Can You Make Ice Grow?

Science Experiment

You will need:

Bottles of water - plain or coloured water

A container of ice cubes





The Activity

1. Put some bottles of water, laying flat, in a freezer for nearly 3 hours.
2. If you would like to use coloured water, add food colouring before placing in the freezer but ensure that the lids are secured tightly afterwards.
3. Remove the bottles from the freezer - before the water turns to ice, but has been in there long enough to make it icy cold.
4. Care is needed when removing the bottles from the freezer to ensure no ice is created. Do not shake or bump the bottle.
5. In a small container, place some ice cubes and gently start to pour the icy water over the top of the ice cubes. Watch what happens!
6. Continue to keep the stream of water going and move it around a bit (like a whippy ice cream) and see the ice tower grow taller and taller.

Awe and Wonder

Cornflour Slime

You will need:


A large bowl


200ml water


Food colouring

200-300g cornflour

Aprons

Large covered table or area where mess is not a problem



Method:

1. Pour the cornflour into the bowl.
2. Pour the water in, mixing slowly as you go. Keep adding more water until the mixture becomes thick (and hardens when you tap on it).
3. Add a few drops of food colouring to make your slime the colour you want it.
4. Put your hands in the slime and experiment with handling it.
5. What happens when you pick the slime up, squeeze it or even punch or slap it?
6. Do you think it is a solid or a liquid?
7. How is it different to water?



The Science

The slime is a non-Newtonian liquid which means it is different to 'normal' liquids. It gets thicker when it is pushed or pressed down. The cornflour is not actually dissolved in the water so when pressure is put on the mixture, the water molecules are pushed away. Other non-Newtonian liquids react in different ways to pressure. Tomato ketchup gets runnier if you shake it. If you whip cream for a long time, it gets thicker and thicker.

Fireworks in a Glass

You Will Need

- Warm Water
- Oil
- A Tall Glass
- Food Colouring



This is a very cool, simple and fun experiment, and also completely safe, just don't drink the water!

Method

1. Fill the tall glass with warm water.
2. Pour a small amount of oil into another container and add a few drops of food colouring.
3. Give it a good stir, if it doesn't mix, add a bit of water.
4. Pour the food colouring and oil mixture into the warm water and watch the fireworks!

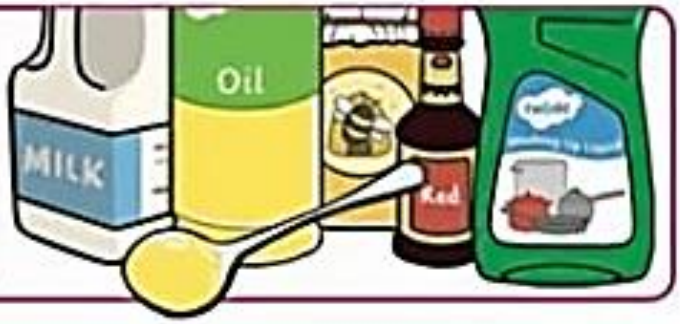
The Science Bit

Oil and water don't mix. Also oil is less dense than water (meaning there is less of it in the same volume) and therefore floats on top of water in a nice layer. The food colouring we used was water based and therefore does not mix with the oil, instead it sinks through the oil into the water below. Since the addition of the colouring makes the food colouring heavier than the water, it sinks to the bottom leaving trails (resembling fireworks) as some of the colour diffuses into the water.

Fun with Density

You Will Need

- Honey
- Milk
- Water
- A Glass
- Vegetable oil
- Food colourings
- Golden syrup
- Washing up liquid



Density is a really tough concept to grasp. We confuse ourselves by referring to our weight all the time when we really mean our **mass**. **Mass** is effectively 'how much stuff' is there. **Density** is how much mass is in a volume (or space).

One way to illustrate density is to pour different liquids (which have different densities) on top of each other. The liquids with the greatest density sink to the bottom.



Method

1. Measure out the same volume of each of the liquids. Colour the water and the milk if you wish.
2. Starting from the bottom, pour in the honey. Make sure it goes into the middle of the glass and that you don't get any honey on the sides.
3. Slowly pour the golden syrup on top, followed by the washing up liquid.
4. Then add the milk, followed by the water.
5. Finally top with vegetable oil and admire your rainbow glass!

The Science Bit

Each of the liquids have a different mass of molecules or different numbers of parts squashed into the same volume of liquid, this makes them have different densities and therefore one can sit on top of the other – the more dense a liquid is the heavier it is.

Do you think you could float small objects on each of the different levels? We'd love to see a photo if you can.