Light – 2022 November IGCSE 0625

1. Nov/2022/Paper_11/No.19

What is the correct order of the colours in a spectrum of white light?

A blue → green → yellow

B blue → yellow → green

C yellow → blue → green

D green → blue → yellow

2. Nov/2022/Paper_11/No.20

An object is placed 30 cm in front of a plane mirror.

Which statement describes the image of the object?

A The image is the same size and 30 cm from the object.

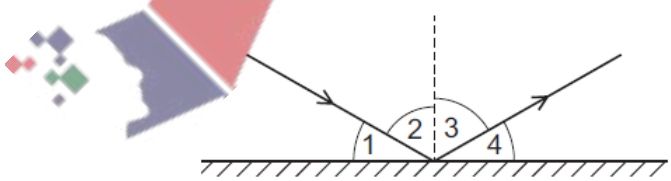
B The image is the same size and 60 cm from the object.

C The image is smaller and 30 cm from the object.

D The image is smaller and 60 cm from the object.

3. Nov/2022/Paper_11/No.21

A ray of light is shone onto the surface of a mirror.

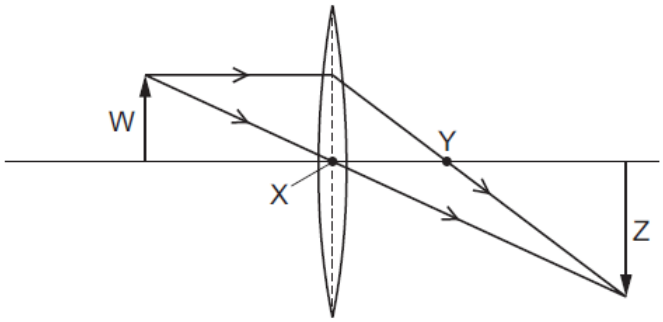


Which two angles represent the angle of incidence and the angle of reflection?

A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

4. Nov/2022/Paper_12/No.19

What are the correct labels for the ray diagram?

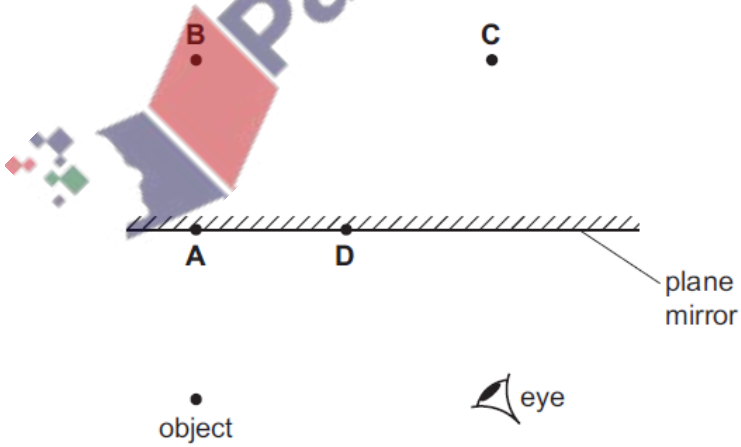


	object	image	principal focus
A	W	X	Y
B	W	Z	Y
C	X	Y	Z
D	X	Z	W

5. Nov/2022/Paper_12,13,22,23/No.20

The diagram shows an object in front of a plane mirror.

At which labelled position is the image of the object formed?



6. Nov/2022/Paper_12/No.21

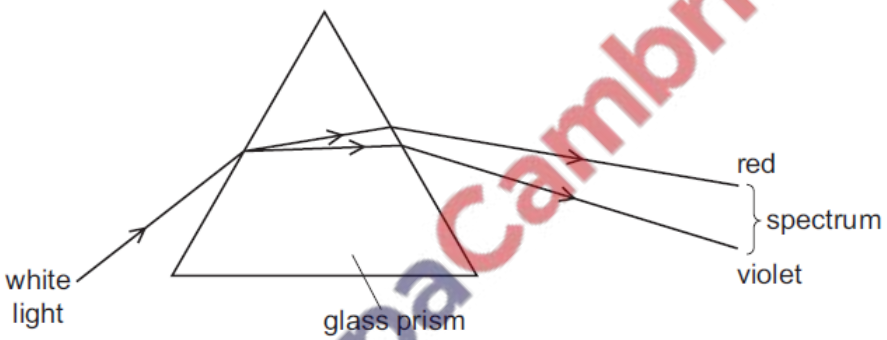
The angle between an incident ray and the surface of a plane mirror reflecting the ray is 70°.

