

## Unit 7 Calculations Based on Formulas

- For each of the following, determine the molar mass. Round off all atomic masses to two decimal places.
  - $\text{AgNO}_3$
  - $\text{HBrO}_2$
  - $\text{Ca}_3(\text{PO}_4)_2$
- For each of the compounds in 1, calculate the % O. Write each as an identity to use in dimensional analysis.
- How many grams of  $\text{Fe}_2\text{O}_3$  are required to produce 113g of Fe? Use dimensional analysis to solve.
- How many grams of gold can be obtained from 23.75g of  $\text{AuBr}_3$ ? Use dimensional analysis to solve.
- Perform the following conversions
  - 2.34g HCl into mols
  - 88.8 g calcium carbonate into mols
  - 0.649 mols  $\text{NaNO}_3$  into grams
  - $2.34 \times 10^{-3}$  mols sodium sulfate into grams
  - $3.99 \times 10^{-6}$  mols  $\text{C}_6\text{H}_{12}\text{O}_6$  into  $\mu\text{g}$
- Perform the following conversions
  - 5 atoms of gold into mols
  - $3.45 \times 10^{24}$  molecules  $\text{HNO}_3$  into mols
  - 45.6g  $\text{H}_2\text{SO}_4$  into molecules
  - $3.99 \times 10^{23}$  molecules  $\text{Br}_2$  into grams
  - 127g  $\text{CO}_2$  into atoms of O
  - $9.66 \times 10^{23}$  atoms of H into grams of  $\text{C}_3\text{H}_8$
- Determine the empirical formula for each of the following
  - 40.00% C, 6.67% H, 53.33% O
  - 40.00% S, 60.00% O
  - 89.92% C, 10.08% H
  - 57.20% S, 42.80% O
- Determine the true molecular formula for each compound in 7, given the following molar masses for the compounds
  - 120.12 g/mol
  - 240.21 g/mol
  - 80.14 g/mol
  - 672.84 g/mol