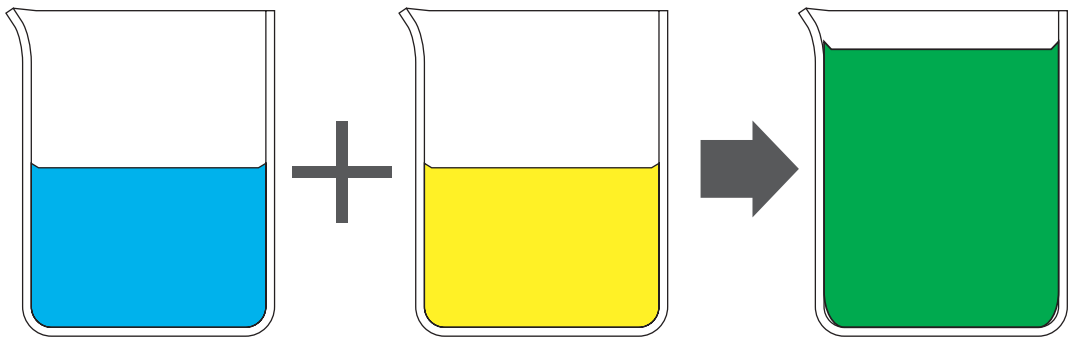
7 Separating dissolved substances

Coloured liquids may be made of many substances. You can sometimes find out what they are by using a filter paper.

A coloured liquid, such as felt-tip pen ink, may look like a single colour, but is really a mixture of solids dissolved in water (Picture 1). It is very hard to separate out the various substances because they are dissolved in the water. However, you can see what they are made of if you get the coloured ink to seep up a **POROUS** substance, like a filter paper (the kind used to filter coffee), because some colours will seep up the paper faster than others.



▲ **(Picture 1) A pot of blue paint added to a pot of yellow paint will produce a pot of green paint.**

Measuring water dyes

Take several different water-based ink pens, or dyes, and draw lines on the lower part of a filter cone. Now add clean water to the saucer. As the water rises up the filter paper, the different chemicals that make up the ink or dye are drawn up the paper at different speeds, as you can see in Picture 2.

As you watch the water creep up the paper, you will see that the original colour first becomes blurred. This is the start of the separation. The colours then begin to separate out more clearly.

Could you guess which colours were needed to make up each ink or dye colour?

The colours used to make inks and dyes may remind you of the colours of the rainbow, since most inks and dyes are made of mixtures of red, blue and yellow.

Notice that an important property of the filter paper is that it lets liquid move up its surface. You could try other substances, such as newspaper, to see if they work as well.

Summary

- **Most inks are mixtures of solids dissolved in liquid.**
- **Mixtures can be separated by drawing them up filter papers.**

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▼ (Picture 2) The water draws the ink up the paper at different speeds.

The separation technique used here is called paper chromatography. It is a very important technique used by scientists to find out what a chemical is made from.

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