What is the angle of incidence?

A 20° **B** 40° **C** 70° **D** 140°

7. Nov/2022/Paper_13/No.19

A 60° glass prism disperses white light as shown.



The spectrum can be seen emerging from the prism.

Which spectrum shows the colours in the correct order?

A violet, green, blue, yellow, orange, red

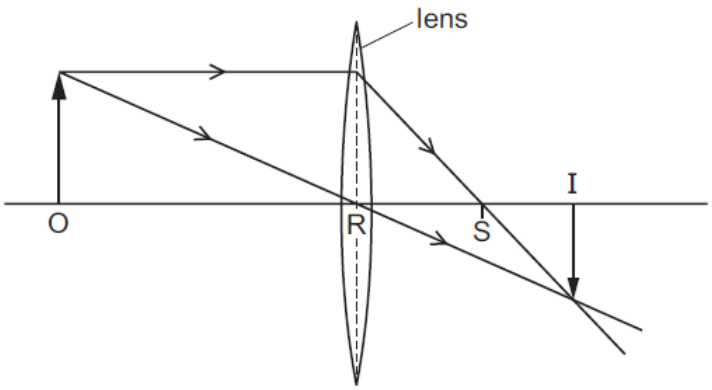
B violet, blue, green, orange, yellow, red

C violet, blue, green, yellow, orange, red

D violet, green, blue, orange, yellow, red

8. Nov/2022/Paper_13,23/No.21

The diagram shows the action of a thin converging lens on two rays of light. The rays are from the top of an object O. An inverted image I is formed.



Which name is given to the distance RS?

A principal axis

B principal focus

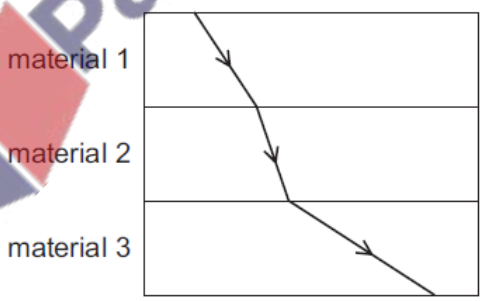
C focal length

D real length

9. Nov/2022/Paper_21/No.19

A composite block is made by joining together three transparent materials.

The diagram shows a ray of light passing through the composite block.



Which list gives the three materials in order of the speeds of light in the materials, from slowest to fastest?

A $1 \rightarrow 2 \rightarrow 3$ **B** $1 \rightarrow 3 \rightarrow 2$ **C** $2 \rightarrow 1 \rightarrow 3$ **D** $2 \rightarrow 3 \rightarrow 1$

10. Nov/2022/Paper_21/No.20

An object is placed 30 cm in front of a plane mirror.

Which statement describes the image of the object?

A The image is the same size and 30 cm from the object.

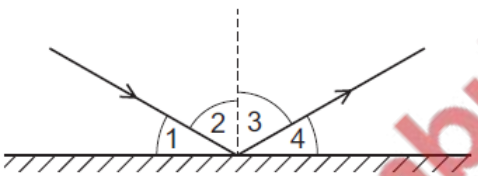
B The image is the same size and 60 cm from the object.

C The image is smaller and 30 cm from the object.

D The image is smaller and 60 cm from the object.

11. Nov/2022/Paper_21/No.21

A ray of light is shone onto the surface of a mirror.

