

Chemical analysis – GCSE CS Chemistry

1. No.3

0 3

Printer ink is a mixture of chemicals.

0 3 . 1

What is the name given to a mixture that has been designed as a useful product?

[1 mark]Tick (✓) **one** box.

Formula

☐

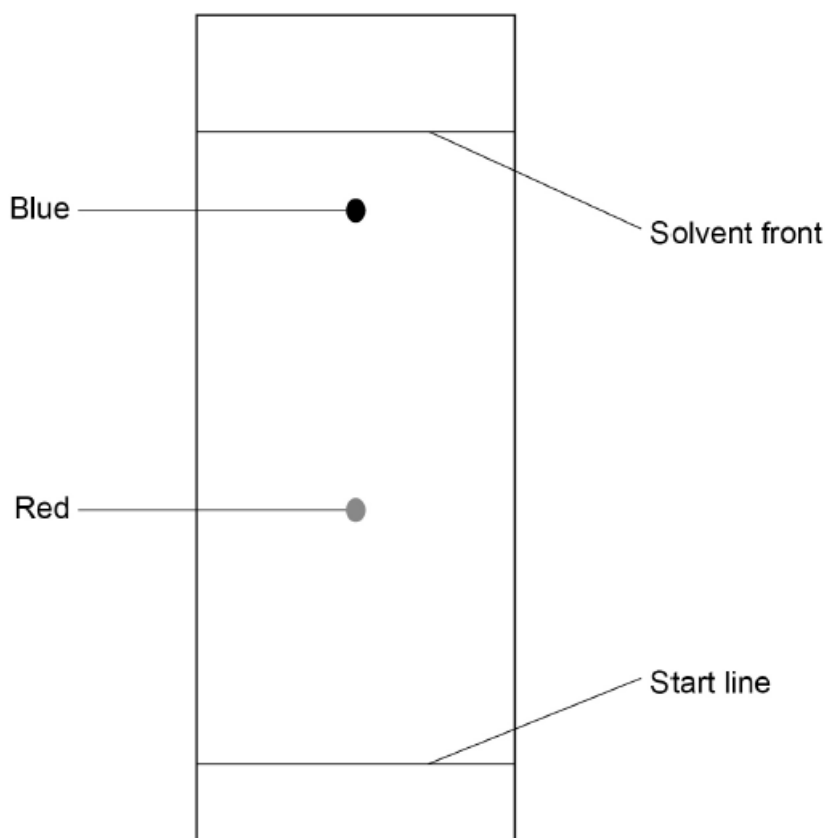
Formulation

☐

Fraction

☐

A student used chromatography to investigate the colours in a printer ink.

Figure 2 shows the chromatogram.**Figure 2**

0 3 . 2

The student used a ruler for the start line.

What would the student have used to draw the start line?

Give **one** reason for your answer.**[2 marks]**

Reason

0 3 . 3

Determine the R_f value of the **red** colour.

Use the equation:

$$R_f = \frac{\text{distance moved by colour}}{\text{distance moved by solvent}}$$

[4 marks]Distance moved by red colour

Distance moved by solvent

 $R_f =$

0 3 . 4

Table 2 shows the R_f values of four blue colours.

Table 2

Blue colour	R_f
Cerulean	0.40
Cobalt	0.15
Prussian	0.88
Ultramarine	0.68

The student determined that the R_f value of the blue colour in the printer ink was 0.86

Suggest which blue colour was used in the printer ink.

Give **one** reason for your answer.

[2 marks]

Blue colour _____

Reason _____

2. No.4

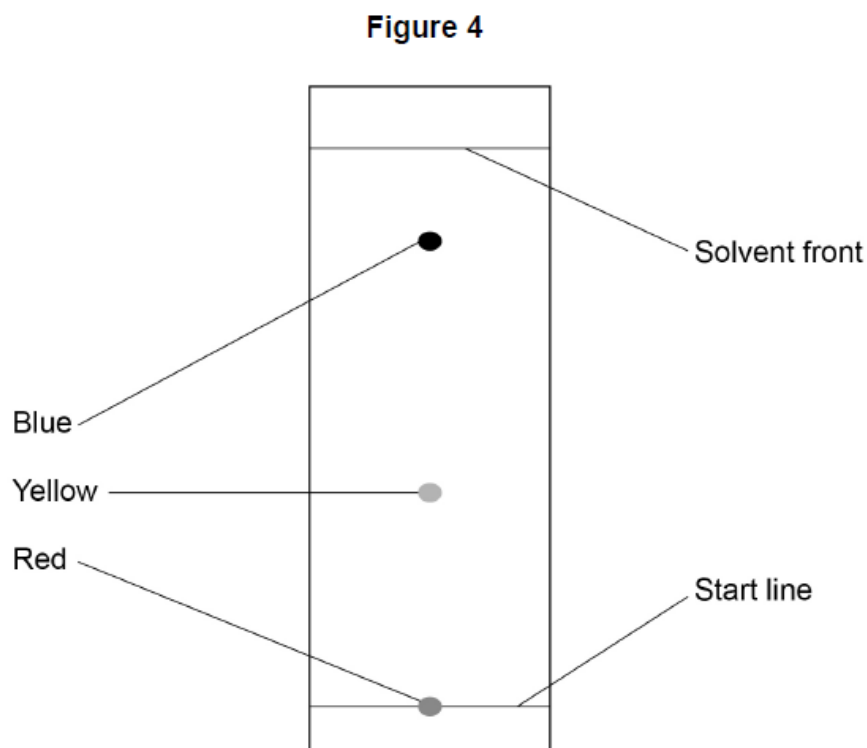
0 4

Printer ink is a mixture of chemicals.

A student used chromatography to investigate the colours in a printer ink.

The student put a spot of the printer ink on the start line.

Figure 4 shows the results.



Not to scale

0 4 . 1

Explain why the red colour did **not** move from the start line.

[2 marks]

0 4 . 2

The blue colour moved 6.4 cm up the chromatogram.

The R_f value of the blue colour is 0.87

Calculate the distance moved by the solvent.

Give your answer to 2 significant figures.

[4 marks]

Distance moved by the solvent (2 significant figures) = _____ cm

There were four colours in the printer ink.

0 4 . 3

Suggest **one** reason why only three colours were visible on the chromatogram.

[1 mark]

0 4 . 4

Suggest how the student could use chromatography to show there were four colours in the printer ink.

[1 mark]
