

Write the equation and balance it where necessary. Show all work.

1. How many grams of sodium fluoride (used in water fluoridation and manufacture of insecticides) are needed to form 485 g of sulfur tetrafluoride?



- a) 1940 g      b) 1510 g      c) 754 g      d) 205 g      e) 51.3 g

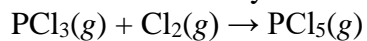
2. What mass, in grams, of sodium carbonate is required for complete reaction with 8.35g of nitric acid to produce sodium nitrate, carbon dioxide, and water?

- a) 28.1 g      b) 14.04 g      c) 4.96 g      d) 7.02 g      e) 400.0 g

3. Ammonia is produced by the reaction:  $3\text{H}_2(g) + \text{N}_2(g) \rightarrow 2\text{NH}_3(g)$

- (a) If  $\text{N}_2(g)$  is present in excess and 55.6 g of  $\text{H}_2(g)$  reacts, what is the *theoretical yield* of  $\text{NH}_3(g)$ ?  
(b) What is the *percent yield* if the actual yield of the reaction is 159 g of  $\text{NH}_3(g)$ ?

4. When 61.3 g  $\text{Cl}_2$  is reacted with excess, 119.3 g  $\text{PCl}_5$  is formed. What is the percent yield for the  $\text{PCl}_5$  formed? (Hint: calculate the theoretical yield of  $\text{PCl}_5$  first.)



- a) 195%    b) 85.0%    c) 66.3%    d) 51.4%    e) 43.7%

5. Write the following equation in symbol form.

Iron (II) sulfide + hydrochloric acid  $\longrightarrow$  iron (II) chloride + dihydrogen sulfide

How much dihydrogen sulfide will be synthesized from 8.5 g iron (II) sulfide? What is the percent yield if 2.6 g of dihydrogen sulfide is actually obtained after the reaction?