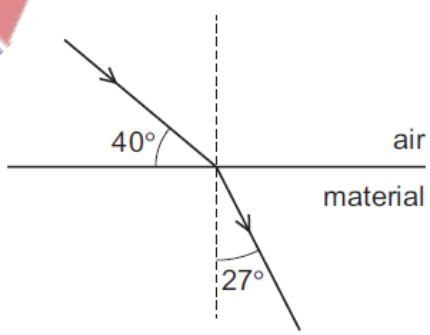


Which two angles represent the angle of incidence and the angle of reflection?

A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

12. Nov/2022/Paper_22/No.19

A ray of light travels from air into a material, as shown.



What is the refractive index of the material?

A 1.4 **B** 1.5 **C** 1.7 **D** 1.9

13. Nov/2022/Paper_22/No.21

The angle between an incident ray and the surface of a plane mirror reflecting the ray is 70°.

What is the angle of incidence?

A 20° **B** 40° **C** 70° **D** 140°

14. Nov/2022/Paper_22/No.23

An object is reflected in a plane mirror.

Which description of the image is correct?

A diminished and real

B enlarged and virtual

C same size and real

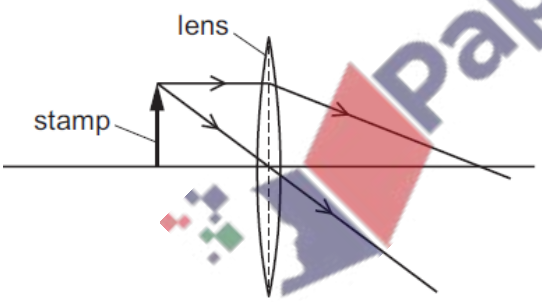
D same size and virtual

15. Nov/2022/Paper_23/No.19

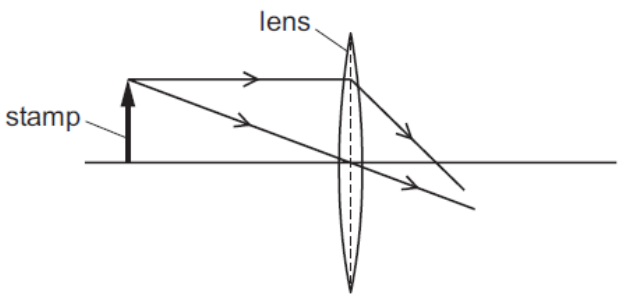
A person uses a magnifying glass to look at a stamp.

Which ray diagram shows a thin converging lens being used to do this?

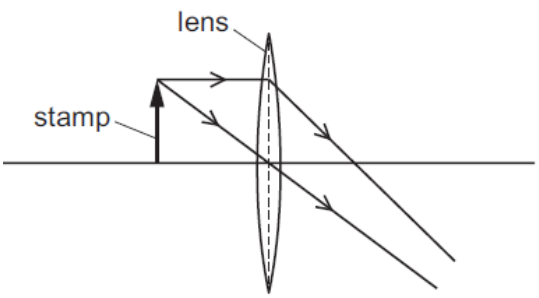
A



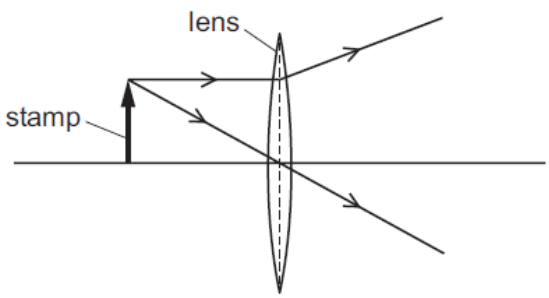
B



C



D



16. Nov/2022/Paper_32/No.6

(a) Fig. 6.1 shows a ray of light striking a plane mirror.

