



Can be done inside



Can be done individually

11. FIREWORKS IN A JAR

What happens when we mix fluids of different densities?

You will need

- A clear jar
- Warm water
- Vegetable oil
- Food colouring (in a variety of colours)
- A pipette (optional)
- Other liquids, e.g. honey or milk, for comparison (optional)

Investigate

Now try adding other fluids to your jar, such as honey or milk. How do their densities compare to water and vegetable oil?

What are we learning?

Density is the mass of an object divided by its volume. Put another way, it is the amount of 'stuff' that can fit in a given space. Some materials are very light for their size while others are very heavy. For example, a brick and a sponge might be a similar size but the sponge would be a lot lighter. This is because it is less dense. Oil is less dense than water so it floats to the top of the jar. The food colouring droplets sink into the water because they are denser than the oil. They diffuse in the water (spread out completely), creating what looks like fireworks.



How to do it

1. Part-fill your jar with warm water, leaving space at the top.
2. Then add a 2-centimetre layer of vegetable oil. You will notice that the oil floats on top of the water.
3. Place droplets of different shades of food colouring onto the oil layer, either by squeezing them from the bottle or using a pipette. The larger the droplet, the quicker it will sink through the oil layer.
4. Watch as the coloured droplets sink down into the water and mix together, creating fireworks!



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