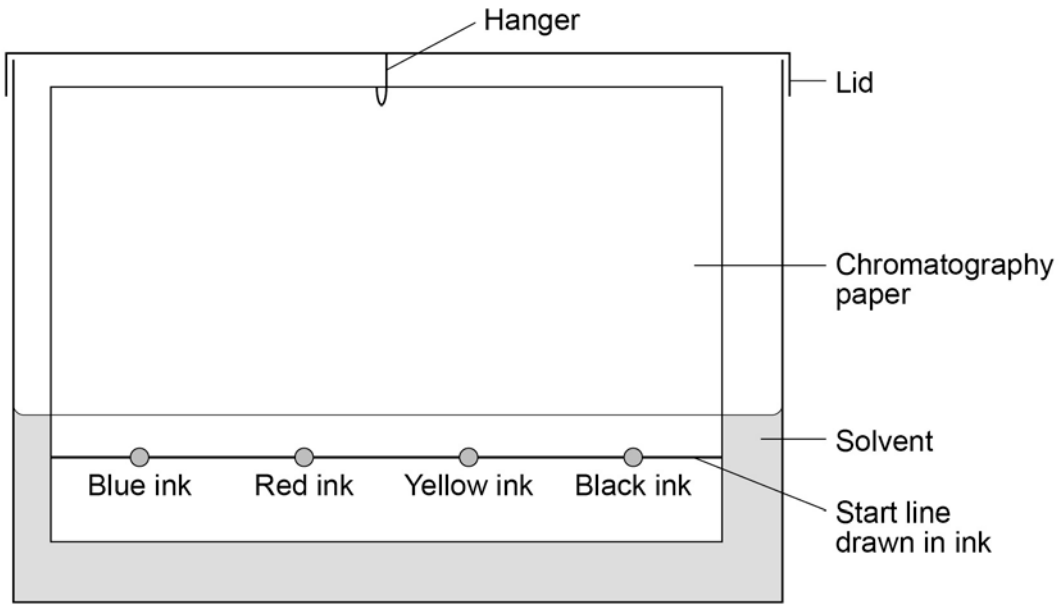
0 5 A student used paper chromatography to investigate the colours in different inks.

Figure 5 shows the apparatus the student used.

Figure 5



0 5 . 1 The student made **two** mistakes in setting up the apparatus.

Identify the **two** mistakes.

Describe the problem each mistake would cause.

[4 marks]

Mistake 1 _____

Problem _____

_____

_____

Mistake 2 _____

Problem _____

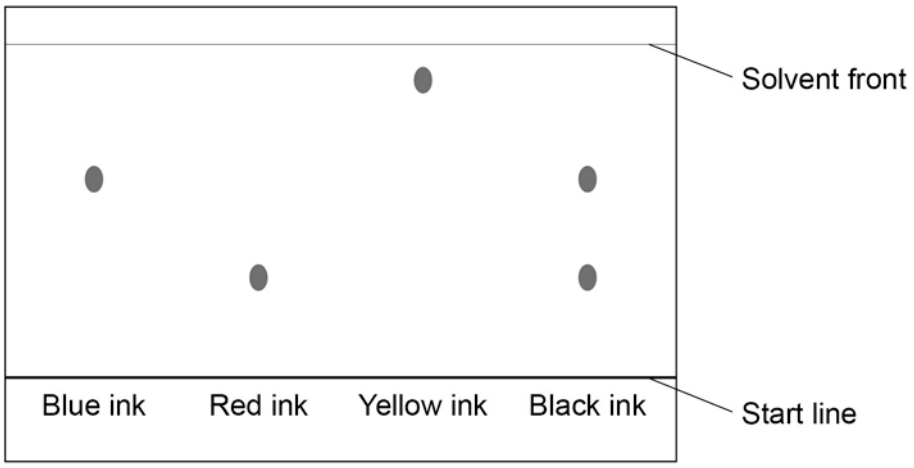
_____

_____

0 5 . 2 The student then set up the apparatus without making any mistakes.

Figure 6 shows his results.

Figure 6



What colours are in the black ink?

[1 mark]

0 5 . 3 Which of the inks is the most soluble in the solvent?

Give a reason for your answer.

[2 marks]

Ink

Reason

0 5 . 4 Use **Figure 6** to complete **Table 4**, then calculate the R_f value for red ink.

[5 marks]

Table 4

	Distance in mm
Distance moved by red ink	.
Distance from start line to solvent front	

The R_f value for red ink is calculated using the equation.

R_f = distance moved by red ink from the start line / distance moved by solvent from the start line

Give your answer to two significant figures.

R_f value = _____

0 5 . 5 How can you tell from **Figure 6** that the R_f value for the blue ink is greater than the R_f value for the red ink?

[1 mark]

Question 5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.1	start line drawn in ink (so) line would run start line below solvent level (so) samples would wash off		1 1 1 1	AO3/2b 5.8.1.3
05.2	red **and** blue	both colours needed	1	AO2/2 5.8.1.3
05.3	yellow travels furthest up the paper		1 1	AO2/2 5.8.1.3
05.4	distance moved by red ink 13 ±1 distance from start line to solvent front 44 ±1 correct substitution correct answer to 2 significant figures	measurements in cm max **1** mark for mps 1 and 2 allow ecf from Table 4 range if correct is 0.27 to 0.33	1 1 1 1 1	AO2/2 5.8.1.3
05.5	moves further **or** nearer the top of the paper		1	AO2/2 5.8.1.3
Total			**13**	