Stoichiometry Exam Review Stations Name Key

Chemistry GT 2014

1. In the reaction that follows, how many moles of Cu will be produced from 5 moles of Al? Be sure to balance the equation first.

   3 $CuSO_4$ (aq) + 2 Al (s) → __ $Al_2(SO_4)_3$ (aq) + 3 Cu (s)

   $$\frac{5 \text{ mol Al}}{1}\left(\frac{3 \text{ mol Cu}}{2 \text{ mol Al}}\right) = 7.5 \text{ mol Cu} = \boxed{8 \text{ mol Cu}}$$

2. According to the reaction below, how many moles of $FeCl_3$ will be produced from 6 moles of Cl_2? Be sure to balance the equation first.

   2 FeBr3 + 3 Cl2 → 2 FeCl3 + 3 Br2 ← should be subscripts

   $$\frac{6 \text{ mol } Cl_2}{1}\left(\frac{2 \text{ mol } FeCl_3}{3 \text{ mol } Cl_2}\right) = \boxed{4 \text{ mol } FeCl_3}$$

3. In the *unbalanced* reaction that follows, how many grams of aluminum chloride will be produced from 92 L of chlorine gas? Be sure to balance the equation first.

   2 $AlBr_3$ + 3 Cl_2 → 3 Br_2 + 2 $AlCl_3$

   $$\frac{92 \text{ L } Cl_2}{1}\left(\frac{1 \text{ mol } Cl_2}{22.4 \text{ L } Cl_2}\right)\left(\frac{2 \text{ mol } AlCl_3}{3 \text{ mol } Cl_2}\right)\left(\frac{133.33 \text{ g } AlCl_3}{1 \text{ mol } AlCl_3}\right) = \boxed{370 \text{ g } AlCl_3}$$

4. In the reaction that follows, what volume of oxygen is needed to combine with 87 g of lithium? Be sure to balance the equation first.

   4 Li (s) + __ O_2 (g) → 2 Li_2O (s)

   $$\frac{87 \text{ g Li}}{1}\left(\frac{1 \text{ mol Li}}{6.94 \text{ g Li}}\right)\left(\frac{1 \text{ mol } O_2}{4 \text{ mol Li}}\right)\left(\frac{22.4 \text{ L } O_2}{1 \text{ mol } O_2}\right) = \boxed{70. \text{ L } O_2}$$

5. According to the reaction below, how many grams of magnesium oxide are needed to produce 264 g of magnesium hydroxide?

   __ MgO + __ H_2O → __ $Mg(OH)_2$

   $$\frac{264 \text{ g } Mg(OH)_2}{1}\left(\frac{1 \text{ mol } Mg(OH)_2}{58.33 \text{ g } Mg(OH)_2}\right)\left(\frac{1 \text{ mol MgO}}{1 \text{ mol } Mg(OH)_2}\right)\left(\frac{40.31 \text{ g MgO}}{1 \text{ mol MgO}}\right) = \boxed{182 \text{ g MgO}}$$