Chapter 4 Review

1. How many grams of carbon dioxide should form if a student heats 50.00 grams of Aluminum carbonate and it decomposes?

**\_\_\_Al2(CO3)3 (s) 🡪 \_\_\_Al2O3 (s) + \_\_\_CO2(g)**

a. Balance the equation.

b. Find the grams of CO2.

c. If the actual lab value of CO2 is 25.0 grams, what is the %yield?

2. **\_\_\_Pb(NO3)2(aq) + \_\_\_NaOH(aq) 🡪 \_\_\_NaNO3 (aq)+ \_\_\_Pb(OH)2(s)**

A reaction combines 133.484 g of lead (II) nitrate with 45.010 g of sodium hydroxide.

a. Which reactant is limiting?

1. What is the molarity of a solution that contains 8.00 grams of Na2SO4 in 500 mL of solution?

What is the molarity of Na+1 ions in the above solution?

1. How would you prepare 150 mL of a 2.00 M of HCl if you have a 12.0 M solution?

1. How many grams of NaOH would you need to prepare 250 mL of a 3.00 M solution?

40 mL of a .500 M solution of calcium chloride reacts completely with 30.0 mL of a solution of sodium phosphate to form a precipitate of calcium phosphate

1. Write the balanced equation.
2. What is the molarity of the sodium phosphate solution?
3. What is the number of grams of precipitate formed?

1996 B

Concentrated sulfuric acid (18.4-molar H2SO4) has a density of 1.84 grams per milliliter. After dilution with water to 5.20-molar, the solution has a density of 1.38 grams per milliliter and can be used as an electrolyte in lead storage batteries for automobiles.

1. (a) Calculate the volume of concentrated acid required to prepare 1.00 liter of 5.20-molar H2SO4.

In a reaction vessel, 0.600 mol of Ba(NO3)2 and 0.300 mol of H3PO4 (aq) are combined with deionized water to a final volume of 2.00 L. The reaction represented below occurs.

3Ba(NO3)2(aq) + 2H3PO4(aq) 🡪 Ba3(PO4)3(s) + 6HNO3(aq)

10. Calculate the mass of Ba3(PO4)2 formed.

11. What is the concentration, in mol L-1, of the nitrate ion, NO3(aq) after the reaction reaches completion?