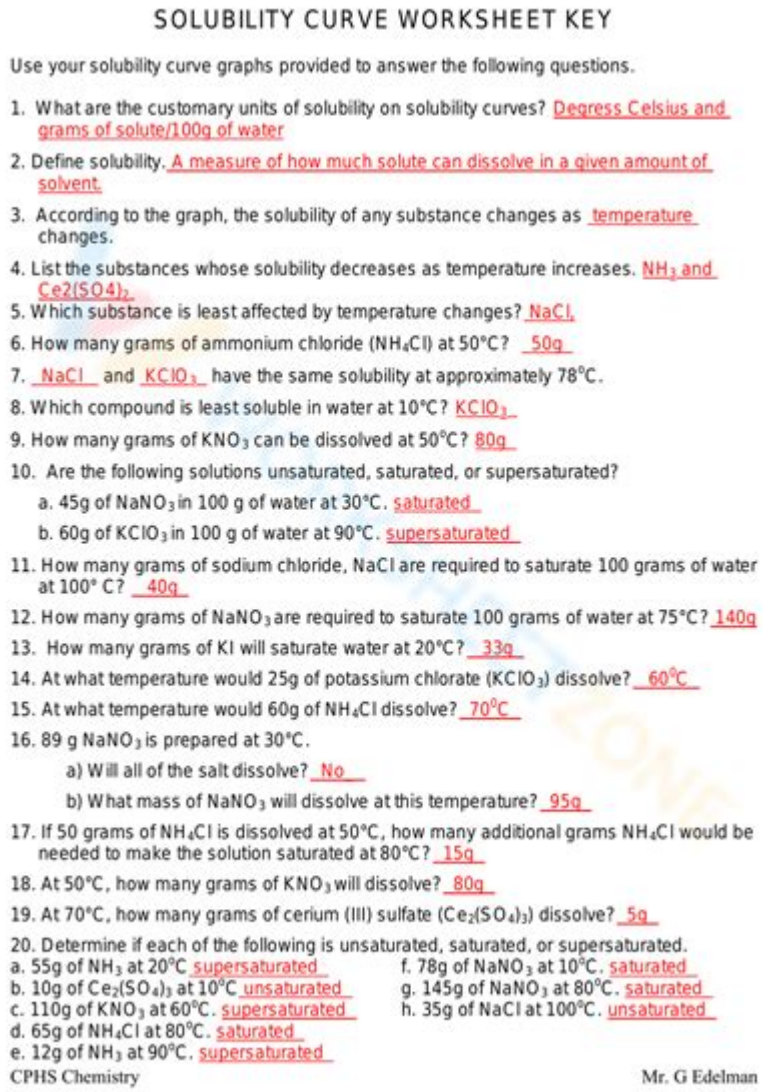
Solubility Worksheet 1 Answer Key



SOLUBILITY CURVE WORKSHEET KEY

Use your solubility curve graphs provided to answer the following questions.

1. What are the customary units of solubility on solubility curves? Degress Celsius and grams of solute/100g of water
2. Define solubility. A measure of how much solute can dissolve in a given amount of solvent.
3. According to the graph, the solubility of any substance changes as temperature changes.
4. List the substances whose solubility decreases as temperature increases. NH_3 and $Ce2(SO4)_2$
5. Which substance is least affected by temperature changes? NaCl
6. How many grams of ammonium chloride (NH_4Cl) at 50°C? 50g
7. NaCl and $KClO_3$ have the same solubility at approximately 78°C.
8. Which compound is least soluble in water at 10°C? $KClO_3$
9. How many grams of KNO_3 can be dissolved at 50°C? 80g
10. Are the following solutions unsaturated, saturated, or supersaturated?
    a. 45g of $NaNO_3$ in 100 g of water at 30°C. saturated
    b. 60g of $KClO_3$ in 100 g of water at 90°C. supersaturated
11. How many grams of sodium chloride, NaCl are required to saturate 100 grams of water at 100° C? 40g
12. How many grams of $NaNO_3$ are required to saturate 100 grams of water at 75°C? 140g
13. How many grams of KI will saturate water at 20°C? 33g
14. At what temperature would 25g of potassium chlorate ($KClO_3$) dissolve? 60°C
15. At what temperature would 60g of NH_4Cl dissolve? 70°C
16. 89 g $NaNO_3$ is prepared at 30°C.
    a) Will all of the salt dissolve? No
    b) What mass of $NaNO_3$ will dissolve at this temperature? 95g
17. If 50 grams of NH_4Cl is dissolved at 50°C, how many additional grams NH_4Cl would be needed to make the solution saturated at 80°C? 15g
18. At 50°C, how many grams of KNO_3 will dissolve? 80g
19. At 70°C, how many grams of cerium (III) sulfate ($Ce_2(SO_4)_3$) dissolve? 5g
20. Determine if each of the following is unsaturated, saturated, or supersaturated.
    a. 55g of NH_3 at 20°C supersaturated
    b. 10g of $Ce_2(SO_4)_3$ at 10°C unsaturated
    c. 110g of KNO_3 at 60°C. supersaturated
    d. 65g of NH_4Cl at 80°C. saturated
    e. 12g of NH_3 at 90°C. supersaturated
    f. 78g of $NaNO_3$ at 10°C. saturated
    g. 145g of $NaNO_3$ at 80°C. saturated
    h. 35g of NaCl at 100°C. unsaturated

CPHS Chemistry Mr. G Edelman

Solubility worksheet 1 answer key is a crucial educational tool for students studying chemistry, particularly in the context of understanding how different substances dissolve in solvents. This article will explore the concept of solubility, the importance of worksheets in reinforcing this knowledge, and provide an in-depth look at a typical solubility worksheet, including its answer key.

