Chemistry CP

Name:

Stoichiometry: 3 Step Problems

Date:

Level 1

1. In the reaction shown here, what mass of iron is needed to react completely with 32.0 g of sulfur? $Fe + S \rightarrow FeS$ (55.7 g)

2. When zinc reacts with sulfuric acid, as shown here, what mass of hydrogen is produced from 31.8 g of zinc? $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2\uparrow$ (.982 g)

3. How much sulfurous acid can be produced when 128 g of sulfur dioxide combines with water? $SO_2 + H_2O \rightarrow H_2SO_3$ (164 g)

4. Silver bromide can be precipitated by the reaction of silver nitrate with sodium bromide. What mass of precipitate can be produced starting with 34.3 g of sodium bromide? $NaBr + AgNO_3 \rightarrow NaNO_3 + AgBr\downarrow$ (62.6 g)

5. Hydrochloric acid is added to 50.0 g of iron (II) sulfide. What mass of hydrogen sulfide is produced? $FeS + 2\ HCl \rightarrow FeCl_2 + H_2S\uparrow$ (19.4 g)

6. How much nitric acid is needed to react completely with 25.0 g of magnesium in the following reaction? $Mg + 2\ HNO_3 \rightarrow Mg(NO_3)_2 + H_2\uparrow$ (130. g)

7. How much copper (I) chloride can be produced beginning with 75.0 g of copper (I) oxide? $Cu_2O + 2\ HCl \rightarrow 2\ CuCl + H_2O$ (104 g)

For the following problems, remember that 1 mol of gas occupies a volume of 22.4 L.

8. What volume of oxygen gas is produced by the decomposition of 100.0 g of sodium nitrate? $2\ NaNO_3 \rightarrow 2\ NaNO_2 + O_2\uparrow$ (13.2 L)

9. What volume of oxygen is produced when 75.0 g of water is decomposed by electrolysis? 2 $H_2O \rightarrow 2\ H_2\uparrow + O_2\uparrow$ (46.7 L)

10. What volume of carbon dioxide is required to produce 50.0 L of carbon monoxide according to the following reaction? $CO_2 + C \rightarrow 2\ CO\uparrow$ (25.0 L)