

Separating ink colours – simple method

Why do this?

The ink in water based felt tip pens consists of different pigments. This simple practical shows how to separate mixtures of liquids to investigate colour.

Curriculum links: - *separating liquids, mixtures, dissolving, solids and liquids*

Suitability

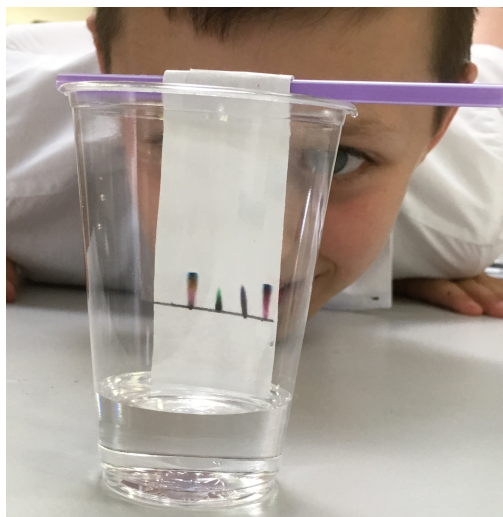
Y1 – Y2

Practical details

Safety points

This activity has been prepared using guidance from CLEAPSS.

Ensure children do **not** taste or put the water used in this practical experiment near their mouths.

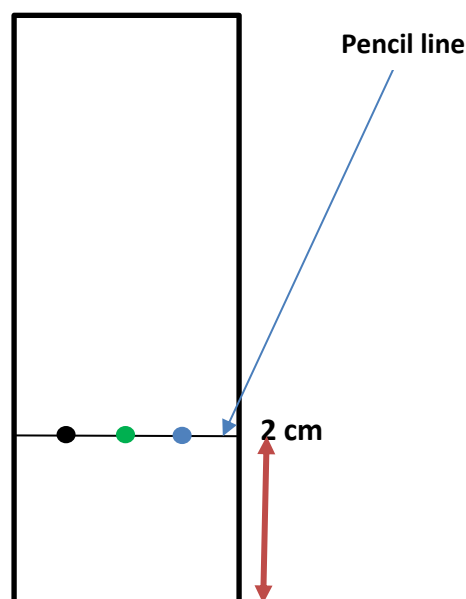


Suggested equipment (per child)

- | | |
|---|-----------------------|
| • Disposable transparent plastic cup or beaker | • Ruler |
| • Strip of filter paper (11cm x 3.5 cm) | • Straw (~10 cm long) |
| • Different coloured water based felt tip pens (browns and purples are particularly good) | • Pencil |
| | • Water |

Procedure

1. Using a pencil, draw a horizontal line 2 cm from the bottom of the piece of filter paper.
2. Choose 3 coloured pens. (Ideally make sure 1 colour is either black, brown or purple.)
3. Using the coloured pens, make 3 small dots equally spaced along the pencil line. Ensure you do not place a dot too close to the edge of the paper.
4. Wrap the top end of the filter paper around the straw.
5. Hang the filter paper into the cup so that the bottom of the paper **just touches** the water. Make sure the line with the coloured spots is not immersed in the water. Once the paper is in the water do not touch it or move it!
6. Remove the paper from the cup before the water line reaches the top of the paper. Place on the table to dry.



Expected observations and results

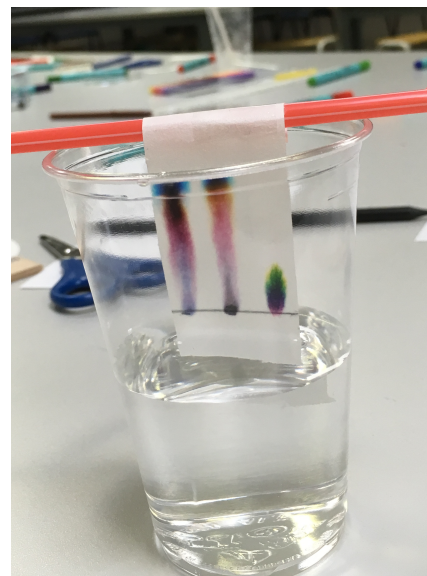
Within a few minutes the children will see the water line rising and when it passes the coloured spots, the ink will begin to separate and move with the water. As the water line moves up the paper, children will see that a coloured pen is very often a mixture of several different colours of ink.

Black, brown, green, purple, blue and red tend to separate the most. Yellow, orange and pink inks will move up the paper but not separate as much.

Possible further activities

You could try:

- 3 different black pens (eg berol, pentel, shop's own brand). Is each black ink the same?
- A board pen or permanent pen. What happens? Why?
- Food colourings
- Using a weak salt solution instead of water.
- Exploring lots of different coloured inks – are there any similarities?



Background notes

For the ink to separate in this experiment, it needs to dissolve in the water. (This is the reason for using water soluble pens.) Once it dissolves, it moves with the water up the paper. In most pens, the ink is a mixture of different coloured inks. These different coloured inks will separate as they move up the paper.

For ease during the lesson, we recommend that teachers place approx. 1 cm depth of water in each cup before the practical begins. Links can also be made to colour mixing and how pen on clothes is removed in the washing machine.