**Molarity and Hydrates Homework**

For each of the following problems, use proper units and show ALL work:

1. If 10.7 grams of NH4Cl is dissolved in enough water to make 800. mL of solution, what will be its molarity? (Answer: 0.25 mol/L).
2. Calculate the molarity of a solution prepared by dissolving 6.80 grams of AgNO3 in enough water to make 2.50 liters of solution. (Answer: 0.016 mol/L).
3. How many moles of CaCl2 are required to prepare 2.00 liters of 0.700 M CaCl2? (Answer: 1.4 moles).
4. What mass, in grams, of CaCl2 will be required to prepare the above solution? (Answer: 155 grams).
5. How many grams of KNO3 will be required to prepare 800. mL of 1.40 M KNO3? (Answer: 113 grams).
6. Calculate the volume of a 1.25 M solution of HCN made from 31.0 grams of HCN. (Answer: 0.919 Liters).
7. Calculate the volume of a 3.50 molar solution of H2SO4 made from 49.0 grams of H2SO4. (Answer: 0.143 Liters).
8. How many sugar molecules are present in 300. mL of a 2.0 M solution? (The formula forsugar is C12H22O11) (Answer: 3.6 x 1023 molecules).
9. Your teacher asks you to prepare 500. mL of a 2.75 molar solution of NaCl for an upcoming laboratory experiment. Write a step-by-step procedure describing how you would carry out this task.
10. Name the following hydrates:
11. Na3PO4• 5 H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. CaSO4 • 2 H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. MgSO4 • H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
14. Mn(NO3)2 • 4 H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Write the formulas of the following hydrates:

1. magnesium nitrate hexahydrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. iron (II) sulfate heptahydrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. copper (II) nitrate trihydrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. tin (II) chloride dihydrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. What is the formula for a hydrate that is 90.7g SrC2O4 and 9.30g H2O? (C2O4-2 = oxalate)

formula of hydrate = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ name of hydrate = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. What is the formula of a hydrate that is 86.7% Mo2S5 and 13.3% H2O?

formula of hydrate = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ name of hydrate = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_