

1. Determine the number of moles present in each of the following:

- a) $17.4 \text{ g Na} = 0.757 \text{ mol}$
 b) $60 \text{ g Na}_2\text{SO}_4 = 0.42 \text{ mol}$
 c) $93.5 \text{ g CO}_2 = 2.12 \text{ mol}$
 d) $25.6 \text{ g NaNO}_3 = 0.301 \text{ mol}$
 e) $33.2 \text{ g HCl} = 0.911 \text{ mol}$

2. Calculate the number of grams present in each of the following:

- a) $0.75 \text{ mol Ca(OH)}_2 = 56 \text{ g}$
 b) $2.45 \text{ mol Cu(NO}_3)_2 = 460 \text{ g}$
 c) $1.0 \text{ mol H}_2\text{O} = 18 \text{ g}$
 d) $0.20 \text{ mol KCl} = 15 \text{ g}$
 e) $0.50 \text{ mol H}_2\text{O}_2 = 17 \text{ g}$

3. Determine the number of molecules in each of the following:

- a) $15 \text{ g SO}_2 = 1.4 \times 10^{23}$
 b) $2.5 \text{ mol CO} = 1.5 \times 10^{23}$
 c) $0.40 \text{ mol CH}_3\text{COOH} = 2.4 \times 10^{25}$
 d) $0.70 \text{ g C}_6\text{H}_{12}\text{O}_6 = 2.3 \times 10^{21}$
 e) $5.00 \text{ g FeCl}_3 = 1.86 \times 10^{22}$

4. How many atoms does each of the following represent?

- a) $22 \text{ g NH}_3 = 3.1 \times 10^{24}$
 b) $2.28 \text{ Ca}_3(\text{PO}_4)_2 \rightarrow 2.28 \text{ mol Ca}_3(\text{PO}_4)_2 = 5.75 \times 10^{22}$
 c) $45.5 \text{ g C}_3\text{H}_8 = 6.83 \times 10^{24}$
 d) $0.20 \text{ mol Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{ H}_2\text{O} = 2.6 \times 10^{24}$

5. Convert the following as indicated:

- a) $10.00 \text{ g NaOH to particles NaOH} = 1.5051 \times 10^{23} \text{ molecules} = 6.02 \times 10^{23} \text{ atoms}$
 b) $0.002 \text{ g CH}_4 \text{ to molecules of CH}_4 = 7.5 \times 10^{19}$
 c) $3.000 \times 10^{20} \text{ molecules of H}_2\text{O to grams of H}_2\text{O} = 0.00898 \text{ g}$
 d) $5 \times 10^{30} \text{ molecules of C}_3\text{H}_8 \text{ to grams of C}_3\text{H}_8 = 4 \times 10^8 \text{ g}$
 (365327133 g)