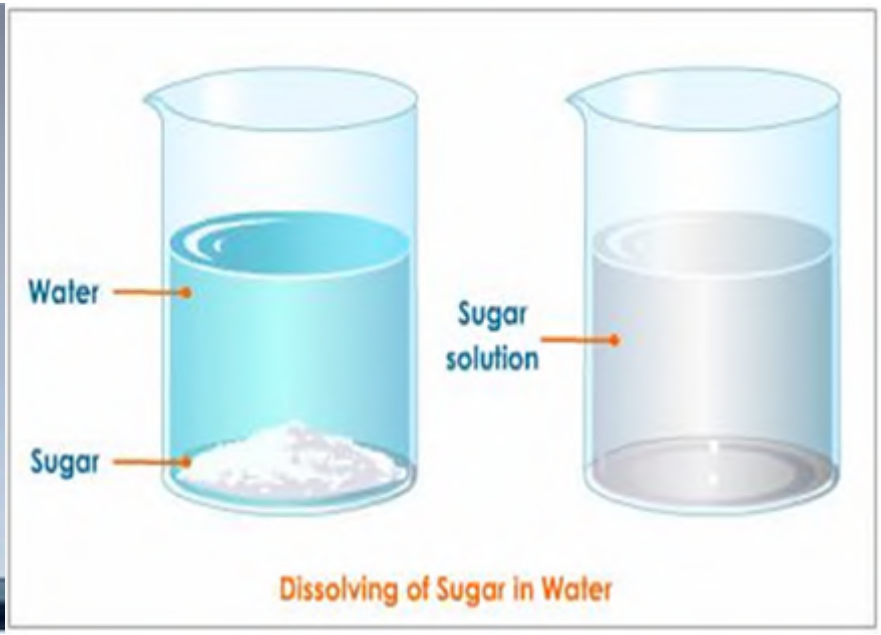
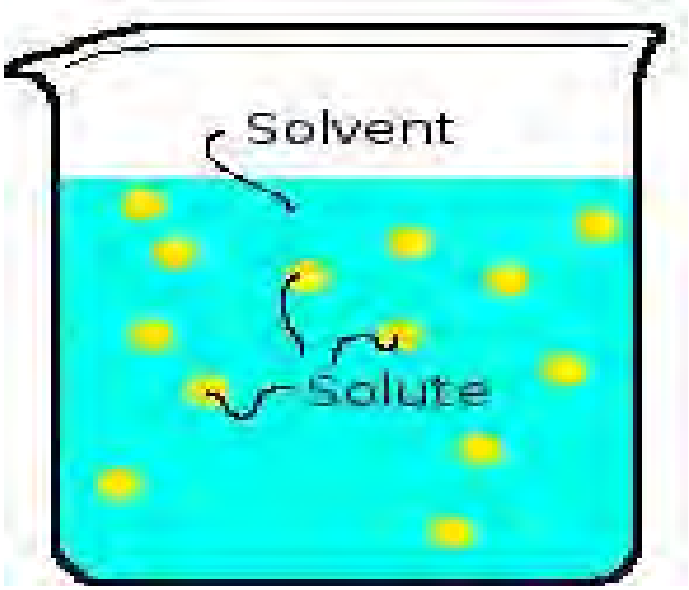
Solution

A solution is a homogeneous mixture that combines a solute and a solvent



Parts of Solutions

- **Solvent** the part that does the dissolving and exist in greatest quantity in a solution.
- **Solutes** the part that gets dissolved and exist in smaller quantity.



- **State of solution**
- **Page 203**

Water as a solvent

- 75% of your brain and 90% of your lungs are made of water.
- Much of this water is not pure water.
- Water is nearly contain dissolved solutes it has to do witht eh structure of the wter molecule.

