

DIY Rainbow

What Do I Need?

- A 500ml clear plastic bottle
- Runny honey
- Golden syrup
- Washing up liquid
- Water
- Cooking oil
- Baby oil
- Food dye
- A spoon



Skill Level:

Easy

Time

10 minutes

How Do I Do It?

1. Do the investigation on a tray to catch any spillages.
2. Mix a few drops of food colouring into about 100ml of tap water.
3. Cut the top off the bottle at the bottle shoulder.
4. Choose three or four of your liquids. Hold the spoon by the handle so the end is just above the bottom of the bottle. Pour your first liquid so it runs down the spoon into the bottle. Stop when you have a layer about 1cm deep.
5. Raise the spoon so it is just above the layer in the bottle and carefully pour the same amount of your second liquid down the spoon.
6. Repeat this for your third liquid (and fourth)
7. Each layer stays separate
8. You could try: Vegetable oil, coloured water and honey; or baby oil, coloured water, washing up liquid and golden syrup
9. Try altering the order in which you add the liquids, for example, add coloured water, then golden syrup and lastly vegetable oil. You should get the same layers in the same order whichever way you add them.
10. Extra activity; when you have several layers carefully add some small solid objects (e.g. a dice, a bolt, an ice cube etc.). Choose objects with different densities; some will float, some will sink part way down and others right to the bottom.

Continued overleaf

DIY Rainbow (continued)

Safety Advice:

IMPORTANT GENERAL SAFETY NOTE FOR SUPERVISING ADULTS: This Terrific Scientific investigation has been devised so that with adult supervision, reasonable care and by following the instructions provided, no special safety equipment or knowledge is required to enjoy the experience safely. These safety reminders are designed to assist the supervising adult when planning and carrying out the investigation. Please read the instructions fully before starting.

- The top of the bottle where it has been cut may be sharp, check before starting the investigation.
- Other containers can be used as long as they are tall enough and have clear smooth sides.
- At the end of the investigation try to avoid putting the oil down the sink. If possible pour it into your compost or rubbish bin.

What's Happening? The Sciency Bit:

Like solids, some liquids are heavier than others, they have different densities. The golden syrup is the most dense so it will sink to the bottom and the baby oil is the least dense so it floats on the top. Each liquid has a different density which is why they stay in layers. The food dye dissolves in the water. Try putting a few drops in some oil, it will not dissolve.

There Are No Layers... What Can I Do?

- You may have poured the liquids into the bottle too quickly. Leave each liquid for a few minutes before pouring the next and they should settle into layers.
- If the container is shaken the layers may mix and take a while to settle.
- Shine a torch through your rainbow, it helps to show the layers.