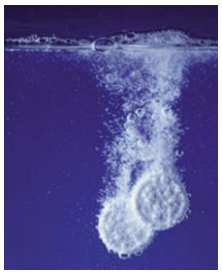
9. Measuring Solubility

In **Science** we have a special word to describe a substance which is being dissolved. It is called a **solute**. And we have a word to describe the liquid which is doing the dissolving. It called a **solvent**. We could say:-

solute plus **solvent** gives a **solution**

Notes: 1. What is a solvent?
2. What is a solute?

How Soluble is Soluble?



We all know that some substances dissolve very easily, for example salt in boiling water for cooking vegetables, and some seem to be much harder to dissolve, for example stock cubes which take a bit of stirring to dissolve even in boiling water. Today's lesson is trying to look at this in a **quantitative way**. That is, can we **measure** differences in solubility from one solute to another.

Aim: The aim of this experiment is to compare the solubility of 4 different solids in water.

Collect:

4 test tubes
1 test tube rack
1 spatula
1 stopper
1 10cm^3 measuring cylinder

4 bottles of solids:
sodium hydrogencarbonate
potassium nitrate
ammonium nitrate
sodium chloride.

Notes: Copy the following table:

Solid	Tally of Number of Spatulafuls	Total Number of Spatulafuls
Sodium hydrogencarbonate	lll etc.	
Potassium nitrate		
Ammonium nitrate		
Sodium chloride		

Activity:

1. Measure out 7cm^3 of water in the measuring cylinder and put into a test tube.
2. Add 1 spatula of solute, put the stopper on and shake until all the solid has disappeared. Put 1 tally mark in the second column of your table.

Note that it is vital to keep the quantity on the spatula the same every time.

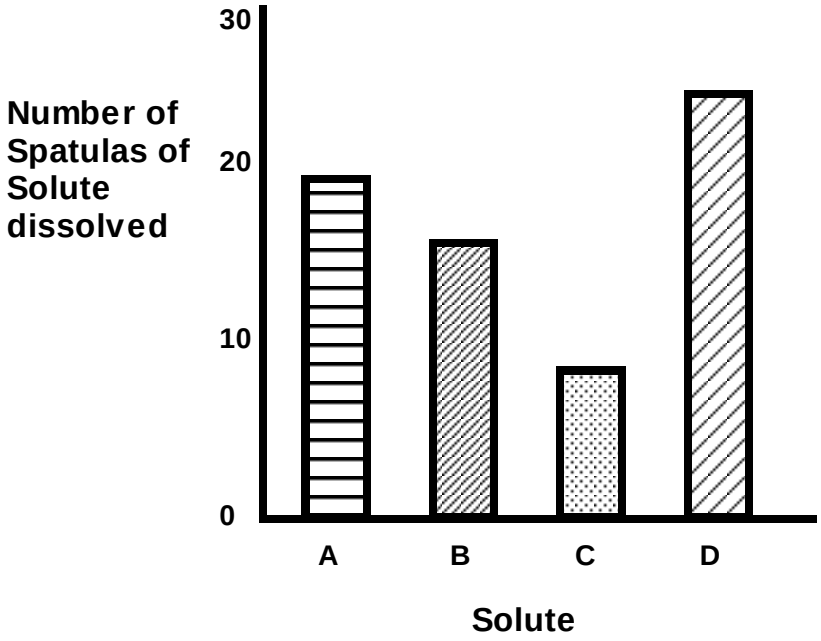
3. Repeat step 2 until a small quantity of solid remains in the test tube. This means that no more of the solid can dissolve. Then add up the tally marks and put the total in the third column.
4. Repeat steps 1 to 3 until all the solids have been tested.

Notes: Answer the following questions:-

1. What is the solvent in every experiment?
2. Did the same number of spatulafuls dissolve for each solute?
3. Which solid was most soluble?
4. Which solid was least soluble?

Use a piece of graph paper to draw a bar graph of your results.
It should look similar to the one below. Use coloured pencils or shading to distinguish between the bars and add a key to label the bars.

Solubility of Different Solids



Notes: Stick your own bar graph into your jotter.