Understanding Solubility

Solubility refers to the ability of a solute to dissolve in a solvent, resulting in a homogeneous mixture known as a solution. Several factors influence solubility, including:

- **Temperature:** Generally, an increase in temperature increases the solubility of solids and

liquids in liquids, while the solubility of gases usually decreases.

- **Pressure:** The solubility of gases in liquids typically increases with increasing pressure.
- **Polarity:** Polar solutes tend to dissolve well in polar solvents (like water), while non-polar solutes dissolve better in non-polar solvents (like oil).

Understanding these factors is essential for predicting how different substances will behave when mixed.

The Role of Solubility Worksheets in Learning

Worksheets are a fundamental part of the learning process in chemistry. They serve various educational purposes, including:

- **Reinforcement of Concepts:** Worksheets provide students with the opportunity to apply theoretical knowledge in practical scenarios.
- **Self-Assessment:** By working through problems on a worksheet, students can gauge their understanding of solubility concepts.
- **Preparation for Exams:** Worksheets often mirror the types of questions found in exams, allowing students to practice and familiarize themselves with the format.

A solubility worksheet typically includes a variety of problems ranging from simple identification of soluble and insoluble substances to complex calculations involving solubility products.

Typical Structure of a Solubility Worksheet

A common solubility worksheet might include the following sections:

1. Definitions and Concepts

This section usually consists of key terms and definitions related to solubility. Students may be asked to define terms such as:

- Solute
- Solvent
- Solution
- Saturated solution

- Concentration

2. Solubility Rules

Students are often provided with a list of general solubility rules that can help them predict whether certain ionic compounds will dissolve in water. For example:

1. All nitrates (NO_3^-) are soluble.
2. Most alkali metal salts (Li^+, Na^+, K^+) are soluble.
3. Chlorides (Cl^-) are generally soluble, except for those of Ag^+, Pb^{2+}, and Hg_2^{2+}.
4. Most sulfates (SO_4^{2-}) are soluble, except for those of Ba^{2+}, Pb^{2+}, and Ca^{2+}.

3. Problem-Solving Questions

This section is where students will encounter various problems requiring them to apply their knowledge of solubility. Common types of questions include:

- Identifying whether a given salt is soluble in water.
- Calculating the concentration of a solution.
- Predicting the outcomes of mixing different solutions.

4. Application Scenarios

Students might be presented with real-world scenarios where they must apply solubility rules to solve problems. For example, they could be asked to determine whether a specific medication would dissolve in the bloodstream or whether a certain fertilizer would be effective in soil.

Sample Solubility Worksheet 1 Answer Key

To illustrate how a solubility worksheet might be structured and assessed, let’s consider a hypothetical Worksheet 1 with a corresponding answer key.

Worksheet Questions

1. Define the following terms:
- Solute
- Solvent
- Solution
- Saturated solution
- Concentration

2. Based on solubility rules, determine if the following compounds are soluble in water:
- NaCl
- $BaSO_4$
- $AgNO_3$
- $CaCO_3$

3. If 10 g of NaCl is dissolved in 100 mL of water, what is the concentration in g/mL?

4. If you mix 50 mL of 1 M NaCl with 50 mL of 1 M $AgNO_3$, what precipitate will form, if any?

Answer Key

1. Definitions:
- Solute: The substance that is dissolved in a solvent.
- Solvent: The substance that dissolves the solute; typically present in greater quantity.
- Solution: A homogeneous mixture of solute and solvent.
- Saturated solution: A solution in which no more solute can dissolve at a given temperature.
- Concentration: The amount of solute present in a given volume of solution.

2. Solubility determinations:
- NaCl: Soluble
- $BaSO_4$: Insoluble
- $AgNO_3$: Soluble
- $CaCO_3$: Insoluble

3. Concentration calculation:
- Concentration = mass of solute (g) / volume of solution (mL) = 10 g / 100 mL = 0.1 g/mL.

4. Precipitate formation:
- When NaCl and $AgNO_3$ are mixed, AgCl forms as a precipitate. This occurs because AgCl is insoluble in water.

Conclusion

The **solubility worksheet 1 answer key** provides students with essential feedback on their understanding of solubility concepts and applications. Through the structured exercises found in worksheets, learners can solidify their grasp of solubility rules, engage in problem-solving, and apply their knowledge to real-world scenarios. Mastering solubility is not only vital for academic success in chemistry but also for comprehending various practical applications in science and industry. As students progress in their studies, worksheets and their answer keys will continue to be invaluable resources in their educational toolkit.

Frequently Asked Questions

What is included in the 'solubility worksheet 1 answer key'?

The answer key typically includes correct answers for various solubility problems, such as identifying soluble and insoluble substances, calculating solubility in different solvents, and interpreting solubility graphs.

How can I effectively use the 'solubility worksheet 1 answer key' for studying?

To study effectively, compare your answers with the key, identify any mistakes, and review the concepts related to those questions to reinforce your understanding of solubility principles.

Is the 'solubility worksheet 1 answer key' suitable for all educational levels?

While the answer key is primarily designed for high school and introductory college chemistry students, it can also be adapted for younger students with additional guidance.

Where can I find the 'solubility worksheet 1 answer key'?

The answer key can usually be found in educational resources provided by teachers, online educational platforms, or downloadable from chemistry-focused websites.

What common mistakes should I look out for when checking my answers against the 'solubility worksheet 1 answer key'?

Common mistakes include misreading solubility rules, confusing solubility with concentration, and neglecting the temperature dependence of solubility. Pay attention to these areas when reviewing.

Solubility Worksheet 1 Answer Key

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 ...

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