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**Worksheet 20**

1. Determine the molecular weight of a compound if 50 grams of the substance is added to 500 ml of water, resulting in a boiling point of 103.6⁰C. Assume that the substance is a nonelectrolyte. **(14 g/mol)**
2. Determine the molecular weight of a substance if 100 grams occupies 15 L at a pressure of 2 atm and standard temperature. **(74.6 g/mol)**
3. For each pair listed, which has the greatest electron affinity? Ca or K, Fe or Os, Sb or P
4. If an atom has two shared pairs and two unshared pairs of electrons, what electron arrangement and molecular geometry (shape) does it have? Is it polar or nonpolar?
5. Compare these two solutions and tell me which one is more concentrated: a 5 % NaCl solution or a 0.25 M NaCl solution. Assume that the density of the NaCl solution is the same as water’s.
6. What element is found in group 5, period four?
7. Calculate the mass of silver chloride produced if 25 ml of a 2M solution of magnesium chloride is reacted with an excess of silver nitrate according to the unbalanced equation: MgCl2 + AgNO3 🡪 Mg(NO3)2 + AgCl **(14.35 g)**
8. List all strong acids. What does it mean for an acid to be strong?
9. A calorimeter with a heat capacity of 1200 J/⁰C sits at room temperature (22⁰C). If 49 grams of octane (C8H18) is then burned, what will the final temperature of the calorimeter be? The heat of combustion for octane is 5500 kJ/mole. **(19920C)**
10. List these elements from most stable to least stable: Li, Ar, Zn, Si. Explain.