

## Mass-mass problems

- $4 \text{FeCr}_2\text{O}_7 + 8 \text{K}_2\text{CO}_3 + \text{O}_2 \rightarrow 2 \text{Fe}_2\text{O}_3 + 8 \text{K}_2\text{CrO}_4 + 8 \text{CO}_2$ 
  - How many grams of  $\text{FeCr}_2\text{O}_7$  are required to produce 44.0 g of  $\text{CO}_2$ ?
  - How many grams of  $\text{O}_2$  are required to produce 100.0 g of  $\text{Fe}_2\text{O}_3$ ?
  - If 300.0 g of  $\text{FeCr}_2\text{O}_7$  react, how many g of  $\text{O}_2$  will be consumed?
  - How many g of  $\text{Fe}_2\text{O}_3$  will be produced from 300.0 g of  $\text{FeCr}_2\text{O}_7$ ?
  - How many grams of  $\text{K}_2\text{CrO}_4$  are formed per gram of  $\text{K}_2\text{CO}_3$  used?
- Given the reaction  $\text{S} + \text{O}_2 \rightarrow \text{SO}_2$ 
  - How many grams of sulfur must be burned to give 100.0 g of  $\text{SO}_2$
  - how many grams of oxygen will be required for the reaction in part (a)?
- $6 \text{NaOH} + 2 \text{Al} \rightarrow 2 \text{Na}_3\text{AlO}_3 + 3 \text{H}_2$ 
  - How much aluminum is required to produce 17.5 g of hydrogen?
  - How much  $\text{Na}_3\text{AlO}_3$  can be formed from 165.0 g of sodium hydroxide?
  - How many moles of  $\text{NaOH}$  are required to produce 3 g of hydrogen?
  - How many mol of hydrogen can be prepared from 1 gram atom of aluminum?
- $\text{BaO} + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{H}_2\text{O}$ 
  - How much  $\text{BaSO}_4$  can be formed from 196.0 g of  $\text{H}_2\text{SO}_4$ ?
  - If 81.00 g of water is formed during this reaction, how much  $\text{BaO}$  was used?
- $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$ 
  - 78.00 g of  $\text{NaCl}$  should produce how many grams of  $\text{AgCl}$ ?
  - How much  $\text{AgCl}$  can be produced from 107.0 g of  $\text{AgNO}_3$ ?
- $\text{B}_2\text{O}_3 + 3 \text{Mg} \rightarrow 3 \text{MgO} + 2 \text{B}$ 
  - How much boron can be obtained from 10.00 tons of  $\text{B}_2\text{O}_3$ ?
  - how much magnesium is required to produce 400.0 lbs of boron?
- $\text{SnO}_2$  is reduced by carbon according to the this reaction:  $\text{SnO}_2 + \text{C} \rightarrow \text{Sn} + \text{CO}_2$ 
  - How many pounds of  $\text{CO}_2$  are formed when 1.00 ton of tin is produced?
  - How much  $\text{SnO}_2$  is required to produce 6.00 tons of tin?
  - How much tin is produced per ton of carbon used?
- $2 \text{KMnO}_4 + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{Mn}_2\text{O}_7 + \text{H}_2\text{O}$ 
  - How many moles of  $\text{Mn}_2\text{O}_7$  can be formed from 196.0 g of  $\text{KMnO}_4$ ?
  - How many grams of  $\text{Mn}_2\text{O}_7$  can be formed from 390.0 g of  $\text{KMnO}_4$ ?
  - How much  $\text{H}_2\text{SO}_4$  is needed to produce 27.00 g of water?
- Determine moles of barium bromate that can be prepared from 7.000 moles each of  $\text{HBrO}_3$  and  $\text{Ba(OH)}_2$  given this equation:  $\text{HBrO}_3 + \text{Ba(OH)}_2 \rightarrow \text{Ba(BrO}_3)_2 + \text{H}_2\text{O}$
- Determine moles of  $\text{Na}_2\text{S}$  that can be prepared by the reaction of 0.2240 moles of sodium with 0.1320 moles of sulfur. Which reactant is the limiting factor?  $16 \text{Na} + \text{S}_8 \rightarrow 8 \text{Na}_2\text{S}$