Molarity, Dilutions and Solubility of Gases

M= molarity V = volume Liters Solubility= #grams/Liter Pressure = atm , kPa, mmHg

Molarity = $\frac{\#\text{mole solute}}{\#\text{Liter solution}}$ **Dilution** = $M_1V_1 = M_2V_2$ **Solubility of Gas**= $\frac{S_1}{P_1} = \frac{S_2}{P_2}$

1. Explain how to make a 0.5 molar solution.

2. Find the molarity of a solution in which 5.0 mole of HCl are dissolved in 2.0 L of solvent.

3. What is the molarity of 6.0 moles of $AgNO_3$ dissolved in 0.50 L of solvent.

4. How many moles of KNO_3 are needed to make 2.00 L of a 0.500 M solution?

5. How many moles of NaCl are required to make 1.25 Liters of a 5.50 molar solution?

6. When you dissolve 116.88 grams of NaCl in 0.25 L of solvent, what is the molarity?

7. How many grams of NaCl would be needed to make a 2.50 Liters of a 1.50 molar solution?

8. What does diluting a solution do?

9. How many mL of aqueous 2.00 M $MgSO_4$ solution must be diluted with water to prepare 100.0 mL of 0.400 M $MgSO_4$?

10. Find the molarity of a solution when 150 mL of solvent is added to 125 mL of a 0.150 Molar solution.

11. How many milliliters of a solution of 6.00M KI are needed to make 2520 mL of 0.750 M KI?

12. How many mL of 2.50M KCl solution would you need to dilute to make 255 mL of a 1.00M KCl?

Solubility of gases in solution

13. The solubility of a gas is 0.75 g/L at a pressure of 105 kPa. What is the solubility if the pressure increases to 175 kPa?

14. A gas has a solubility of 7.8 g/L at a pressure of 1.5 atm. What pressure is needed to increase the solubility to 10.5 g/L?

15. The solubility of a gas is 0.32 g/L at 104 kPa. What is the solubility when the pressure is increased to 350 kPa?

16. The solubility of a gas is 1.78 g/L. What will the solubility be when the pressure decreases from 985 mmHg to 765 mmHg?

Answers: 2.5 M, 12.0 M, 1.00 mol, 6.88 mol,8.0 M, 219 g, 0.125 M, 20.0 mL, 315 mL, 102 mL, 1.25g/L, 2.02 atm, 1.08 g/L, 1.38 g/L