

## Solubility Curve Worksheet Answer Key PDF

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### Part 1: Building a Foundation

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#### What does a solubility curve represent?

undefined. A) The melting point of a substance

undefined. B) The boiling point of a substance

**undefined. C) The solubility of a substance at various temperatures ✓**

undefined. D) The density of a substance at various temperatures

A solubility curve represents the solubility of a substance at various temperatures.

#### What does a solubility curve represent?

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**undefined. C) The solubility of a substance at various temperatures ✓**

undefined. D) The density of a substance at various temperatures

A solubility curve represents the solubility of a substance at various temperatures.

#### Which of the following are typically shown on the axes of a solubility curve? (Select all that apply)

**undefined. A) Temperature ✓**

undefined. B) Pressure

**undefined. C) Solubility ✓**

undefined. D) Volume

The axes of a solubility curve typically show temperature and solubility.

#### Which of the following are typically shown on the axes of a solubility curve? (Select all that apply)

undefined. **A) Temperature ✓**

undefined. B) Pressure

undefined. **C) Solubility ✓**

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The axes of a solubility curve typically show temperature and solubility.

**Explain what is meant by a "saturated solution."**

**A saturated solution is one in which no more solute can dissolve at a given temperature and pressure.**

**Explain what is meant by a "saturated solution."**

**A saturated solution is one in which no more solute can dissolve at a given temperature.**

**List two factors that can affect the solubility of a substance.**

1. Factor 1

**Temperature**

2. Factor 2

**Pressure**

Factors that can affect solubility include temperature and pressure.

**What happens to the solubility of most solid solutes as the temperature increases?**

undefined. A) It decreases

undefined. B) It remains constant

undefined. **C) It increases ✓**

undefined. D) It fluctuates randomly

The solubility of most solid solutes increases as the temperature increases.

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The solubility of most solid solutes increases as temperature increases.

## Part 2: Comprehension and Application

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Which of the following statements are true about a supersaturated solution? (Select all that apply)

undefined. A) It contains more solute than a saturated solution at the same temperature. ✓

undefined. B) It is unstable and can precipitate solute easily. ✓

undefined. C) It is the same as a saturated solution.

undefined. D) It can be formed by cooling a saturated solution slowly. ✓

A supersaturated solution contains more solute than a saturated solution at the same temperature and is unstable.

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A supersaturated solution contains more solute than a saturated solution at the same temperature and is unstable.

Describe how you would identify a saturated solution on a solubility curve.

A saturated solution can be identified on a solubility curve as a point that lies exactly on the curve.

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A saturated solution can be identified on a solubility curve as a point that lies on the curve itself.

**If a solubility curve shows that 50 grams of solute can dissolve in 100 grams of water at 60°C, what type of solution is formed if 60 grams of solute are added at the same temperature?**

undefined. A) Unsaturated

undefined. B) Saturated

**undefined. C) Supersaturated ✓**

undefined. D) Dilute

If 60 grams of solute are added, the solution is supersaturated.

**If a solubility curve shows that 50 grams of solute can dissolve in 100 grams of water at 60°C, what type of solution is formed if 60 grams of solute are added at the same temperature?**

undefined. A) Unsaturated

undefined. B) Saturated

**undefined. C) Supersaturated ✓**

undefined. D) Dilute

If 60 grams of solute are added, the solution is supersaturated because it exceeds the solubility limit.

**You have a solution at 40°C with 70 grams of solute per 100 grams of water. The solubility curve indicates that the solubility at 40°C is 60 grams. What actions can you take to make the solution saturated? (Select all that apply)**

undefined. A) Add more solute

**undefined. B) Remove some solute ✓**

**undefined. C) Increase the temperature ✓**

undefined. D) Decrease the temperature

To make the solution saturated, you can remove some solute or increase the temperature.

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undefined. D) Decrease the temperature

To make the solution saturated, you can remove some solute or increase the temperature.

### Part 3: Analysis, Evaluation, and Creation

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Analyze the following statements and select those that correctly describe the effect of temperature on solubility for gases. (Select all that apply)

undefined. **A) Solubility decreases with increasing temperature.** ✓

undefined. B) Solubility increases with increasing temperature.

undefined. C) Solubility is unaffected by temperature changes.

undefined. D) Solubility decreases with decreasing temperature.

Solubility for gases decreases with increasing temperature and increases with decreasing temperature.

Analyze the following statements and select those that correctly describe the effect of temperature on solubility for gases. (Select all that apply)

undefined. **A) Solubility decreases with increasing temperature.** ✓

undefined. B) Solubility increases with increasing temperature.

undefined. C) Solubility is unaffected by temperature changes.

undefined. **D) Solubility decreases with decreasing temperature.** ✓

Solubility for gases generally decreases with increasing temperature.

Analyze a given solubility curve and explain how you would determine the temperature at which a solution becomes saturated with 40 grams of solute.

To determine the saturation temperature, locate the point on the curve where 40 grams of solute intersects with the solubility line.

Analyze a given solubility curve and explain how you would determine the temperature at which a solution becomes saturated with 40 grams of solute.

To determine the saturation temperature, locate the point where 40 grams of solute intersects the curve.

Given a solubility curve, if a point lies above the curve, what does it indicate about the solution?

undefined. A) The solution is unsaturated.

undefined. B) The solution is saturated.

**undefined. C) The solution is supersaturated. ✓**

undefined. D) The solution is at equilibrium.

A point above the curve indicates that the solution is supersaturated.

**Given a solubility curve, if a point lies above the curve, what does it indicate about the solution?**

undefined. A) The solution is unsaturated.

undefined. B) The solution is saturated.

**undefined. C) The solution is supersaturated. ✓**

undefined. D) The solution is at equilibrium.

A point above the curve indicates that the solution is supersaturated.

**Evaluate the following methods and select those that can be used to create a supersaturated solution. (Select all that apply)**

undefined. A) Rapidly cooling a saturated solution

**undefined. B) Slowly cooling a saturated solution ✓**

**undefined. C) Evaporating some solvent from a saturated solution ✓**

**undefined. D) Adding more solute to a saturated solution at a higher temperature ✓**

Methods to create a supersaturated solution include slowly cooling a saturated solution and evaporating some solvent.

**Evaluate the following methods and select those that can be used to create a supersaturated solution. (Select all that apply)**

undefined. A) Rapidly cooling a saturated solution

**undefined. B) Slowly cooling a saturated solution ✓**

**undefined. C) Evaporating some solvent from a saturated solution ✓**

**undefined. D) Adding more solute to a saturated solution at a higher temperature ✓**

Methods to create a supersaturated solution include slowly cooling a saturated solution or adding more solute at a higher temperature.

**Design an experiment using a solubility curve to determine the effect of temperature on the solubility of a new solute. Describe the steps and expected outcomes.**

**The experiment should outline the procedure for measuring solubility at various temperatures and predict how solubility will change.**

**Design an experiment using a solubility curve to determine the effect of temperature on the solubility of a new solute. Describe the steps and expected outcomes.**

**The experiment should outline how to measure solubility at various temperatures and predict outcomes based on the solubility curve.**