Solutions, Dissolving and Separation: Worksheet

Introductory Chemistry · Worksheet for https://jugami.com/matter/solutions-and-separation/ · For instant feedback, try the self-guided quiz online.

Jugami Introductory Chemistry · Unit 3 · Grades 6–8 Unit page: https://jugami.com/matter/solutions-and-separation/

Name: _____ Date: _____

Directions: Answer each problem in the space given. Problems start easier and get harder. This is a pencil-and-paper worksheet: do not mix, heat, taste or test any substances at home.

---

1. **Match each word to its meaning.** Write the letter on the line.

Word	Letter	Meaning
solute	____	A. a substance that does not dissolve in a given solvent
solvent	____	B. the substance that dissolves
solution	____	C. a substance that can dissolve in a given solvent
soluble	____	D. the substance that does the dissolving
insoluble	____	E. a mixture that looks the same all the way through, made when a solute dissolves

2. **Name the solute and the solvent** in each solution.

Solution	Solute	Solvent
a) Sea water (the salt part)		
b) Sweet iced tea (the sugar part)		
c) Powdered drink mix stirred into water		

3. A beaker of water has a mass of 240 g. A student adds 15 g of sugar. After stirring, the sugar can no longer be seen. What is the mass of the beaker and its contents now? Explain in one sentence.

Mass: _____ g

Explanation: _____

4. **Soluble or insoluble?** Each row describes what a student saw after stirring a solid into water. Write *soluble* or *insoluble*.

What the student saw	Soluble or insoluble?
a) The solid disappeared and the liquid was clear and colorless.	
b) The liquid turned cloudy, and after ten minutes a layer of powder sat on the bottom.	
c) The solid disappeared and the liquid turned see-through purple.	
d) The grains sat on the bottom looking exactly the same as before.	

5. Three cups contain sugar fully dissolved in water.

- Cup A: 2 spoonfuls of sugar in 1 cup of water
- Cup B: 2 spoonfuls of sugar in 2 cups of water
- Cup C: 4 spoonfuls of sugar in 1 cup of water

Rank the cups from **most concentrated** to **most dilute**: _____ , _____ , _____

6. A lemonade tastes far too sweet.

a) What could you add to make it more dilute? _____

b) Does the amount of sugar in the jug change when you do this? Explain.

_____

7. Describe what you would *see* in a glass of salt water that tells you it is saturated. Then explain why the word "saturated" always needs a temperature attached to it.

_____

8. Name **three** changes that would make sugar dissolve faster in a cup of cold tea. Circle the one change that could also let *more* sugar dissolve in the end.

1. _____ 2. _____ 3. _____

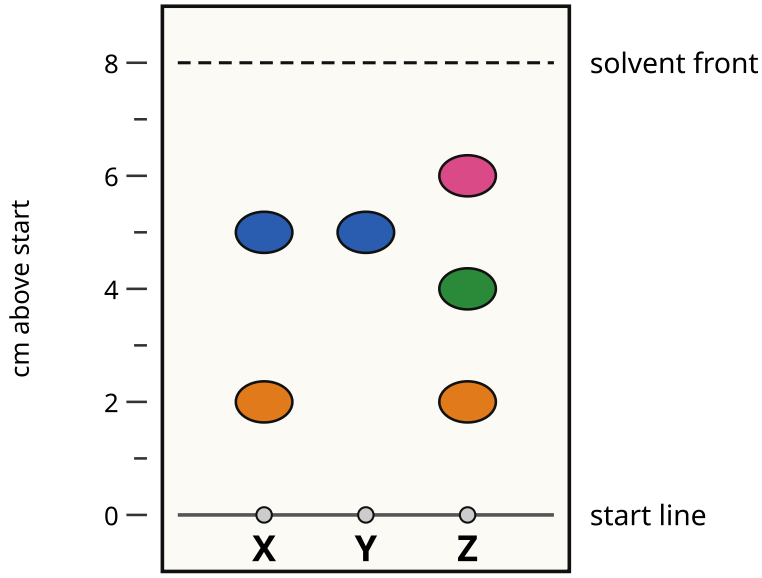
9. Riley wants to test whether stirring speeds up dissolving. Cup 1 has cold water and is stirred. Cup 2 has hot water and is not stirred. Cup 1 dissolves its sugar first. Explain why this is **not** a fair test, and describe how to fix it.

_____

10. **Pick the method.** For each job, write *filtration*, *evaporation* or *paper chromatography*, and give the reason in a few words.

Job	Method	Reason
a) Getting pebbles and grit out of pond water		
b) Collecting the solid from a bowl of salty water		
c) Finding out how many colors are mixed in a green food coloring		

11. Read the chromatogram.



a) Which sample could be a single dye? _____

b) Which sample contains the most dyes? _____

c) Which two samples probably share a dye that traveled 2 cm? _____ and _____

d) Which dye in sample X is probably also in sample Y? _____

12. A student set up paper chromatography with water as the solvent and made two mistakes: they tested an ink that does not dissolve in water, and they poured in so much water that it covered the ink spots. Predict what would go wrong because of **each** mistake.

Mistake 1: _____

Mistake 2: _____

13. **Plan a separation.** You are given a dry mixture of gravel, sand and salt. Write the steps, in order, to end up with three separate piles: gravel, sand and salt. Name the property each step uses. (A sieve with holes bigger than sand grains but smaller than gravel is available.)

    1. _____
    2. _____
    3. _____
    4. _____

Worksheet written for Jugami Introductory Chemistry. Answers are in the separate answer key for parents and teachers.