Name:_____
Blk:_____Date:_____

CHEMISTRY 11
MOLARITY

Answer the following MOLARITY questions:

1. Calculate the molar concentration of the following solutions.
   (a) 0.26 mol of HCl in 1.0 L of solution
   (b) 2.8 mol of HNO_3 in 4.0 L of solution
   (c) 0.0700 mol of NH_4Cl in 50.0 mL of solution
   (d) 25.0 g of NaCl in 250.0 mL of solution
   (e) 1.50 g of $CoBr_2 \cdot 6H_2O$ in 600.0 mL of solution
   (f) 10.0 g of $Cr(NO_3)_3 \cdot 9H_2O$ in 325 mL of solution

2. What is the actual experimental procedure you would use to prepare the following solutions?
   (a) 1.00 L of 3.00 M NH_4Cl
   (b) 500.0 mL of 0.250 M $Hg(NO_3)_2$
   (c) 125 mL of 0.500 M $Ba(NO_3)_2$
   (d) 250.0 mL of 0.100 M $SbCl_3$
   (e) 2.75 L of 0.0120 M NaOH
   (f) 2.00 L of 0.0300 M $CuSO_4$, starting with $CuSO_4 \cdot 5H_2O(s)$
   (g) 50.0 mL of 0.225 M BaI_2, starting with $BaI_2 \cdot 2H_2O(s)$

3. How many moles of $AlCl_3$ are contained in 350.0 mL of 0.250 M $AlCl_3$?

4. What volume of 2.40 M HCl can be made from 100.0 g of HCl?

5. How many moles of $Sr(NO_3)_2$ are contained in 55.0 mL of 1.30×10^{-3} M $Sr(NO_3)_2$?

6. What volume of 2.8×10^{-2} M NaF contains 0.15 g of NaF?

The density of water at 4°C is 1.000 kg/L. What is the molar concentration of H_2O in pure water at °C? (Hint: how many moles of H_2O are contained in 1 L?)

8. The density of acetic acid, $CH_3COOH(l)$, is 1049 g/L. What is the molarity of pure acetic acid?

9. The molar concentration of pure $HClO_4(l)$ is 17.6 M. What is the density of pure $HClO_4$?

10. The molarity of $CS_2(l)$ is 16.6 M. What is the density of $CS_2(l)$?

11. How many grams of $CaCl_2$ are contained in 225 mL of 0.0350 M $CaCl_2$ solution?

12. How many grams of Na_3PO_4 are contained in 3.45 L of 0.175 M $Na_3PO_4 \cdot 12H_2O$?

13. Acetone has a density of 0.790 g/mL. What mass of acetone and benzoic acid, C_6H_5COOH, is required to make 350.0 mL of a 0.0100 M solution of benzoic acid dissolved in acetone? Ignore the contribution which the benzoic acid makes to the volume. Based on your answer, why does it seem appropriate that you can ignore the contribution made by benzoic acid to the total volume?