

Temperature and solubility



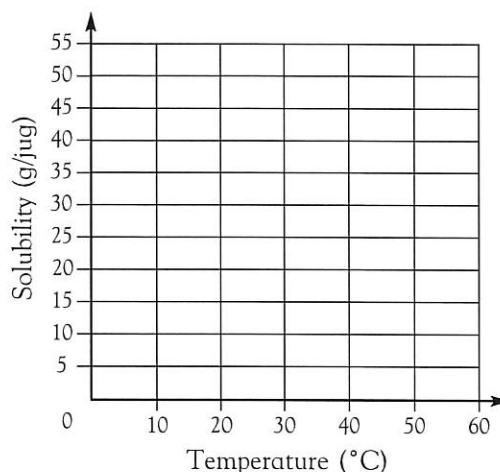
Background knowledge

It is easier to dissolve soluble substances in warm water than in cold water. However, heat increases the solubility of some substances more than of others.

Science activity

Make a line graph to plot the data from the table. Be sure to connect all the points after they are plotted. The data shows the solubility of table salt and of Epsom salts as temperature increases.

Temperature (°C)	Amount dissolved per jug (in grams)	
	Salt	Epsom salts
20	10	20
30	12	30
40	14	40
50	16	50
60	18	55



1 Do you see a relationship between temperature and the solubility of table salt? Explain.

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2 Is this relationship the same for Epsom salts? Explain.

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3 Describe any differences temperature has on the solubility of Epsom salts as compared to table salt.

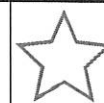
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Science investigation

⚠ Take extra care - ask an adult to supervise you.

You can make rock candy by dissolving a lot of sugar (2 cups) in a cup of boiling water. Let the solution cool and pour it into plastic cups, filling each half way. Tie 12 cm of plain dental floss in the center of a pencil. Place the pencil over a cup and let the floss drop into the solution. Repeat for the other cups. Observe what happens over two weeks. Draw diagrams and explain your observations.

How soluble is it?

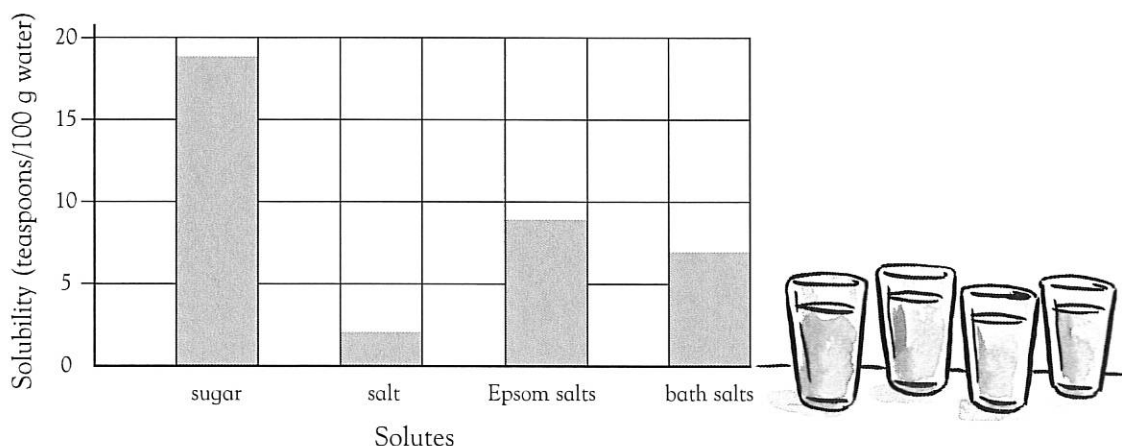


Background knowledge

All soluble substances do not dissolve equally well. Sugar dissolves very easily, while other substances, such as salt, dissolve less easily. The amount of solute that will dissolve in a solvent is a measure of its *solubility*.

Science activity

Below is a graph showing the solubility of different substances.



About how many teaspoons of salt dissolve in the water?

About how many teaspoons of bath salts dissolve in the water?

Another substance is more soluble than bath salts but less soluble than Epsom salts. What range of teaspoons would you expect to dissolve?

List the solutes in the bar graph in order of their solubility.
Write the name of the most soluble substance first.

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Science investigation

Does the size of a sugar particle affect its solubility? Obtain sugar cubes, powdered sugar, and granulated sugar. Design and conduct an experiment to see which type of sugar is most soluble.



Properties Sort**Name:** _____**Associative Property****Commutative Property****Identity Property****Distributive Property**

$4 \times 27 = 4 (20 + 7)$	$12 + 6 = 6 + 12$
$5 \times (20 \times 9) = (5 \times 20) \times 9$	$40 \times 8 = 8 \times 40$
$3 + (6 + 4) = (3 + 6) + 4$	$(9 \times 6) \times 4 = 9 \times (6 \times 4)$
$75 \times 42 = 42 \times 75$	$87 \times 7 = (90 - 3) \times 7$
$65 \times 1 = 65$	$45 \times 6 = 6 \times 45$
$8 \times (5 \times 4) = (8 \times 5) \times 4$	$1,037 \times 1 = 1,037$
$4 \times 53 = (4 \times 50) + (4 \times 3)$	$42 \times 6 = (40 \times 6) + (2 \times 6)$