Name _____

Period _____

Calculating Concentration

Many solutions are colorless. Therefore, you cannot always compare the concentrations of solutions by looking at the color—you have to compare the actual calculated concentrations. One way to calculate the concentration of a liquid solution is to divide the grams of solute by the milliliters of solvent. For example, the concentration of a solution in which 35 g of salt is dissolved in 175 mL of water is:

$$\frac{35 \text{ g salt}}{175 \text{ mL water}} = \frac{0.2 \text{ g}}{\text{mL}}$$

1. In solutions A and B, sugar is dissolved in water. The sugar is the solute and the water is the solvent.
   a. Solution A has 55 g of sugar dissolved in 500 mL of water. What is the concentration of Solution A?

   b. Solution B has 36 g of sugar dissolved in 144 mL of water. What is the concentration of Solution B?

   c. Which solution is the more dilute one?

   d. Which solution is the more concentrated one?

2. Suppose you have 45 g of sodium chloride (table salt) dissolved in 150 mL of water, and you need 250 mL more of the same solution.
   a. How much sodium chloride do you need to make the additional solution?

   b. What is the concentration of the solution?

Concentration worksheet
Show all work and use the correct units

1. 65 g of sugar is dissolved in 750ml of water what is the concentration of the solution?

2. Which is more concentrated 34 g of salt dissolved in 100 ml of water or 100 g of salt in 1500 ml of water?

3. If the solubility of salt in water was determined to be .5 g/ml would a solution that had 50 g of salt in 150 ml of water be considered saturated?

5. If the concentration of a solution is determined to be .27 g/ml and it was dissolved in 200 ml of solvent how much solute was used to make it?

6. If the concentration of sugar in water is determined to be .45 g/ml and 100 g of sugar was used to make the solution how much water was used?

10. Sand is insoluble in water. If you have 50g of sand how much water would you need to dissolve it?