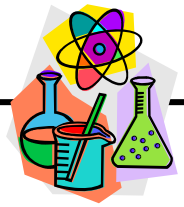
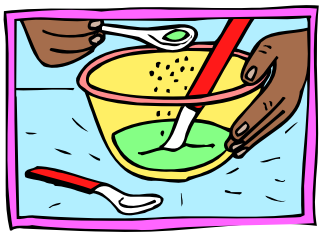


Substances and Mixtures



1. In groups, discuss the differences between pure substances and mixtures and come up with simple definitions for both. Write your group's definitions below and list examples of pure substances and mixtures.

pure substance

Examples:

salt

mixture

Examples:

sea water

Solution: A substance created by mixing two or more other substances.

Example: lemonade

Solvent: The liquid into which something dissolves to form a solution.

Example: water

Solute: The substance or material that dissolves in a liquid to form a solution.

Example: juice crystals

Juice Crystals + Water → Lemonade

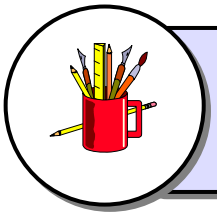
Solute + Solvent → Solution

2. With a partner, plan and conduct an experiment using four solutes:
   - juice crystals
   - petroleum jelly
   - sugar
   - salt

   and two solvents:
   - water
   - vegetable oil.

   Your objective is to answer this question:
   - Which solutes dissolve in water and which dissolve in vegetable oil?

   Before you begin, make sure you understand the process of Scientific Inquiry.



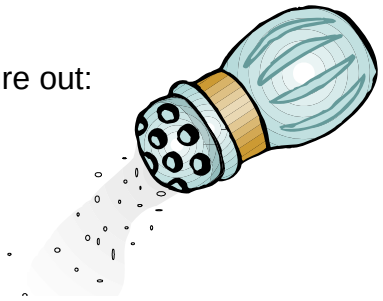
Use Tools Planning an Experiment, Experiment/Investigation Template I and Analyzing and Interpreting Experiment Results.

Concentration: The amount of solute dissolved in the solvent, measured in g/mL or kg/L.

Calculating Concentration

Remember:

Concentration is usually written as grams per millilitre (g/mL) or kilograms per litre (kg/L).



To calculate concentration, you need to know or figure out:

- the mass of solute (in grams or kilograms)
- the volume of solvent (in millilitres or litres)

The formula:

Solute ÷ Solvent = Concentration

Example:

5 grams of salt ÷ 100 millilitres of water = 0.05 g/mL

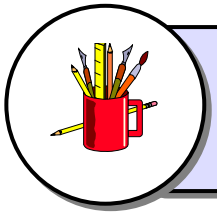
For a further explanation of solutions and concentrations, **go to** http://www.chem4kids.com/files/matter_solution.html

Saturation point: The point at which a solvent will no longer dissolve a solute and the solute begins to collect on the bottom.

Dilution: A weak solution; a solution with a low amount of solute.

3. Investigate and identify what concentration of a solution of pre-sweetened juice crystals and water tastes best to you. Compare your findings with your classmates.

4. Plan and conduct an experiment to investigate the effect of temperature on the saturation point of a solution of sugar and water. Before you begin, make sure you understand the process of Scientific Inquiry. You might also want to review ways of Processing and Displaying Data.



Use Tools Planning an Experiment, Experiment/Investigation Template I and Analyzing and Interpreting Experiment Results.