Name ___________________________________

Solution Concentration (Molarity) and Dilution

1) What is the molarity of a solution if 58.2g of sodium chloride was dissolved in sufficient water to prepare a 1.83L solution?

   0.544M

2) How many grams of sodium hydroxide must be dissolved to produce 600.mL of a 0.750M solution?

   18.0g

3) If 9.62g of potassium iodide is dissolved in sufficient water to make a 4.50L solution, then what is its molarity?

   0.0129M

4) What volume of solution do you have if you know you dissolved 0.0500g nitric acid to make a solution that was determined to be 0.0793M?

   10.0mL

5) If 6.32g of barium sulfate is produced from the reaction of sulfuric acid with barium chloride, then what was the molarity of the sulfuric acid solution if only 50.0mL was used?

   0.541M

6) If 98.2mL of a 1.50M hydrochloric acid solution is reacted with excess aluminum hydroxide, then how many grams of aluminum chloride would be your theoretical yield?

   $Al(OH)_3 + 3HCl \rightarrow AlCl_3 + 3H_2O$

   6.55g

7) If 25.2mL of a 2.50M sodium bromide solution reacts with excess chlorine gas, then how many liters of bromine gas would you expect to collect at 1.03atm and 295K?

   0.741L

8) What was the initial concentration of a silver nitrate solution if 45.8mL of the solution was reacted with magnesium, and 3.28g of silver was recovered?

   0.664M

9) How many milliliters of a 1.50M acetic acid solution will be needed to create 2.50L of a 0.250M solution?

   417mL

10) Concentrated hydrochloric acid has a concentration of 12.1 moles per liter. How many milliliters of the concentrated acid should be used to create 3.25L of a 0.100M solution?

    26.9mL

11) If you want to produce 1.00L of 0.0500M nitric acid from a 10.0M solution, then calculate the volume of nitric acid and the volume of water necessary to make the solution.

    5.00mL, 995mL H_2O