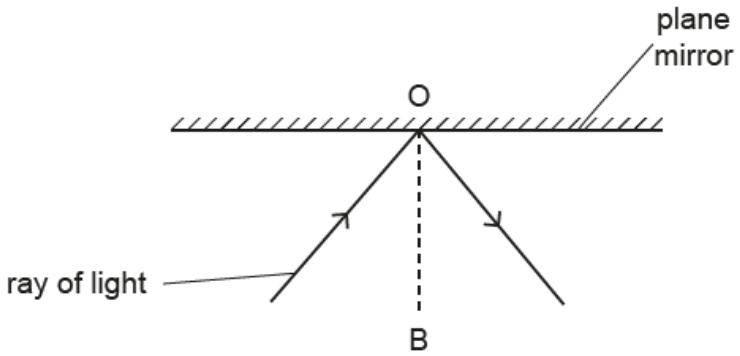


Fig. 6.1

(i) State the name of the dashed line OB in Fig. 6.1.

..... [1]

(ii) On Fig. 6.1, indicate the angle of reflection by drawing an X. [1]

(iii) State the law of reflection.

..... [1]

(b) A candle is placed in front of a plane mirror. An image of the candle is formed in the mirror.

Circle the words from the list that describe the image of the candle.

enlarged **diminished** **same size** **upside-down** **upright** [2]

(c) Fig. 6.2 shows a ray of red light striking one side of a glass prism.

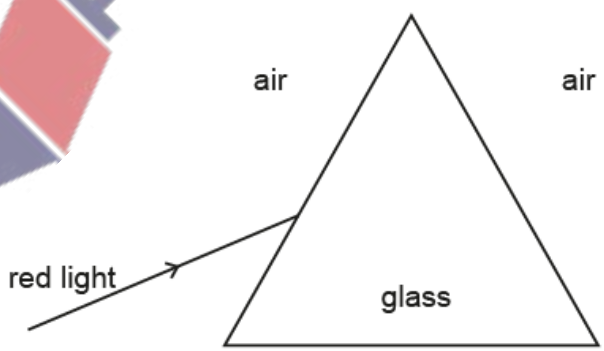


Fig. 6.2

(i) On Fig. 6.2, draw a line to indicate the path of the red light travelling through the glass prism and emerging into the air. [2]

(ii) Explain why the red light follows the path you have drawn in **(c)(i)**.

..... [1]

[Total: 8]

17. Nov/2022/Paper_33/No.5

(a) A student shines a ray of red light towards a large glass prism, as shown in Fig. 5.1.
The angles of the prism are 45°, 90° and 45°.
The critical angle for the glass is 42°.

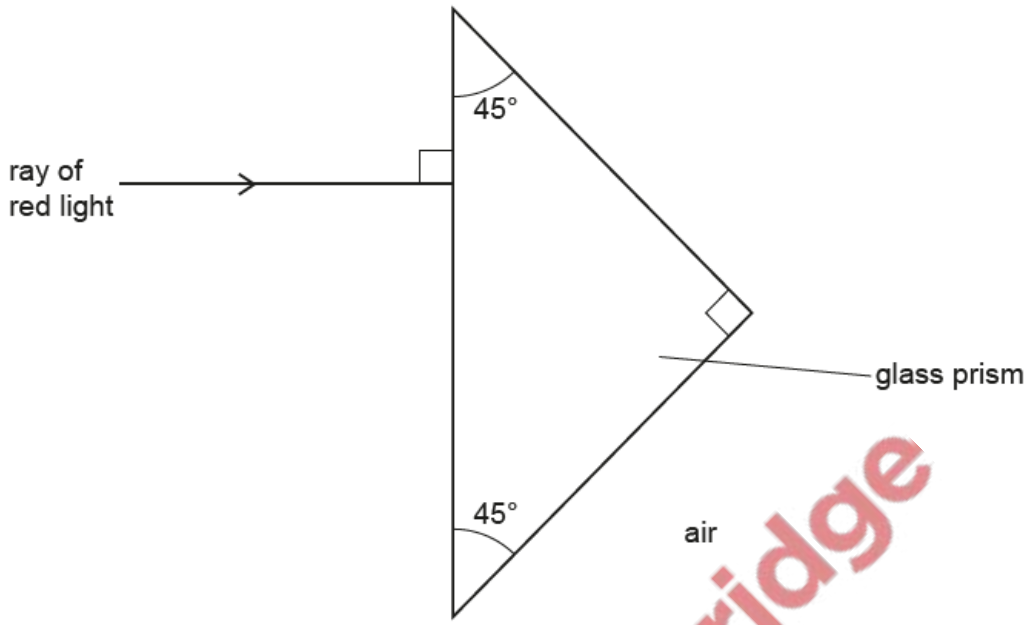


Fig. 5.1

On Fig. 5.1:

