Percent Composition
Practice Problems

① NH_3

$1 \times N = 1 \times 14.01\ g/mol = 14.01\ g/mol$

$3 \times H = 3 \times 1.01\ g/mol = 3.03\ g/mol$

$17.04\ g/mol$

$\%N = \frac{g\ N}{g\ total} \times 100\%$

$= \frac{14.01\ g/mol}{17.04\ g/mol} \times 100\%$

$= 82.2\%\ N$

② NH_4NO_3

$2 \times N = 2 \times 14.01\ g/mol = 28.02\ g/mol$

$4 \times H = 4 \times 1.01\ g/mol = 4.04\ g/mol$

$3 \times O = 3 \times 16.00\ g/mol = 48.00\ g/mol$

$80.06\ g/mol$

$\%N = \frac{g\ N}{g\ total} \times 100\%$

$= \frac{28.02\ g/mol}{80.06\ g/mol} \times 100\%$

$= 35.0\%$

③ $KMnO_4$

$1 \times K = 1 \times 39.10\ g/mol = 39.10\ g/mol$

$1 \times Mn = 1 \times 54.94\ g/mol = 54.94\ g/mol$

$4 \times O = 4 \times 16.00\ g/mol = 64.00\ g/mol$

$158.04\ g/mol$

$\%O = \frac{g\ O}{total\ g} \times 100\%$

$= \frac{64.00\ g/mol}{158.04\ g/mol} \times 100\%$

$= 40.5\%$

④ C_2H_6

$2 \times C = 2 \times 12.01\ g/mol = 24.02\ g/mol$

$6 \times H = 6 \times 1.01\ g/mol = 6.06\ g/mol$

$30.08\ g/mol$

$\%C = \frac{g\ C}{total\ g} \times 100\%$

$= \frac{24.02\ g/mol}{30.08\ g/mol} \times 100\%$

$= 79.9\%$

$\%H = \frac{g\ H}{total\ g} \times 100\%$

$= \frac{6.06\ g/mol}{30.08\ g/mol} \times 100\%$

$= 20.1\%$