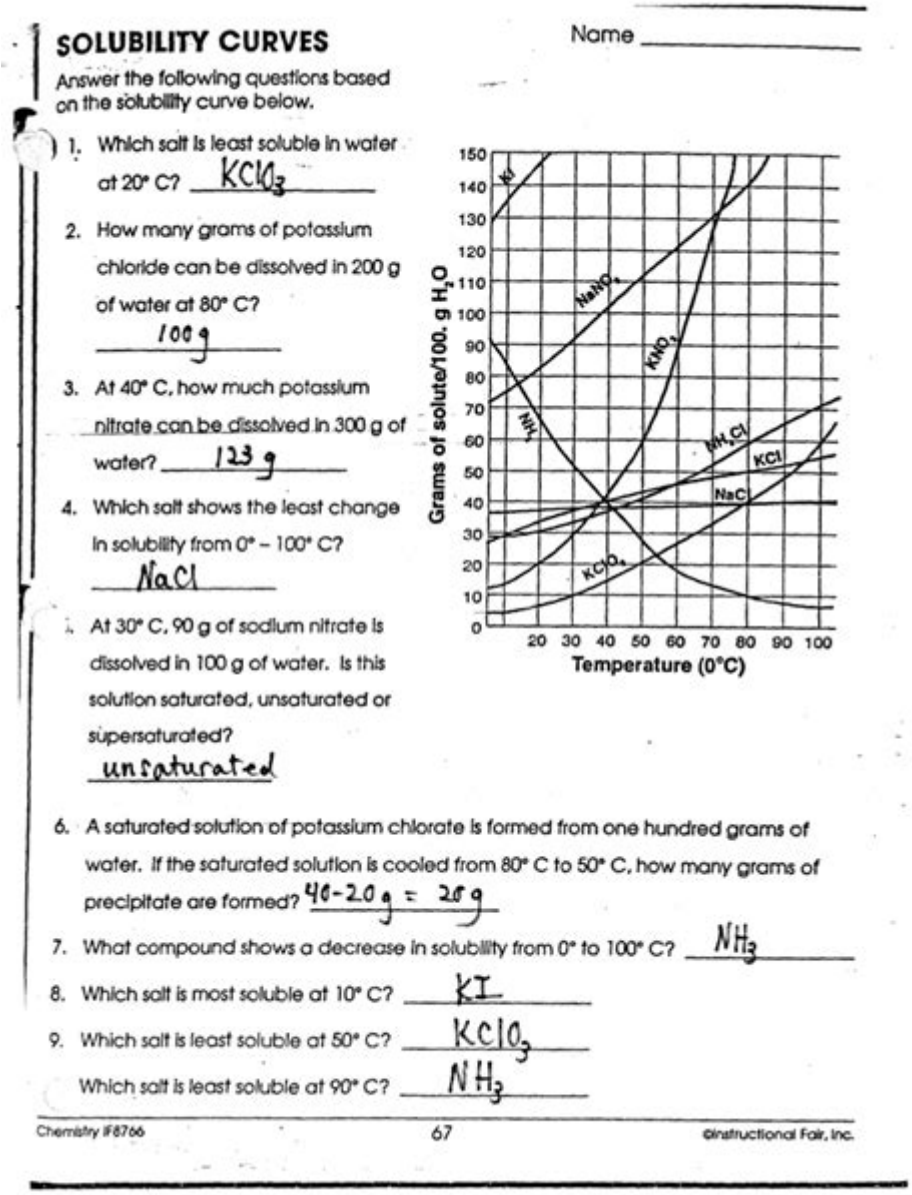
# Solubility Curve Practice Problems Worksheet 1 Answers



**SOLUBILITY CURVES**

Name _____

Answer the following questions based on the solubility curve below.

1. Which salt is least soluble in water at 20° C? $KClO_3$
2. How many grams of potassium chloride can be dissolved in 200 g of water at 80° C? 100 g
3. At 40° C, how much potassium nitrate can be dissolved in 300 g of water? 123 g
4. Which salt shows the least change in solubility from 0° – 100° C? NaCl
5. At 30° C, 90 g of sodium nitrate is dissolved in 100 g of water. Is this solution saturated, unsaturated or supersaturated? unsaturated



6. A saturated solution of potassium chlorate is formed from one hundred grams of water. If the saturated solution is cooled from 80° C to 50° C, how many grams of precipitate are formed? 40-20 g = 20 g
7. What compound shows a decrease in solubility from 0° to 100° C? $NH_3$
8. Which salt is most soluble at 10° C? KI
9. Which salt is least soluble at 50° C? $KClO_3$

Which salt is least soluble at 90° C? $NH_3$

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**Solubility curve practice problems worksheet 1 answers** are essential tools for students and educators in the field of chemistry. Understanding solubility curves is crucial for grasping the relationship between temperature and the solubility of substances in solvents, typically water. This article will explore solubility curves, provide practice problems, and offer detailed answers to ensure a complete understanding of the topic.