(i) continue the path of the ray in the glass prism to a boundary between glass and air [1]

(ii) draw and label the normal at the point your ray hits the boundary between glass and air [1]

(iii) continue your ray until it emerges into the air. [2]

(b) The spectrum of visible light is made up of seven colours.

Fig. 5.2 shows a partially completed spectrum for visible light.

Fig. 5.2

(i) On Fig. 5.2, write the names of the missing colours. [2]

(ii) State the property of visible light that increases in the direction of the arrow in Fig. 5.2.

..... [1]

[Total: 7]

18. Nov/2022/Paper_33/No.6

A vertical arrow O is used as an object for a converging lens.

Fig. 6.1 shows a ray of light from the object passing through the lens.

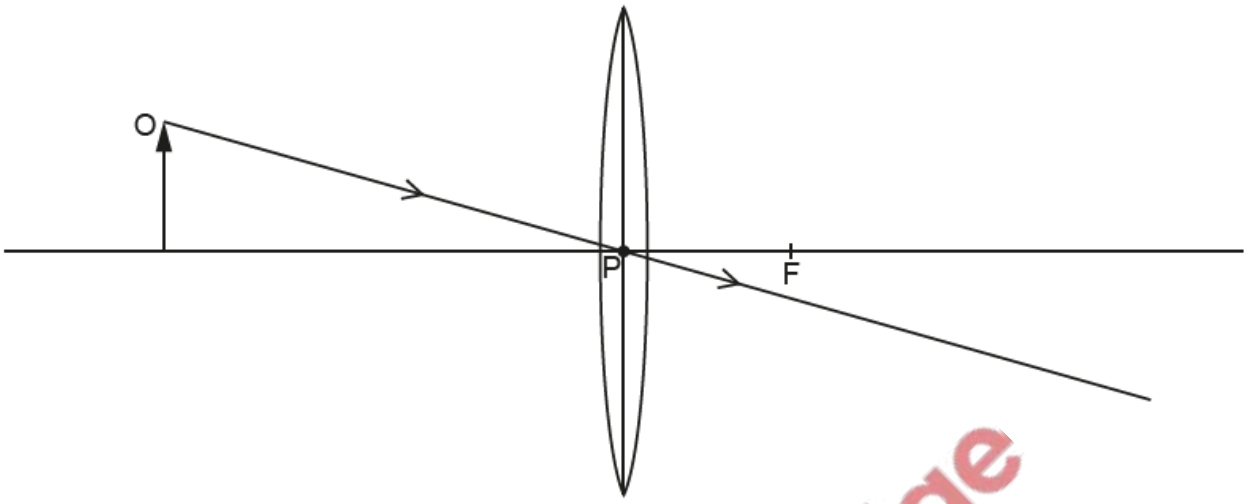


Fig. 6.1

The point labelled F is a principal focus of the lens.

(a) State the name of the distance labelled PF on Fig. 6.1.

..... [1]

(b) On Fig. 6.1, draw another ray that enables you to locate the image of O. [2]

(c) Draw an arrow to indicate the image. Label the image I. [1]

(d) Circle **two** words from the list which describe the image I.

enlarged **diminished** **same size** **inverted** **upright**

[2]

[Total: 6]

19. Nov/2022/Paper_41/No.6

The red light produced by a laser is monochromatic.

(a) State what is meant by monochromatic.

.....

..... [1]

(b) The red light from the laser hits the curved surface of a semicircular transparent plastic block at point P and passes into the plastic.

The red light travels through the plastic and hits the straight edge of the block at its midpoint M. Fig. 6.1 shows that some of the light is reflected and that some light travels in the air along the straight edge of the plastic block.

