7ANo Homework Sheet 2

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A rough guide as to how the marks are given is as follows:

		Effort Grade		Achievement of task
A	Excellent	this effort grade will rarely be given – to get this mark the work must demonstrate great effort and real clarity	+	Excellent understanding of the work
B	Good	will be given e.g. when a lot of effort has obviously been put into the work or when the work is very clearly set out	=	Good understanding of the work
C	Average	will be given for work which is of a satisfactory, acceptable standard; if you get less than C you must improve the standard at once!	−	Poor understanding of the work
D	Poor			
E	Very Poor			

If a question has one or a number of * before it then it contains points which are inherently difficult and which will be met more generally in subsequent years.

1 On making some observations at home

Carry out each of the activities below. For each explain what you did and write down clearly everything you **observed**.

a. Stir a teaspoon of sugar (as large granules as possible) into some water in a glass.

   *What do you see happening to the individual grains of sugar?

b. Put a small amount of baking powder in a cup and add some vinegar to it. You could use sodium bicarbonate instead of baking powder.

   *Why do you think the vinegar reacts with the baking powder?

c. Make a clean, still water surface e.g. in a well-rinsed washing up bowl. Dust the surface lightly with talc. Get the smallest possible drop of olive oil and put this on the surface.

   **What do you think is happening to the particles that made up the oil drop?

2 On solutes, solvents and solutions

a. Take a flat teaspoon of salt and stir it into a glass of water.

Write down what you see happening as the salt dissolves.

*If you could just look at a single crystal of the salt what do you think you would see as it dissolves? **Try to draw a diagram to show what is happening.

Describe carefully how you would get *as much as possible* of the salt back from the solution. Why might you not get all the salt back?

b. Alcohol (methylated spirits) is a dangerous liquid as it is flammable and can easily burn out of control if not carefully used.

Salt will not dissolve in alcohol but sugar will.

Describe what you would see if

i. salt was stirred into alcohol

ii. sugar was stirred into alcohol.

c. From the experiments considered above, give two examples of a **solute**, a **solvent** and a **solution**. Give one example of a **suspension**.

3 An investigation on solubility

Plan and carry out an investigation into whether salt or sugar dissolves the **faster** in water.

Do this by going through the stages below, writing each stage up carefully before you go on to the next stage.

- Make a prediction and back the prediction up with a reason.
- Explain how you will make the investigation fair.
- Describe what you will do and the (household) apparatus you will use.
- Carry out the investigation and say what you did if it is different to your plan.
- Record your results as clearly as possible.
- Make some comment on your results in terms of what you predicted to start with.

4 On volume

a. Make a 1 cm cube somehow e.g. with plasticene or paper. This is our main unit of volume in a science laboratory and is often written $1\,\text{cm}^3$.

**Give two other metric units of volume and see whether you can relate them to your cm^3.

b. Now get (or borrow) a golf ball. Look at it and guess the number of cm cubes that would fit into the golf ball – write down your guess (estimate).

c. Next estimate the volume of the golf ball by thinking of the box the ball would just fit into. By just measuring the diameter of the ball you can then work out an estimate (over-estimate) of the volume. Write down your result, explaining every step taken.

d. Get a measuring jug which is marked in cm cubes (or ml – a millilitre is exactly the same as a cm cube) and measure the volume of the ball. Again explain exactly what you did at each stage.

e. **See if you can find a formula to work out the volume of the ball (a sphere) and use this to check your results.