Concentration Review

1. Determine the concentrations of the following solutions in g/L:

a) 30g of solute in a 2.5L solution

$\frac{30g}{2500} = \frac{x}{1000}$ 12g

b) 14g of solute in a 250ml solution

$\frac{14}{250} = \frac{x}{1000}$ = 56g

2. Determine the concentration of the following solutions in %:

a) 1.5g of solute in 60ml solution

$\frac{1.5}{60} \times 100$ 2.5%.

b) 90g of solute in a 1.5L solution

$\frac{90}{1500} \times 100$ 6%.

3. Calculate the mass of the solute that is needed to obtain the following solutions.

a) 500ml solution with a concentration of 75g/L

$\frac{75g}{1000} = \frac{x}{500}$ = 35.7 g

b) 35ml solution with a concentration of 50g/L

$\frac{50}{1000mL} = \frac{x}{35mL}$ 1.75g

4. Arianne dissolves 15g of sugar in 50 ml of water.

A) What is the concentration of this solution?

$\frac{15}{50} = 30\%$.

B) If she needs to prepare a solution of 500ml, what mass of solute does she need to dissolve to obtain the same concentration?

$\frac{15}{50} = \frac{x}{500}$ 150g

5. Miguel, Jessica, and Patrick prepared some Iced Tea. Miguel dissolved 60g of iced tea powder in 2.5L of water. Jessica used 75g of powder to prepare 3L of Iced tea. Patrick prepared 300ml of iced tea using 9g of powder.

Calculate the concentration in g/L of each solution:

Miguel: $\frac{60g}{2500} = \frac{x}{1000}$ = 24

Jessica: $\frac{75}{3000} = \frac{x}{1000}$ 25g

Patrick: $\frac{9}{300} = \frac{x}{1000}$ 30g

Who prepared the most un-sweetened Iced Tea? Miguel.

6. Among the following solutions, which ones have the same concentration?

- Solution 1: 9g of solute in 2L solution $\frac{9}{2000} \times 1000 = 4.5g$
- Solution 2: 3g of solute in a 250ml solution $3/250 \times 1000 = 12$.
- Solution 3: 4g of solute in a 0.5L solution $4/500 = \frac{x}{1000} = 8$
- Solution 4: 12g of solute in a 1.5L solution

8 g/L.

a) 2 and 3 b) 3 and 4 c) 1 and 4 d) 1 and 2

7. Among the following concentrations, which one has the highest concentration?

a) 60g of solute in a 6L solution $\frac{60}{6000} = \frac{x}{1000}$ 10

b) 1.5g of solute in a 0.1L solution 15

c) 3g of solute in a 0.25L solution 12

d) 30g of solute in a 7.5L solution 4

8. A bottle of mineral water contains 149mg/L of calcium. Calculate the concentration in PPM.

149 ppm

9. The water in a lake is contaminated. To determine the concentration of contaminant, a technician takes a 50ml sample of water. After several tests, he concludes that the sample contains 3,75mg of contaminant. Calculate the concentration in ppm.

$\frac{0,00375}{50} = \frac{x}{1\,000\,000}$

10. If the total concentration of dissolved matter in a like is 500mg/L, what is the concentration in PPM?

500 ppm

11. Public pools usually contain about 5ppm of chlorine to control bacterial growth. If your pools holds 550L of water, how much chlorine should there be in g?

$\frac{5}{1000000} = \frac{x}{550\,000}$