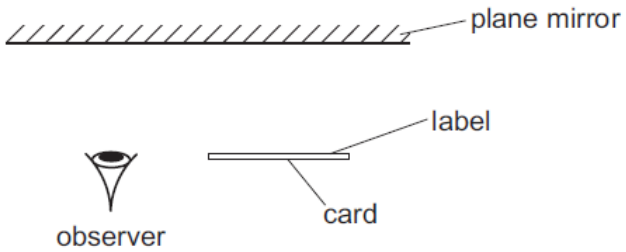
Light – 2022 June IGCSE 0625

1. June/2022/Paper_11/No.22

A card is placed in front of a plane mirror so that its label is facing the mirror, as shown.



The label is shown.

How does the image of the label formed by the mirror appear to the observer?

A

B

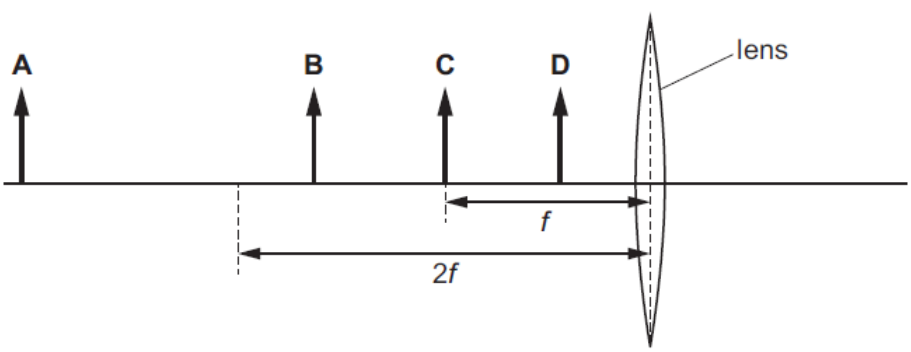
C

D

2. June/2022/Paper_11/No.23

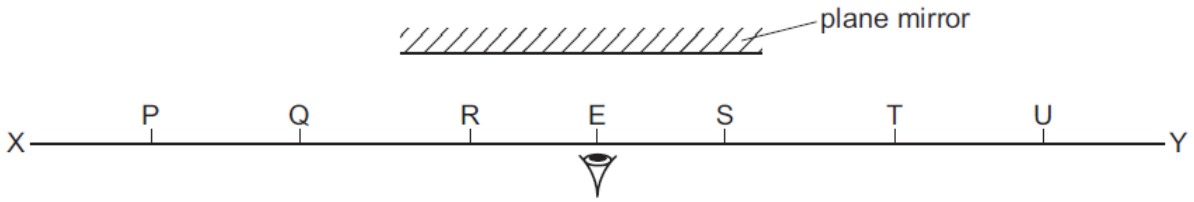
An object is placed in front of a converging lens. The lens has a focal length *f*.

In which labelled position should the object be placed in order to produce a real image that is smaller than the object?



3. June/2022/Paper_12/No.22

A student uses one eye to look at images in a plane mirror.



Objects are placed on the line XY.

Which objects give rise to images that can be seen by the eye at E?

A P, Q, R, S, T and U

B Q, R, S and T only

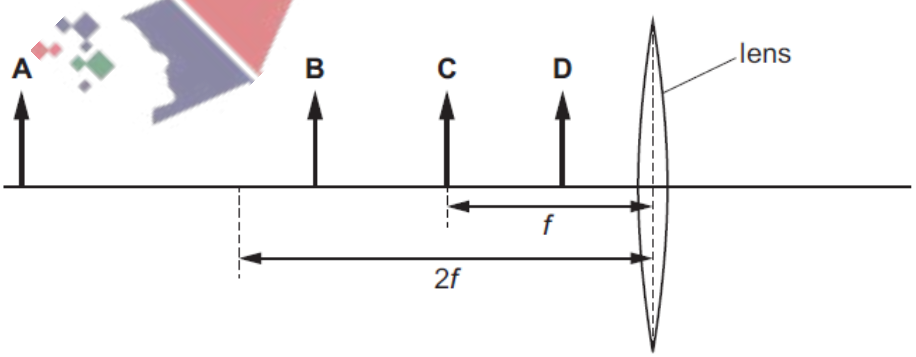
C P and U only

D R and S only

4. June/2022/Paper_12/No.23

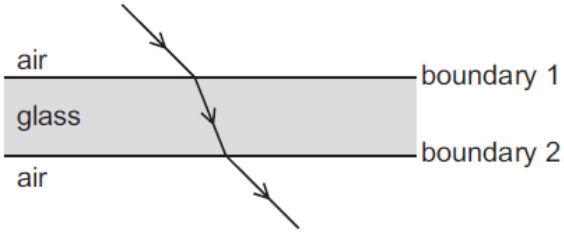
An object is placed in front of a converging lens. The lens has a focal length *f*.

In which labelled position should the object be placed in order to produce a real image that is smaller than the object?



5. June/2022/Paper_13/No.22

A ray of light passes from air through a sheet of glass and out the other side, as shown.



Which two angles are equal to each other?