## Understanding Solubility Curves

A solubility curve is a graphical representation that shows how the solubility of a substance varies with temperature. The solubility of a solute is typically expressed in grams of solute per 100 grams of

solvent. These curves are essential for predicting how much of a substance can dissolve in a given amount of solvent at different temperatures.

## Key Terms and Concepts

Before diving into practice problems, it's crucial to understand some key terms related to solubility curves:

- Solubility: The maximum amount of solute that can dissolve in a specific amount of solvent at a given temperature.
- Saturated Solution: A solution in which no more solute can dissolve at a particular temperature.
- Unsaturated Solution: A solution that can still dissolve more solute at a given temperature.
- Supersaturated Solution: A solution that contains more solute than can typically dissolve at a given temperature.

# How to Read a Solubility Curve

Reading a solubility curve involves analyzing the graph to determine how temperature affects the solubility of various substances. Here are the steps to read a solubility curve:

1. Identify the Axis:
- The x-axis typically represents temperature (in degrees Celsius).
- The y-axis represents solubility (in grams of solute per 100 grams of solvent).

2. Locate the Substance:
- Each curve on the graph corresponds to a different solute. Ensure to identify which curve you are analyzing.

3. Determine Solubility:
- Find the temperature on the x-axis. Move vertically to intersect with the curve to find the corresponding solubility value on the y-axis.

4. Classify the Solution:
- If the solubility value is below the curve, the solution is unsaturated.
- If it lies on the curve, it is saturated.
- If it is above the curve, it is supersaturated.

# Practice Problems

To reinforce the understanding of solubility curves, here are some practice problems based on hypothetical solubility curves. Each problem will be followed by an answer section.

## Problem 1: Determining Saturation

Given a solubility curve for sodium chloride (NaCl), at 20°C, the curve indicates that the solubility is 36 grams per 100 grams of water.

Question: If you dissolve 40 grams of NaCl in 100 grams of water at 20°C, is the solution saturated, unsaturated, or supersaturated?

## Problem 2: Finding Solubility at a Specific Temperature

Referring to a solubility curve for potassium nitrate (KNO3), at 60°C, the curve shows that the solubility is 120 grams per 100 grams of water.

Question: How many grams of KNO3 can be dissolved in 200 grams of water at 60°C?

## Problem 3: Analyzing Temperature Effects

From a solubility curve of sugar, it is observed that the solubility at 30°C is 200 grams per 100 grams of water.

Question: If a solution is prepared with 150 grams of sugar in 100 grams of water at 30°C, what type of solution is it?

# Answers to Practice Problems

Now, let’s provide the answers to the practice problems presented above.

## Answer 1

To determine whether the solution is saturated, unsaturated, or supersaturated:

- The solubility of NaCl at 20°C is 36 grams per 100 grams of water.
- Since 40 grams of NaCl is dissolved, and this exceeds the solubility limit, the solution is classified as supersaturated.

## Answer 2

To find how many grams of KNO3 can be dissolved in 200 grams of water at 60°C:

- The solubility of KNO3 at 60°C is 120 grams per 100 grams of water.

- Therefore, in 200 grams of water, the amount of KNO3 that can be dissolved is calculated as follows:

$$
\text{Solubility in 200 grams} = 120 \, \text{g} \times \frac{200 \, \text{g}}{100 \, \text{g}} = 240 \, \text{g}
$$

Thus, 240 grams of KNO3 can be dissolved in 200 grams of water at 60°C.

## Answer 3

To determine the type of solution with 150 grams of sugar in 100 grams of water at 30°C:

- The solubility of sugar at 30°C is 200 grams per 100 grams of water.
- Since 150 grams is less than the solubility limit of 200 grams, the solution is classified as unsaturated.

