

## Unit 8 Chemical Equations

- Complete and balance the following equations
  - potassium reacts with dioxygen
  - aluminum reacts with dichlorine
  - rubidium reacts with sulfur
  - calcium reacts with dinitrogen
- Complete and balance the following equations
  - the combustion of  $C_3H_8$
  - the complete oxidation of  $C_5H_{10}$
  - the burning of  $C_7H_{14}$
- For the following equation
$$2 S + 3 O_2 \rightarrow 2 SO_3$$
  - how many grams of  $SO_3$  could be made from reaction of 12.5 g S?
  - how many grams of  $O_2$  are required to produce 65.5 g  $SO_3$ ?
- For the following equation
$$2 C_2H_6 + 7 O_2 \rightarrow 4 CO_2 + 6 H_2O$$
  - how many grams of water could be formed with 235 g  $CO_2$ ?
  - how many grams of  $O_2$  will produce 2.34 g  $CO_2$ ?
- What does STP mean?
- Write the molar volume of a gas at STP as an identity.
- Perform the following conversions
  - 33.8 g  $O_2$  to liters @ STP
  - 68.0 L  $CO_2$  @ STP into grams
- According to the following equation
$$2 C_2H_{6(g)} + 7 O_{2(g)} \rightarrow 4 CO_{2(g)} + 6 H_2O_{(l)}$$
  - how many liters of  $O_2$  @ STP are required to produce 118 g  $H_2O$ ?
  - how many grams of  $CO_2$  could be produced from 46.7 L  $C_2H_6$  @ STP?
- Complete and balance the following
  - sodium sulfate + calcium nitrate
  - aluminum bromide + potassium carbonate
  - iron (II) chlorate + scandium iodide
  - barium phosphate + aluminum chloride
- Complete and balance the following
  - magnesium + hydrochloric acid
  - aluminum + nitric acid
  - potassium + sulfuric acid
- Complete and balance the following
  - sodium + calcium nitrate
  - barium + cobalt (II) bromate
  - scandium + titanium (IV) sulfate
- Complete and balance the following
  - nitric acid + potassium hydroxide
  - sulfurous acid + aluminum hydroxide
  - chloric acid + calcium hydroxide

13. Complete and balance the following

- water decomposes to the elements using an electrical current
- mercury(II) oxide, when heated, decomposes to the elements
- potassium chlorate decomposes to potassium chloride and dioxygen

14. According to the following equation



- how many grams of  $\text{CO}_2$  are formed upon release of 1330kJ of heat?
- how many kJ of heat are released when 165g  $\text{C}_2\text{H}_6$  are burned?