

Unit 4 – Chapter 4: Types of Reactions

Name _____

End of chapter practice problems

Period _____

1. Calculate the molarity of the following solutions:

a) 49.73 g H_2SO_4 in enough water to make 500 mL of solution.

b) 5.035 g FeCl_3 in enough water to make 250 mL of solution.

2. Calculate the molarity of the following solutions:

a) 21.18 g of $\text{Fe}(\text{NO}_3)_3$ in 1 L of water.

b) 72.06 g of BaCl_2 in 500 mL of water.

3. Calculate the concentrations of each of the ions in the following solutions:

a) 0.25 M Na_3PO_4

b) 0.87 M Na_2CO_3

4. Describe how you would prepare the following solutions:

a) 1 L of 1.5 M KMnO_4

b) 250 mL of 0.2 M AgNO_3

5. Describe how you would prepare the following solutions:

a) 500 mL of 1.0 M H_2SO_4 from 17.8 M H_2SO_4

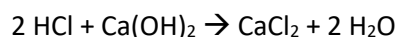
b) 1.5 L of 0.25 M KMnO_4 from 1.0 M stock solution.

c) 1.0 L of 0.15 M KBrO_3 from solid KBrO_3

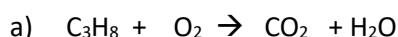
6. A standard solution of KHP ($\text{C}_8\text{H}_5\text{O}_4\text{K}$) was made by dissolving 3.697 g of KHP in enough water to make 100.0 mL of solution. Calculate the KHP concentration.

7. A stock solution of sodium hydroxide is prepared by dissolving 120.0 g of NaOH in 500.0 mL of water. What is the molarity of the stock solution?

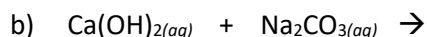
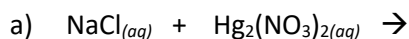
8. How many milliliters of 0.50 M $\text{Ca}(\text{OH})_2$ are required to react with the HCl in 30 mL of a 0.12 M solution? The reaction of interest is:



9. Balance the following reactions:



10. Complete and balance the following reactions:



11. Write the molecular, complete ionic, and net ionic equations for the following reactions:

a) Aqueous sodium sulfide reacts with aqueous copper (II) nitrate.

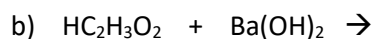
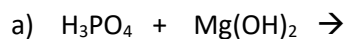
b) Aqueous hydrogen fluoride reacts with aqueous potassium hydroxide to give water and aqueous potassium fluoride.

12. What mass of CaCO_3 is produced when 250 mL of 6.0 M Na_2CO_3 is added to 750 mL of 1.0 M CaF_2 ?

13. What volume of 0.1379 M HCl is required to neutralize 10.0 mL of 0.2789 M NaOH solution?

14. How many mL of 1.50 M NaOH is required to neutralize 275 mL of 0.5 M H_2SO_4 ?

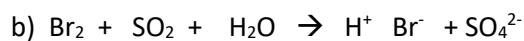
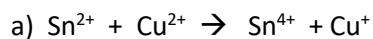
15. Complete and balance each acid-base equation (assume complete neutralization):



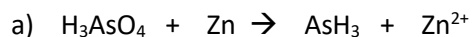
16. What volume of 0.2 M NaOH is required to neutralize 50 mL of 0.1 M H_2SO_3 ?

17. A 30.0 mL sample of an unknown basic solution is neutralized after the addition of 12.0 mL of a 0.15 M HCl solution. What is the molarity of the monoprotic base?

18. Balance the following oxidation-reduction reactions. Identify the oxidizing and agents.



19. Balance the following oxidation-reduction reactions taking place in acid solution:



20. Balance the following oxidation-reduction reactions taking place in basic solution:

