

Solubility of Table Salt and Table Sugar in Water

Purpose: Determine the solubility of table salt and table sugar in room temperature water using varying amounts of water.

Data: Read the experiment directions and the calculations. Then design a data table that will serve to show your data and allow required predictions.

Directions:

Part A: Table salt

1. Mass a clean cup or beaker, then put about 150 grams of table salt in it and record the amount of salt.
2. Measure 20 ml of water into a 150 ml beaker. Record temperature.
3. Carefully add salt and while stirring until the solution appears to be barely over saturation.
4. Record the amount of salt that dissolved.
5. Add another 10 ml of water to your salt solution and then find out how much will dissolve.
6. Continue adding 10ml of water and then salt until you reach a total of 80 ml of solution.

Part A: Table sugar

Repeat 1-6 procedure with table sugar and water.

Graph and Calculations:

1. Graph your results and include a trendline. (use graph paper or Excel). Consider these ideas before you finalize your graph.
 - a. How did you decide what to put on the x- axis?
 - b. How did you decide what type of trendline to use?
 - c. Do you have any outliers that should be excluded in a trendline?
2. Describe how to use your graph to predict how much of each substance in grams will dissolve in 100 ml of water at room temperature using each trial. State your prediction.
3. Research to find the accepted value for solubility of each substance in g/100ml. Then calculate your percent error.
4. Show how to calculate how much of each substance in moles will dissolve in 100 ml of water using each trial.

Questions:

1. Explain why your results might have some variation and also a percent error. (ie. your precision and accuracy errors) Make sure to explain experimental errors that are not just “mistakes”, but design issues.
2. What ideas do you have that might explain why the solubility of salt is not the same as sugar?