

Name Key

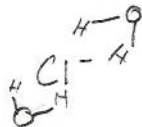
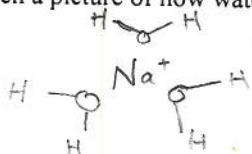
Solutions Test

1. Use the terms solute and solvent to describe a solution.

Solute - Item being dissolved

Solvent - Item dissolving the solute

2. Sketch a picture of how water molecules are oriented around sodium ions and chloride ions in a solution.



Use the table to answer the next four questions

Beaker A	Beaker B	Beaker C	Beaker D
20 grams of NaCl	20 grams of NaCl	20 g NaCl	40 g NaCl
1.0 liter solution	2.0 liters solution	0.5 liters solution	4 liters solution

3. Which beaker has the greatest concentration of NaCl? C
4. Which beaker is the most dilute? B + D
5. Which two beakers have the same concentration? B + D
6. What is the molarity of each of the solutions above

a.  $\frac{20}{58.5} / 1 = 0.342 \text{ M NaCl}$       b.  $\frac{20}{58.5} / 2 = 0.171 \text{ M}$       c.  $\frac{20}{58.5} / 0.5 = 0.684 \text{ M}$       d.  $\frac{40}{58.5} / 4 = 0.171 \text{ M}$

A student has two identical beakers with equal volumes of water. The student adds three grams of sugar to each beaker. The student places beaker B on a hot plate and heats the solution while stirring. Solution A remains at room temperature and is not stirred. The student records the time it takes for the sugar to dissolve in each beaker.

	Beaker A	Beaker B
Conditions of experiment	Room temp., no stir	Heat and stir
Time to completely dissolve	20 minutes	3 minutes

The student concludes that heat increases the dissolution rate of sugar in water.

7. Based on the experiment, is this a valid conclusion? Explain!

No, two variables being tested

8. How would you prepare 200 ml of 5M NaOH?

$$5 \text{ M} = \frac{x}{0.2 \text{ L}}$$

$$\frac{1 \text{ mol NaOH} \mid 40 \text{ g}}{1 \text{ mol}} = 40 \text{ g NaOH} + \text{add distilled H}_2\text{O up to 200 ml}$$