

Name: _____

Class: _____

7th Grade

Summer Vacation Assignment

SOLUTIONS



WWW.PHOTOBANK.COM (03) 4479 FoodCollection
sprinkling salt into a glass of water

In our first unit we will be studying how solutions form. We will learn that when you mix a solvent with a solute, the solute will dissolve into the solvent creating a solution. An example of this would be if you mixed sugar and water together. The sugar would be the solute and the water is the solvent.

Over vacation, you are to conduct a simple experiment testing the dissolve time of a solution. You will be testing to see if a sugar cube (large sugar particle) dissolves faster than the small particles of sugar in a sugar packet. To do this all you need is warm water, 2 cups of the same size, a measuring cup, spoon, timer or clock, 3 sugar packets, and 3 sugar cubes. Sugar cubes can be found in the baking aisle of most major super markets, Domino is the brand they usually carry.

Once you have collected your materials your job will be to complete the packet by conducting the experiment. **Be sure to complete your hypothesis, variables, and procedure sections of the packet before conducting the actual experiment!**

If you have any questions or problems email Ms. Verra over break at scienceverra@yahoo.com.

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Which will dissolve faster a sugar cube (large particle) or regular granulated sugar (small particles)?

Focus Question

How does the particle size of sugar affect the dissolve time?

Situation

You have seen at some restaurants that some places give sugar cubes for coffee and other places have packets of loose granulated sugar. You know the sugar cube has a larger particle size than the loose sugar from the packet. You want to see which one will dissolve faster, the sugar cube or the loose sugar. You went home to setup the experiment. To do this you took out two identical cups and filled them equally with hot water from your sink.

Materials:

- 2 cups of equal size
- 3 Packets of sugar
- 3 Sugar cube
- Spoon
- Hot water from sink
- Clock with second hand or a timer

Hypothesis:

The hypothesis is a prediction answering the focus question based on research information.

Hypothesis:

If _____

then _____

because _____

Additional procedure space for diagrams if necessary

Data

Conduct the experiment and complete the data table below.

<u>Sugar Type</u>	<u>Dissolve Time in Seconds</u>			
	Trial 1	Trial 2	Trial 3	Average
Sugar Packet (loose sugar) (small particles)				
Sugar Cube (large particle)				

Discussion:

This is where you analyze your data. This section has several parts. Complete all parts by answering the questions and finishing the sentence starters below.

What is the focus question that you want to answer?
What did you do to collect evidence that will be used to support your explanation?

Support for your explanation

Scientific Explanation = Claim + Evidence + Science Reasoning
My claim is _____

The evidence supporting this is _____

The reason why this happens is (<i>This is where your research from the attached reading will help you. It should be at least 3-4 sentences</i>)

Conclusion:

This is where you discuss the relationship between your hypothesis and your data. Complete the sentence starters below to do this.

My hypothesis (was/was not) supported by my data. The data showed _____

_____ which (does/does not) support my hypothesis.

I learned from this experiment _____

Some possible errors during this experiment may have been _____

Some things that could have done to improve this experiment are _____

Some questions or wonderings I now have about the experiment are _____

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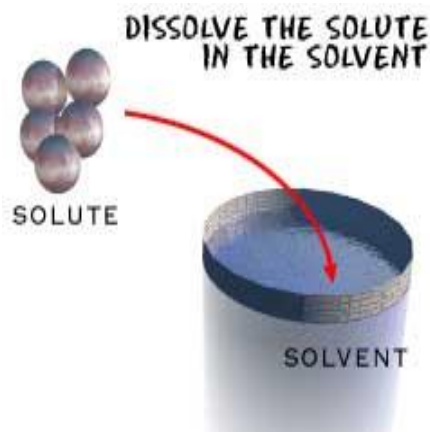
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The following are excerpts from Chem4Kids.com. For more information feel free to visit the full article at this site http://www.chem4kids.com/files/matter_solution.html

Making Solutions

A simple solution is basically two substances that are evenly mixed together. One of them is called the solute and the other is the solvent. A **solute** is the substance to be dissolved (sugar).

The **solvent** is the one doing the dissolving (water). As a rule of thumb, there is usually more solvent than solute. Be patient with the next sentence as we put it all together. The amount of solute that can be dissolved by the solvent is defined as **solubility**.



Making Solutions

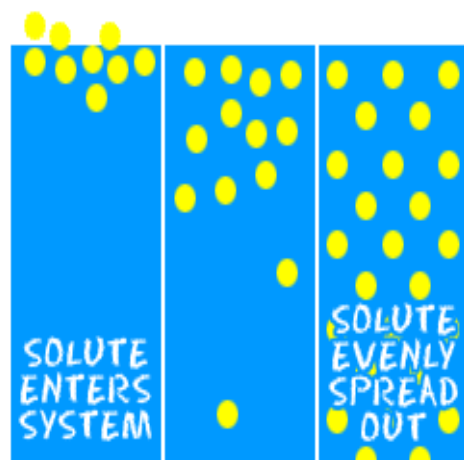
So, what happens? How do you make that **solution**? Mix the two **liquids** and stir. It's that simple. Science breaks it into three steps. When you read the steps, remember...

Solute= Sugar

Solvent= Water

System= Glass.

1. The **solute** is placed in the **solvent** and *the concentrated solute particles slowly break into smaller pieces until small enough to dissolve*. If you start to stir the liquid, the mixing process happens much faster.



2. The molecules of the solvent begin to move out of the way and they

make room for the molecules of the solute. Example: The water has to make room for the sugar molecules to spread out.

3. The solute and solvent interact with each other until the concentration of the two substances is equal throughout the system. The concentration of sugar in the water would be the same from a sample at the top, bottom, or middle of the glass.