



NAME: _____ CLASS / SEC: _____ WEEK -25.01.2021 to 29.01.2021

LEARNING OUTCOMES:

Each child will be able to:-

- define a SOLUTION.
- list the different types of solutions and give at least two examples of each type.
- explain the molecular arrangement in a solution.

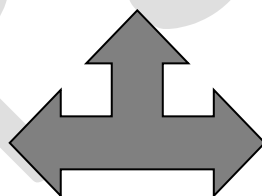
In our previous lesson we had learnt about the *molecular arrangement in solids, liquids, and gases*, which determine their properties.

Let us see what happens **when we mix two or more kinds of matter!**

There may be two possibilities or outcomes, that these may.....

DISSOLVE in each other completely

(can't be seen separately)



Remain SEPARATED.

(can be seen distinctly)

Let us do it ourselves and observe:-

ACTIVITY 1

-Dissolve two teaspoonful of common salt in a beaker filled with water. Stir with a spoon till the salt dissolves.

-Repeat the same with two spoonful of sugar.

-Observe carefully. Can you see the particles of salt or sugar in the water?



ACTIVITY 2

- Now dissolve a spoonful of sand in another beaker filled with water.
- Again, stir and let it stand for a few minutes.
- Observe carefully. Do you see the sand particles at the bottom of the glass?



Let us now compare the two results....



- We find that salt particles **dissolve** in water completely. They cannot be seen separately. Sand particles on the other hand can be seen clearly, settled at the bottom of the container. They do not dissolve in water.

Substances that dissolve in water are called **SOLUBLE**. Sugar and salt are examples of soluble substances. Substances that do not dissolve in water are called **INSOLUBLE**. Sand and flour are examples of insoluble substances.

FUN TIME

EXPLORE various ingredients in your kitchen. Try to dissolve them in water. (Adult supervision required)

Classify them as **SOLUBLE** or **INSOLUBLE**. Find out if the substances dissolve more easily on stirring or by heating.

Record your observations in the following table:-

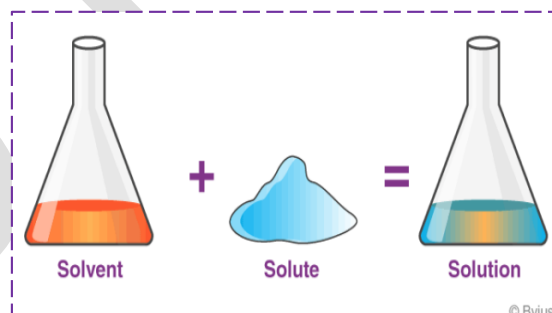
	SOLUBLE	INSOLUBLE
1.	Salt	
2.		
3.		
4.		
5.		
6.		
7.		

Whenever any substance dissolves completely in another one, it forms a **SOLUTION**. The two substances mix so well that we cannot see them separately, like salt solution, sugar solution etc.

A **solution** is a uniform mixture of two or more substances. A solution may exist in any state. A solution consists of at least two substances known as **solute** and a **solvent**.

The **solute** is the substance that dissolves in another substance. (the solvent)

The substance in which it dissolves is called a **solvent**.



For example, when salt or sugar are added to water, they dissolve to form salt or sugar solution. Here sugar and salt are the solutes, and water is the solvent.

Now think and recollect some solutions that you use in your everyday life...

NAME OF THE SOLUTION	SOLUTE	SOLVENT
1.		
2.		
3.		
4.		

How is a solution different from a mixture???



SOLUTION

- In a solution we cannot see the solute and the solvent separately.
- The solute particles are evenly distributed in the solvent and have uniform properties e.g. Colour, taste etc.

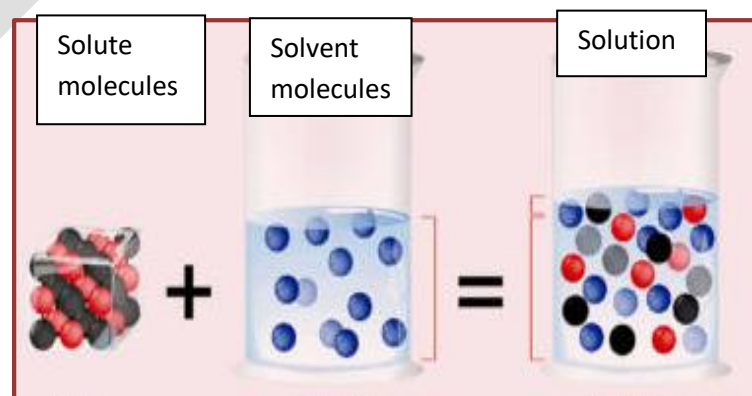
MIXTURE

- In a mixture the different components can be seen distinctly.
- Particles will not be evenly
- Each particle will retain its distinct properties. e.g. shape, size, colour etc.



LET US NOW SEE WHAT HAPPENS TO THE MOLECULES WHEN A SOLUTION IS FORMED???

- When we dissolve any solute in water, the solute molecules spread out and evenly distribute or fit themselves in between the intermolecular spaces of the water molecules.



(This is why the volume of the liquid does not change when any solute is dissolved in it.)

