

## Identification of unknown substances using paper chromatography

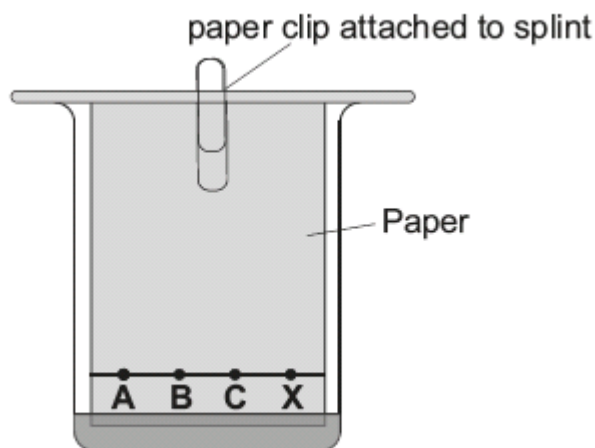
### Introduction

Black ink is a mixture of colours and different black inks contain different amounts and types of coloured dyes and thus give a different pattern in a chromatograph. Chromatography is used in forensic science. In this experiment you will examine a ransom note and ink from three pens. The objective is to identify which pen's ink matches the ransom note.

### Apparatus

3 × black pens (water soluble)  
 part of a ransom note  
 beaker  
 splint  
 paper clip  
 chromatography paper  
 dimple tray (or small watch glass)  
 dropping pipette  
 capillary tube

### Diagram of Apparatus



## Method

1. On a rectangular piece of chromatography paper, draw a line **in pencil**, 1 cm from a short edge and mark 4 evenly spaced points.
2. **In pencil**, label under the points **A,B,C** and **X**.
3. Mark a spot with each pen labelled A, B and C on each of the corresponding points.
4. Take the sample of the ransom note and place in the well of a dimple tray.
5. Add a small amount (1-2 drops) of water to the sample. The ink should come out of the paper.
6. Use a small capillary tube to apply some of this ink to the point labelled X.
7. Attach the chromatography paper to the splint with a paper clip.
8. Place some water into the beaker making sure that the water does not go over the spot line on the chromatography paper.
9. Suspend the chromatography paper in the beaker and allow the water to travel up until it almost touches the splint.
10. Remove the chromatography paper and allow to dry.

## Analysis

1. Identify which pen has the same ink as on the ransom note.