Concentration
تركيز

Concentration is the amount of a particular solute in a given amount of solution. **كمية المذاب في الحلول**

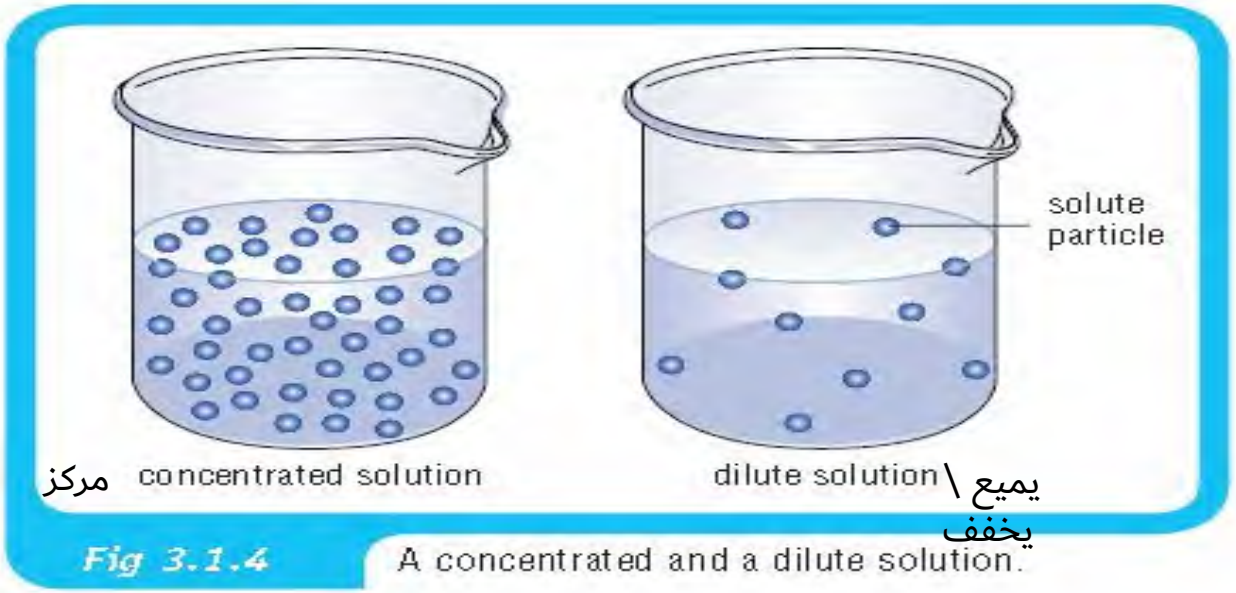


Fig 3.1.4 A concentrated and a dilute solution.

Concentrated vs Dilute

- The terms concentrated and dilute are one way to describe how much solute is dissolved in a solution. However, these terms don't state the exact amount of solute dissolved. What one person thinks is concentrated might be what another person thinks is dilute.
    - المصطلحات المركزة والمخففة هي إحدى الطرق لوصف مقدار الذوبان الذي يتم حله في محلول. ومع ذلك، فإن هذه المصطلحات لا تذكر المبلغ المحدد من المذاب الذائب. ما يعتقد شخص واحد هو تتركز قد يكون ما يعتقد شخص آخر هو تمييع

Calculating concentration

Concentration = Mass of solute / Volume of solution

$$C = \frac{m}{V}$$

Practice question

1) What is the concentration of 5 g of sugar in 0.2 L of solution?

2) How many grams of salt are in 5 L of a solution with a concentration of 3g/L?

Solubility

- **Solubility** is the maximum amount of solute that can dissolve in a solvent in a given temperature and pressure.
  الذوبانية هو الحد الأقصى من المذيبات التي يمكن أن تذوب في المذيب في درجة حرارة معينة والضغط

Effect of temperature and pressure

- **True for many Sold solutes** The solubility increases with temperature. for example: sugar dissolve easily in hot water than cold water.

- The solubility of a gas in a liquid decreases when the temperature of the solution increases.

Questions page 202 to 207

1)How do a solute and solvent differ? Solvent exists in greater quantity than the solute

2) Why is the term dilute not precise way to describe concentration? Because the term dilute don't state the exact amount of solute dissolved. Also what one person think dilute might be what other person thinks is concentrated.

4) If more solvent is added to a solution, what happens to the concertation of the solution? It become less concentered .

5) How do concentration and solubility differ? Solubility is the maximum amount of solute in a solution but concentration is the amount of a solute in a solution.

6.1 Review page 196

1) **why do some substances dissolve in water and other do not?** Every chemical substance which dissolves in water has a fixed solubility. If it does not dissolve - its solubility is zero.

2) **How do concentration and solubility differ?** Solubility is the maximum amount of solute in a solution but concentration is the amount of a solute in solution.

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1) adding more solvent til it reach maximum amount or changing either temprature or pressure.

2) at 10C the solubility is 5

3) increasing the temperature, crushing the solute, and stirring the solution

4) pressure does not affect the solubity of a solid solute in liquid

5)