

GCSE Physics B (Twenty First Century Science)
J259/02 Depth in physics (Foundation Tier)

Question Set 12

1 Sarah investigates what happens when light shines on different coloured cards.

(a) She places two coloured square cards next to each other, as shown in **Fig. 1.1**.

Card **R** is red and card **G** is green.

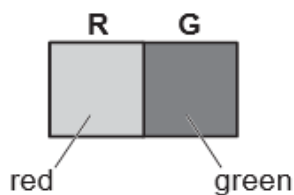


Fig. 1.1

Sarah shines **green** light on both cards.

Fig. 1.2 shows the observed colour of the cards.

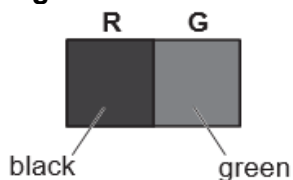


Fig. 1.2

(i) Complete the following sentences about the observation in **Fig. 1.2**.

Use words from the list.

You may use each word once, more than once, or not at all.

absorbs refracts scatters transmits

Card **R** looks black because it the green light.

Card **G** looks green because it the green light. **[2]**

(ii) What colour light can Sarah shine on the red and green cards to make them both appear **black**?

Put a **ring** around the correct colour.

blue green red white **[1]**

(b) Sarah is now investigating the refraction of light.

A narrow beam of green light is incident on a plastic block.

She measures the angle of incidence, i , and the angle of refraction, r , as shown in Fig. 1.3.

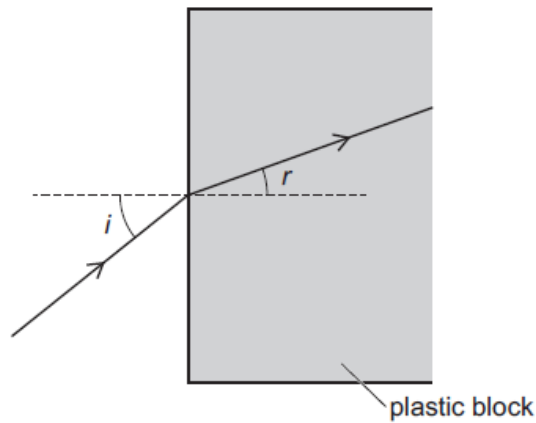


Fig. 1.3

Sarah then draws a graph of angle of refraction, r , against angle of incidence, i , as shown in Fig. 1.4.

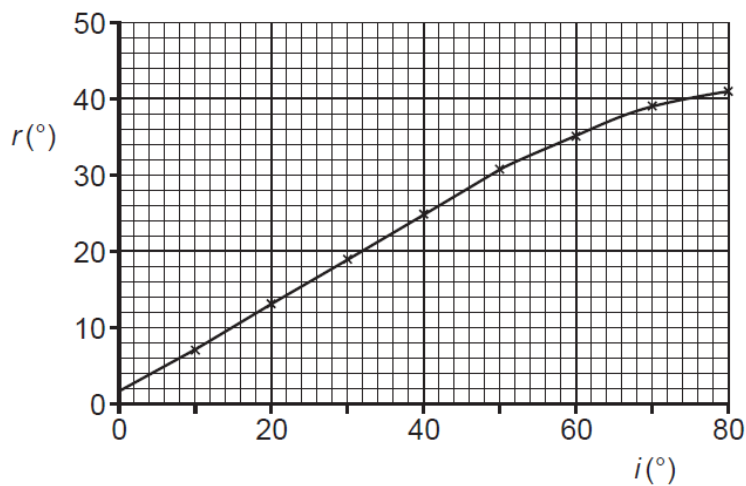


Fig. 1.4

Sarah makes the following hypothesis.

Sarah
The angle r is directly proportional to the angle i .



Use Fig. 1.4 to explain if Sarah is correct.

(c) Green light has wavelength 5.6×10^{-7} m and frequency 5.4×10^{14} Hz.

Calculate the **wave speed** of the green light.

Use the equation: wave speed = frequency \times wavelength

Give your answer in standard form and to **2** significant figures.

Wave speed = m/s **[3]**

Total Marks for Question Set 12: 8

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