TYPES OF SOLUTIONS

Solutions may be of different types, depending upon the state of the solute and solvent present in the solution:-

1. **Solid dissolved in liquid:** This type of solution is formed when the solute is solid and the solvent is liquid, e.g. sugar solution, salt solution.
2. **Liquid dissolved in liquid:** This type of solution is formed when the solute and the solvent are both liquids, e.g. milk in water(milkshake), alcohol in water.
3. **Gas dissolved in liquid:** This type of solution is formed when the solute is gas and the solvent is liquid, e.g. aerated drinks (fizzy drinks have CO₂ in them), air (oxygen) dissolved in water of the water bodies (which aquatic animals breathe).
4. **Gas dissolved in gas:** This type of solution is formed when the solute and the solvent are both gases, e.g. air (mixture of different gases).



Can you think of some solutions that are **SOLIDS** !!



What are these utensils made up of? Find out what their composition is?

Miscible and Immiscible Liquids

MISCIBLE LIQUIDS

IMMISCIBLE LIQUIDS

When two liquids mix together in such a way that they dissolve completely in each other, For example :

when milk is mixed in water
when ink is mixed in water.



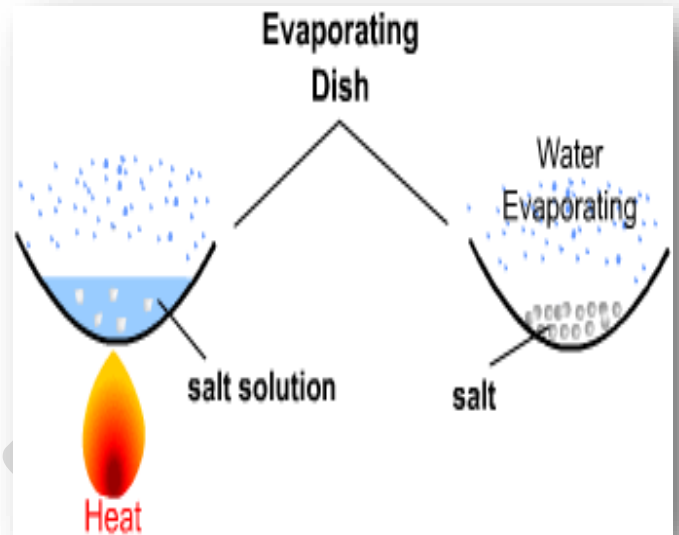
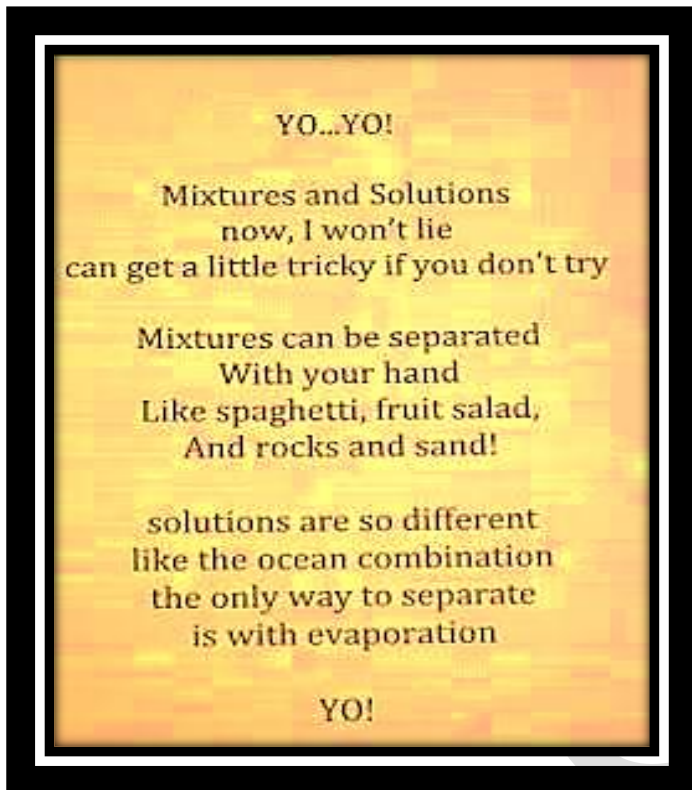
when two liquids mixed together in such a way that they do not dissolve completely in each other, For example

when oil is mixed in water, it does not dissolve. Instead oil and water form separate layers within the container.



Is it possible to separate a solute from its solution??

Let us see how it happens...



The molecules of salt and water do not change into some other molecules when they dissolve to form a solution. If we heat the solution, to allow all the water to evaporate, we will get the salt back.

This is how we obtain salt from sea water!!

Learn more about solutions by clicking on the following links:

<https://youtu.be/e-2EoyDYamg>

<https://youtu.be/Pn8P-QtJQH4>

LET'S REVISE

(To be done in the notebook)

Q 1. Name the solute(s) and the solvent in the following solutions:-

- a) Sea Water
- b) Lemonade
- c) Tea
- d) Milkshake

Q 2. State TRUE or FALSE. Correct the incorrect statements.

- a) When a solvent dissolves in a solute, we get a solution. _____
- b) We can dissolve a solute in a solvent more quickly by cooling. _____
- c) The molecules of a solute change permanently when they dissolve in water.

- d) Air is a gaseous mixture. _____

Q 3. Complete the following statements giving reasons:-

- a) Aquatic animals can breathe easily under water because _____
 - b) The volume of a solution does not increase when we dissolve some solute in it because _____.
 - c) Water vapour quickly disappears into the air because _____.
 - d) Water can be called a universal solvent because _____.
- _____