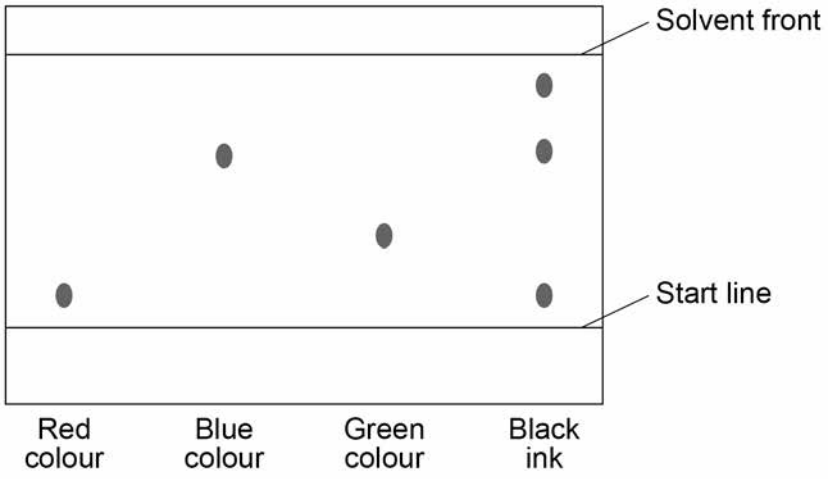
Do not write outside the box

0 2 A student used paper chromatography to identify the colours in a black ink.

Figure 5 shows the student's results.

Figure 5



0 2 . 1 What colours are in the black ink?

[2 marks]

0 2 . 2 Suggest which colour is least soluble in the solvent.

Give a reason for your answer.

[2 marks]

Colour _____

Reason _____

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0 2 . 3 Use **Figure 5** to complete **Table 2**

Table 2

	Distance in mm
Distance moved by green colour	
Distance moved by solvent	

Calculate the R_f value for the green colour.

Use the equation:

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

[4 marks]

R_f value = _____

8

Turn over for the next question

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.1	red **and** blue	both needed for mark	1	AO3 5.8.1.3
	unknown		1	
02.2	red	ignore black	1	AO3 5.8.1.3
	travels least far	dependent on correct colour allow closest to the start line	1	AO2 5.8.1.3
02.3	distance moved by green colour = 12 mm	allow 10 to 14 mm	1	AO2 5.8.1.3
	distance moved by solvent = 36 mm	allow 35 to 36 mm	1	
	$\frac{12}{36}$	allow correct substitution of student's measurements	1	
	R_f value = 0.33	allow correct answer from student's measurements for **2** marks	1	
Total			**8**	