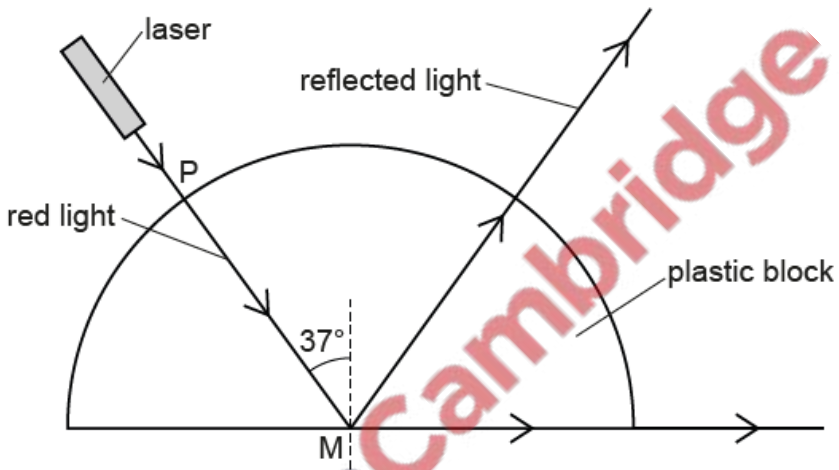


Fig. 6.1

The speed of light in air is 3.0×10^8 m/s.

(i) Explain why the red light does **not** change direction as it enters the plastic block.

.....

.....

..... [2]

(ii) At M, the angle between the red light in the plastic and the normal is 37°.

Calculate the speed of the red light in the plastic.

speed = ... [4]

20. Nov/2022/Paper_42/No.6

(a) Fig. 6.1 shows a converging lens and an object OX. The focuses of the lens are labelled F.