# Conclusion

Solubility curves are integral to understanding the behavior of solutes in various solvents across different temperatures. By practicing problems related to solubility curves, students can enhance their comprehension of solubility concepts, prepare for examinations, and apply this knowledge in real-world situations. The practice problems outlined in this article, along with their answers, provide a solid foundation for mastering solubility curves and their applications in chemistry. Whether you are a student preparing for a test or an educator looking for effective teaching resources, solubility curve practice problems are invaluable for reinforcing key concepts in the study of solutions.

# Frequently Asked Questions

## What is a solubility curve?

A solubility curve is a graphical representation that shows the relationship between the solubility of a substance and temperature, typically illustrating how much solute can dissolve in a solvent at various temperatures.

## How do you read a solubility curve?

To read a solubility curve, locate the temperature on the x-axis and then find the corresponding solubility value on the y-axis. The point where the temperature and solubility intersect indicates how much solute can dissolve in a specific amount of solvent at that temperature.

## What types of questions are typically found in solubility curve

## practice problems?

Questions often involve calculating the amount of solute that can dissolve at a given temperature, predicting changes in solubility with temperature changes, and identifying solutes based on their solubility data.

## What is the significance of the saturation point on a solubility curve?

The saturation point on a solubility curve indicates the maximum concentration of solute that can dissolve in the solvent at a given temperature. Beyond this point, the solution becomes supersaturated, and excess solute will not dissolve.

## What resources can help with solving solubility curve practice problems?

Resources such as chemistry textbooks, online educational platforms, and interactive simulations can provide guidance on understanding solubility curves and solving related practice problems.

## Can solubility curves vary between different solutes?

Yes, solubility curves can vary significantly between different solutes due to differences in chemical properties, interactions with the solvent, and temperature effects.

## How do temperature changes affect solubility according to the solubility curve?

Generally, for most solids, solubility increases with temperature, while for gases, solubility typically decreases as temperature rises. The solubility curve illustrates these trends visually.

## What are common mistakes students make when interpreting solubility curves?

Common mistakes include misreading the axes, confusing solubility values for different solutes, and failing to account for temperature changes when making predictions about solubility.



# Solubility Curve Practice Problems Worksheet 1 Answers

**Solubility - Wikipedia**

In chemistry, solubility is the ability of a substance, the solute, to form a solution with another substance, the solvent. Insolubility is the opposite property, the inability of the solute to form such a solution.

**Solubility | Solvent, Solutions & Concentration | Britannica**
May 31, 2025 · Solubility, degree to which a substance dissolves in a solvent to make a solution (usually expressed as grams of solute per litre of solvent). Solubility of one fluid (liquid or gas) in another may be complete (totally miscible; e.g., methanol and water) or …

Solubility: Definition, Examples, and Factors Affecting it.
Solubility is the maximum concentration of a solute that can dissolve in a specific amount of a solvent at a given temperature. The process through which a solute in its solid, liquid, or gaseous phase dissolves in a solvent to produce a solution is called dissolution.

What is Solubility? - ChemTalk
Solubility is the ability of a solute to dissolve in a solvent to form a solution. This is the property that allows things like sugar molecules to dissolve in a cup of coffee.

**7.9: Solubility: Introduction - Chemistry LibreTexts**
The solubility, which is also known as the solubility limit, of a solute corresponds to the maximum amount of that chemical that can dissolve in a given amount of solvent.

**Solubility Definition in Chemistry - ThoughtCo**
Jun 9, 2025 · Solubility is how much of a substance can dissolve in another before the solution becomes saturated. Solubility can change with temperature, pressure, and other chemical …

**What is Solubility? - BYJU'S**
What is Solubility? The maximum amount of solute that can dissolve in a known quantity of solvent at a certain temperature is its solubility. A solution is a homogeneous mixture of one or more solutes in a solvent. Sugar cubes added to a cup …

**Solubility Basics - What is solubility? - Solubility of Things**
In general, SOLUBILITY is an ability of a substance to dissolve. In the process of dissolving, the substance which is being dissolved is called a solute and the substance in which the solute is dissolved is called a solvent.

Solubility and Factors Affecting Solubility - Chemistry LibreTexts
Solubility is defined as the upper limit of solute that can be dissolved in a given amount of solvent at equilibrium. In such an equilibrium, Le Chatelier's principle can be used to explain most of the main factors that affect solubility.

**What is solubility in GCSE Chemistry? - BBC Bitesize**
Solubility is defined as the mass of a solid required to saturate 100 g of water at a given temperature. Solubility is measured in grams of a solute per 100 g of water. If the mass of water is...

**Solubility - Wikipedia**
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