Inspiring Greatness
ISD
INDEPENDENCE SCHOOL DISTRICT

High School Science Virtual Learning

College Chemistry Solutions Virtual Lab

May 7, 2020

High School College Chemistry
Lesson: May 7, 2020

Objective/Learning Target:
Students will complete lab activities to learn about solutions.

Let's Get Started:

1. What is the equation for molarity?

2. Explain the term "Like Dissolves Like"

Let's Get Started:

Answer Key

1. See equation below.

$$\text{Molarity } (M) = \frac{\text{moles of solute}}{\text{liters of solution}}$$

2. Common phrase used to determine what can or cannot dissolve in any substance.

Lesson Activity:

Directions

- Use this answer key to check your work from yesterday.
- This link is from Khan Academy will help expand your knowledge of molarity.

Practice

Complete the following questions using the information you learned during the lesson activity.

Questions:

1. 1.0 g of potassium fluoride is dissolved to make 0.10 mL of solution.
2. 952 g of ammonium carbonate are dissolved to make 1750 mL of solution.
3. 9.82 g of lead (IV) nitrate are dissolved to make 465 mL of solution.
4. How much 0.075 M NaCl solution can be made by diluting 450 mL of 9.0 M NaCl?
5. If 550 mL of a 3.50 M KCl solution are set aside and allowed to evaporate until the volume of the solution is 275 mL, what will the molarity of the solution be?

Answer Key:

1. $1.0\ g\ KF \times \frac{1\ mole\ KF}{58\ g\ KF} = 0.0172\ mol\ KF$

$\frac{0.0172\ mol\ KF}{1 \times 10^{-4}\ L\ soln} = 170\ M$

2. $952\ g\ (NH_4)_2CO_3 \times \frac{1\ mole\ (NH_4)_2CO_3}{96\ g\ (NH_4)_2CO_3} = 9.92\ mole\ (NH_4)_2CO_3$

$\frac{9.92\ mole\ (NH_4)_2CO_3}{1.75\ L\ soln} = 5.67\ M$

3. $9.82\ g\ Pb(NO_3)_4 \times \frac{1\ mole\ Pb(NO_3)_4}{455.2\ g\ Pb(NO_3)_4} = 0.0216\ moles\ Pb(NO_3)_4$

$\frac{0.0216\ moles\ Pb(NO_3)_4}{0.0465\ L\ soln} = 0.0465\ M$

4. $(9.0\ M)(450\ mL) = (0.075\ M)V_2$

$V_2 = \frac{(9.0\ M)(450\ mL)}{(0.075\ M)} = 54{,}000\ mL = 54\ L$

5. $(3.50\ M)(550\ mL) = M_2\ (275\ mL)$

$M_2 = \frac{(3.50\ M)(550\ mL)}{(275\ mL)} = 7.0\ M$

Additional Practice:
Click on the link below for additional practice.
Solutions Quiz

Molarity and Dilution Quiz