Dilutions Worksheet

1) If I have 340 mL of a 0.5 M NaBr solution, what will the concentration be if I add 560 mL more water to it?

2) If I dilute 250 mL of 0.10 M lithium acetate solution to a volume of 750 mL, what will the concentration of this solution be?

3) If I leave 750 mL of 0.50 M sodium chloride solution uncovered on a windowsill and 150 mL of the solvent evaporates, what will the new concentration of the sodium chloride solution be?

4) To what volume would I need to add water to the evaporated solution in problem 3 to get a solution with a concentration of 0.25 M?

Molarity and Dilution Worksheet **NAME:**

1) For each of the following solutions, the number of moles of solute is given, followed by the total volume of solution prepared. Calculate the molarity.

a. 0.50 mol of NaCl; 0.200 L
b. 0.50 mol of NaCl; 0.125 L
c. 0.25 mol of NaCl; 100. mL
d. 0.75 mol of NaCl; 300. mL

3) For each of the following solutions, the mass of the solute is given, followed by the total volume of solution prepared.
Calculate the molarity.

a. 5.0 g of $CaCl_2$; 2.5 L
b. kg of KBr; 4.5 L
c. 1.5 g of $NaNO_3$; 75 mL
d. 4.5 g of Na_2SO_4; 125 mL

2) How many moles of the indicated solute does each of the following solutions contain?

a. 10.0 L of 0.550 M $NaHCO_3$ solution
b. 5.0 L of 12 M HCl solution
c. 250. L of 19.4 M NaOH solution
d. 125 mL of 17.0 M $HC_2H_3O_2$ solution

4) How many grams of the indicated solute does each of the following solutions contain?

a. 2.00 L of 1.33 M NaCl solution
b. 0.050 mL of 6.0 M HCl solution
c. 125 mL of 3.05 M HNO_3 solution
d. 1.25 L of 0.503 M NaBr solution

Perform the following dilution calculations.

5) To what volume must 100. ml of 1.0 M NaCl be diluted in order to obtain a 0.10 M solution? How much solvent must be added?

6) How many liters of 0.50 M $KMnO_4$ solution can be produced from 0.50 L of a 3.0 M solution. How much solvent must be added?

7) To what volume must 100. ml of 6.0 M HCl be diluted in order to obtain a 1.0 M solution? How much solvent must be added?

8) What is the concentration of a standard NaOH solution if 250. ml of 2.0 M NaOH were produced from an initial volume of 100.0 ml of standard solution?

Molarity and Dilution Problems 2 **Name:_____**

1) Describe how you would prepare 5.00 liters of a 6.00M solution of potassium hydroxide.

2) How would you prepare 100.0ml of .4M MgSO4 from a stock solution of 2.0M MgSO4?

3) If 1.00L of water is added to 3.00 L of a 6.00M solution of HCl, what is the new molarity of the acid solution?

4) What is the concentration when 50.0ml of 1.0M Na2SO4 is diluted to 500mL?

5) How would you prepare 4.0L of .5M sodium carbonate from a 10.0M solution?

6) You need 267 mL of .25M NaCl, but the only supply of NaCl you have is 1.75M NaCl. How do you prepare the required solution?

7) Describe how you would prepare 1.50L of a .25M solution of sodium sulfate.

8) Calculate the molarity of a solution containing 10.0 grams of sulfuric acid in 500 ml of solution.

9) Hydrogen peroxide solution for hair bleaching is usually prepared by mixing 5.0 g of hydrogen peroxide, H_2O_2, per 100.0 ml of solution. What is the molarity of this solution?

10) A chemist wants to dilute 50.0 ml of 3.50 M Sulfuric acid to 2.00 M Sulfuric acid. To what volume must it be diluted?

Molarity and Dilution Problems 3 **Name:_____**

1. What is the molarity of a 1000 ml solution containing 65.12 g of potassium cyanide?

2. What is the molarity of 500 ml of solution containing 41.98 g of sodium fluoride?

3. What is the molarity of 125 ml of solution containing 5.31 g sodium nitrate?

4. 12.47 g of ammonium nitrate are dissolved in water, then diluted to 250 ml. What is the molarity of the resulting solution?

5. 16.99 g of silver nitrate are dissolved in water, then diluted to 500 ml. What is the molarity of this solution?

6. How many grams of potassium chloride are required to make 1.00 L of a 2.00 M solution?

7. How many g of sodium dichromate are needed to make 500 ml of a of a 1.5 M solution?

8. How much calcium chloride would you need to make 400 ml of a 0.5 M solution?

9. If I started with 500 ml of 2.50 M solution and diluted it to 1500 ml, what would the resulting molarity be?

10. How many ml of 12.0 M sulfuric acid are required to make 1000 ml of a 0.1 M solution?