

WKS
Solubility Curves & Gas Solubility

Name _____
Period _____

Part 1: Solubility Curves of Solids

- 1) What is solubility? List at least two factors that affect solubility.

- 2) What type of solution contains the maximum amount of solid dissolved in it? _____
- 3) What type of solution can still have more solid dissolved in it? _____
- 4) What type of solution has *more* solid than ordinarily possible dissolved in it? _____

Refer to the solubility curves in Chart G of your reference pack to answer the following questions. Show any calculations used.

- 5) When the temperature increases, the solubility of *most* solids (**increases, decreases**)
- 6) How many grams of **NaNO₃** must be dissolved in 100 g of water to form a saturated solution at 40°C?
- 7) At what temperature can one dissolve a maximum of **60g** of **NH₄Cl** in 100g of water? _____
- 8) If **130 g of KNO₃** are added to 100 g of water at **40°C**, ...
 - a) How many grams dissolve? _____
 - b) How many grams stay undissolved? _____
- 9) If one dissolves **90 g of KNO₃** in 100 g H₂O at **60°C**, what type of solution is formed?
- 10) How many grams of NaCl could dissolve in **200 g H₂O** at 70°C?

- 11) Describe the steps needed to make a **supersaturated** solution that contains 130g of KNO₃ all dissolved in 100 g of water at 40°C.
 - a) List a few ways one could disturb this supersaturated solution and cause the “extra” solid to crystallize.

 - b) What kind of solution remains after the crystallization occurs? Why?

Part 2: Solubility of Gases

- 12) When the temperature increases, the solubility of gases (**increases, decreases**). (*Think of a soda can.*)
- 13) When the pressure increases, the solubility of gases (**increases, decreases**). (*Think of a soda can.*)

Refer to the solubility curve in Chart G of your reference pack to answer the following questions:

- 14) How many grams of **SO₂** can be dissolved in 100 g of water at 40°C?
- 15) At what temperature can one dissolve a maximum of **60g** of **HCl** in 100g of water?
- 16) If **50 g** of **NH₃** are added to 100 g of water at **20°C**, ...
- Is the solution saturated or unsaturated?
 - If the temperature is raised to 70°C, how many grams of NH₃ will bubble out of solution?

Use Henry's Law to answer the following questions.

- 17) What is the relationship between the solubility of a gas (*S*) at a given temperature and the partial pressure of the gas (*P*) above the solution?
- 18) If 0.55 g of a gas dissolves in 1.0 L of water at a pressure of 20.0 kPa, how much will dissolve at 110.0 kPa?
- 19) A gas has a solubility of 0.66 g/L at 10.0 atm. What is the pressure on a 1.0-L sample that contains 1.5 g of gas?