*Name:*

***Practice Problems***

**Molarity**

1. Sea water contains roughly 28.0 g of NaCl per liter. What is the molarity of sodium chloride in sea water?

2. What is the molarity of 245.0 g of H2SO4 dissolved in 1.00 L of solution?

3. What is the molarity of 5.30 g of Na2CO3 dissolved in 400.0 mL solution?

4. What is the molarity of 5.00 g of NaOH in 750.0 mL of solution?

5. How many moles of Na2CO3 are there in 10.0 L of 2.0 M solution?

6. How many moles of Na2CO3 are in 10.0 mL of a 2.0 M solution?

7. How many moles of NaCl are contained in 100.0 mL of a 0.20 M solution?

8. What weight (in grams) of NaCl would be contained in problem 7?

9. What weight (in grams) of H2SO4 would be needed to make 750.0 mL of 2.00 M solution?

10. What volume (in mL) of 18.0 M H2SO4 is needed to contain 2.45 g H2SO4?

11. What volume (in mL) of 12.0 M HCl is needed to contain 3.00 moles of HCl?

12. How many grams of Ca(OH)2 are needed to make 100.0 mL of 0.250 M solution?

13. What is the molarity of a solution made by dissolving 20.0 g of H3PO4 in 50.0 mL of solution?

14. What weight (in grams) of KCl is there in 2.50 liters of 0.50 M KCl solution?

15. What is the molarity of a solution containing 12.0 g of NaOH in 250.0 mL of solution?

**Dilutions**

1. A stock solution of 1.00 M NaCl is available. How many milliliters are needed to make 100.0 mL of 0.750 M

2. Concentrated H2SO4 is 18.0 M. What volume is needed to make 2.00 L of 1.00 M solution?

3. A 0.500 M solution is to be diluted to 500.0 mL of a 0.150 M solution. How many mL of the 0.500 M solution are required?

4. 2.00 L of 0.800 M NaNO3 must be prepared from a solution known to be 1.50 M in concentration. How many mL are required?

5. Calculate the final concentration if 2.00 L of 3.00 M NaCl and 4.00 L of 1.50 M NaCl are mixed. Assume there is no volume contraction upon mixing.