition of potassium chloride, KCl.

Molar mass = 74.55 g/mol
K: 39.10 ÷ 74.55 × 100 = 52.45%
Cl: 35.45 ÷ 74.55 × 100 = 47.55%

2. Find the percent composition of aluminum oxide, Al_2O_3.

Molar mass = 101.96 g/mol
Al: 53.96 ÷ 101.96 × 100 = 52.92%
O: 48.00 ÷ 101.96 × 100 = 47.08%

3. Find the percent composition of propane, C_3H_8.

Molar mass = 44.11 g/mol
C: 36.03 ÷ 44.11 × 100 = 81.68%
H: 8.08 ÷ 44.11 × 100 = 18.32%

4. What percent of the mass of calcium nitrate, $Ca(NO_3)_2$, is N?

Molar mass = 164.10 g/mol. N: 28.02 g
28.02 ÷ 164.10 × 100 = 17.07% N

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5. Find the percent composition of sodium sulfate, Na_2SO_4.

Molar mass = 142.05 g/mol
Na: 45.98 ÷ 142.05 × 100 = 32.37%
S: 32.07 ÷ 142.05 × 100 = 22.58%
O: 64.00 ÷ 142.05 × 100 = 45.05%

6. An 8.40 g sample of a compound contains 2.94 g of magnesium. What percent of the compound is magnesium?

2.94 g ÷ 8.40 g × 100% = 35.000%
Answer: 35.0% Mg (3 sig figs)

7. A 25.00 g sample of a copper compound contains 19.97 g of copper. What percent is copper? What percent is everything else?

19.97 g ÷ 25.00 g × 100% = 79.88% Cu. Everything else: 100.00 − 79.88 = 20.12%

8. Is the percent of hydrogen in a 1 g drop of water the same as in a 1000 kg tank of water? Explain.

Yes. The same compound always has the same percents (11.21% H in water), no matter the sample size.

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