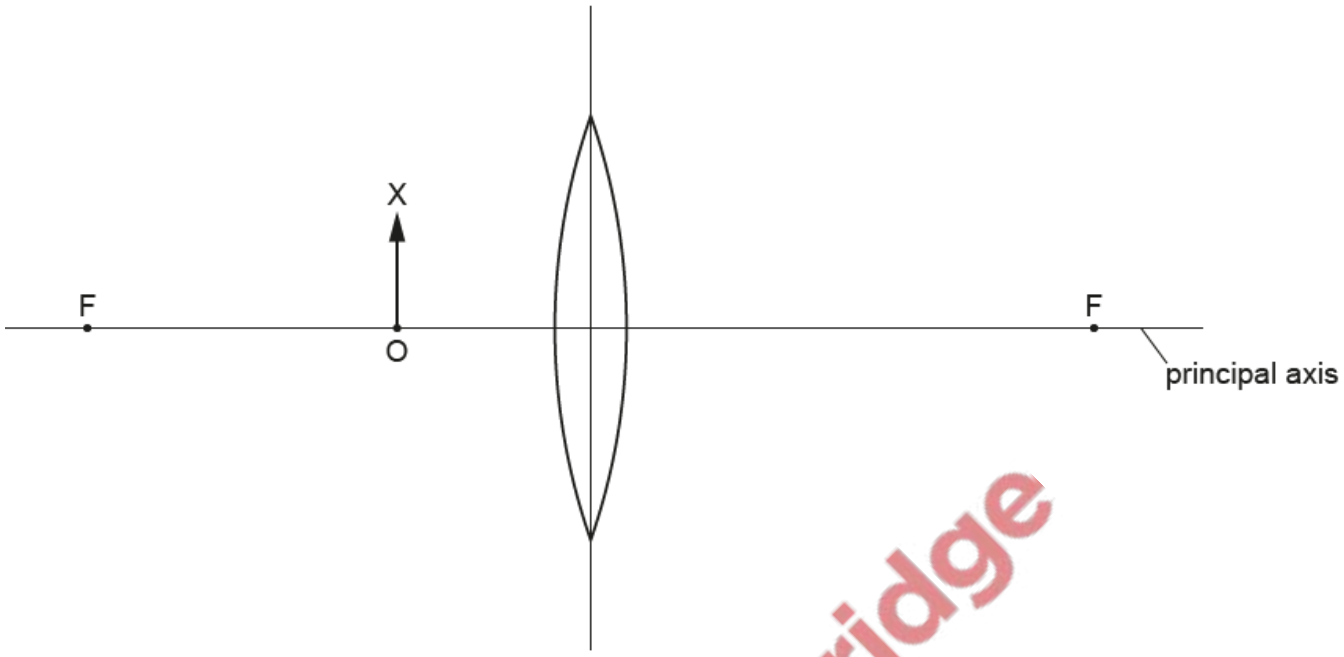


Fig. 6.1

(i) On Fig. 6.1, carefully draw **two** rays from X which locate the image of the object. Draw the image and label it IY.

Measure the distance from IY along the principal axis to the centre line of the lens.

distance = ...

[4]

(ii) State **two** reasons why the image IY is virtual.

1. .....

2. .....

[2]

(b) Fig. 6.2 shows a ray of green light passing into, through and out of a glass prism.

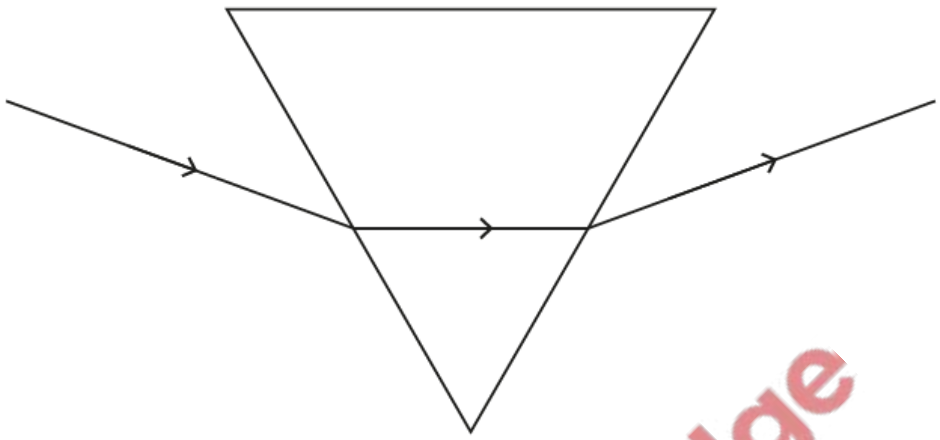


Fig. 6.2

A ray of blue light is incident on the prism on the same path as the incident ray of green light.

On Fig. 6.2, draw the path of the blue light through and out of the prism. [3]

[Total: 9]

21. Nov/2022/Paper_43/No.7

(a) State what is meant by total internal reflection.

.....

..... [2]

(b) Fig. 7.1 shows a ray of light from a light source in a tank containing a liquid.

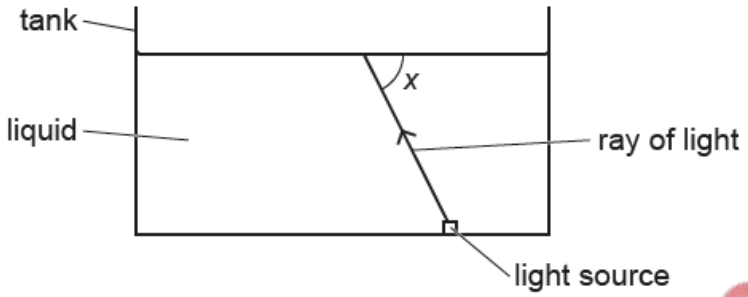


Fig. 7.1

The ray of light strikes the surface of the liquid at an angle x.

(i) The refractive index of the liquid is 1.5.

Calculate the largest value of x for which total internal reflection can occur.

x = ... [3]

(ii) The speed of light in air is 3.0×10^8 m/s.

Calculate the speed of light in the liquid.

speed = ... [2]

[Total: 7]