

Name: _____

Date: _____

Homework: Dilution

Answer the following questions, which will be graded for marks (SHOW ALL YOUR WORK):

1. A bottle of cleaner is a 10g/L solution, but to clean the counter you only need 100 mL of a 2g/L solution. What volume of cleaner should you use?

$$\begin{array}{l} C_1 \text{ 10g/L} \\ V_1 \text{ x} \\ C_2 \text{ 2g/L} \\ V_2 \text{ 100mL (0.1L)} \end{array}$$

$$C_1 V_1 = C_2 V_2 \\ (10)x = (2)(.1)$$

$$x = 0.02L \text{ or } 20mL$$

2. Juice concentrate is a 200 g/L solution of orange juice. 1050 mL of water is added to a 350 mL can of concentrate.

a) What is the volume of the new solution?

b) What is the concentration of the new solution?

$$\begin{array}{l} \text{(added)} \\ 1050mL + 350 = 1400mL \\ V_1 \end{array}$$

$$\left(\frac{200g}{L}\right)(.35) = (C_2)(1400)$$

$$C_2 = 50g/L$$

3. Fragrance is sold in two different concentrations. Perfume is a 0.25 g/L solution of fragrance and alcohol, while Eau de cologne is a 0.05 g/L solution of fragrance and alcohol. You can make Eau de cologne by diluting Perfume. What volume of Eau de cologne can be made from a 15 mL bottle of Perfume?

$$(0.25g/L)(0.015) = (0.05g/L)(V_2)$$

$$C_1 V_1 = C_2 V_2$$

$$V_2 = 0.075L$$

4. 50 mL of a 400 g/L antiseptic solution is diluted with 150 mL of water. What is the concentration of the new solution?

$$(400g/L)(.05L) = (x)(.2L) = 100g/L$$