A angle of incidence at boundary 1 and angle of incidence at boundary 2

B angle of incidence at boundary 1 and angle of refraction at boundary 1

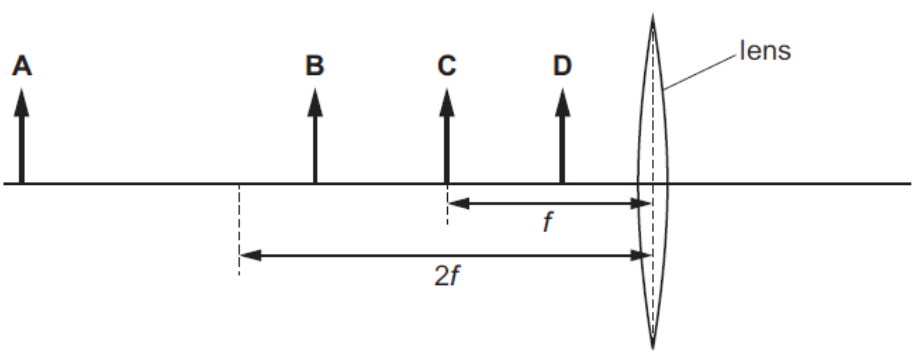
C angle of incidence at boundary 1 and angle of refraction at boundary 2

D angle of refraction at boundary 1 and angle of refraction at boundary 2

6. June/2022/Paper_13/No.23

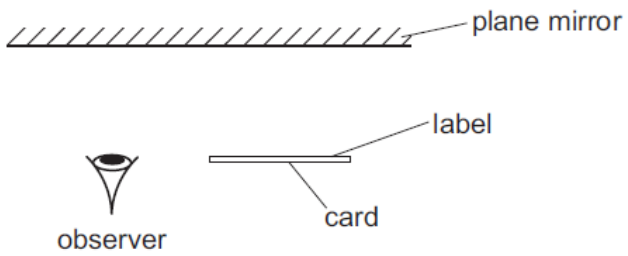
An object is placed in front of a converging lens. The lens has a focal length *f*.

In which labelled position should the object be placed in order to produce a real image that is smaller than the object?



7. June/2022/Paper_21/No.23

A card is placed in front of a plane mirror so that its label is facing the mirror, as shown.



The label is shown.

How does the image of the label formed by the mirror appear to the observer?

A

B

C

D

8. June/2022/Paper_21/No.24

A thin converging lens can produce both real and virtual images.

Which row describes a real and a virtual image?

	real image	virtual image
A	rays converge to form the image	image can be projected onto a screen
B	rays converge to form the image	image cannot be projected onto a screen
C	rays diverge to form the image	image can be projected onto a screen
D	rays diverge to form the image	image cannot be projected onto a screen

9. June/2022/Paper_21/No.25

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

The critical angle for light in a transparent plastic material placed in air is 37°.

What is the speed of light in the plastic material?

A 1.8×10^8 m/s

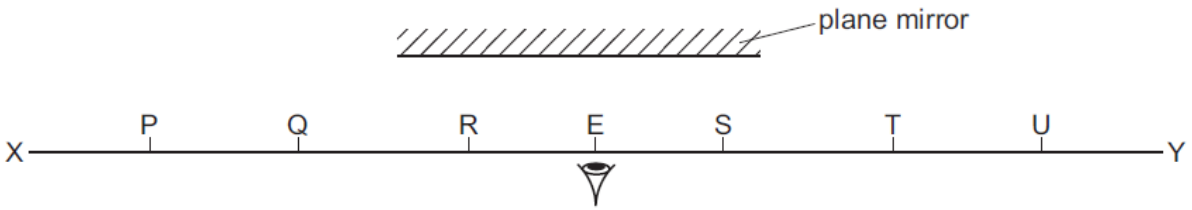
B 2.4×10^8 m/s

C 3.8×10^8 m/s

D 5.0×10^8 m/s

10. June/2022/Paper_22/No.23

A student uses one eye to look at images in a plane mirror.



Objects are placed on the line XY.

Which objects give rise to images that can be seen by the eye at E?

A P, Q, R, S, T and U

B Q, R, S and T only

C P and U only

D R and S only

11. June/2022/Paper_22/No.24

An object is placed in front of a converging lens of focal length 15 cm.

Which row describes the image of the object?

	distance of object from lens / cm	nature of the image
A	40	real, upright, diminished
B	30	virtual, inverted, enlarged
C	20	real, inverted, diminished
D	10	virtual, upright, enlarged

12. June/2022/Paper_22/No.25

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

The critical angle for light in a transparent plastic material placed in air is 37°.

What is the speed of light in the plastic material?

A 1.8×10^8 m/s

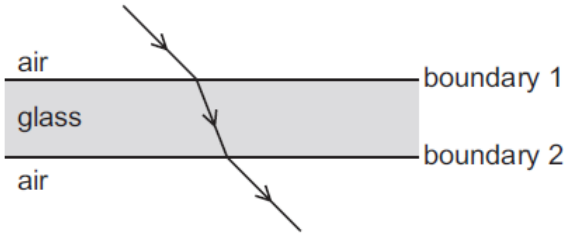
B 2.4×10^8 m/s

C 3.8×10^8 m/s

D 5.0×10^8 m/s

13. June/2022/Paper_23/No.23

A ray of light passes from air through a sheet of glass and out the other side, as shown.



Which two angles are equal to each other?

A angle of incidence at boundary 1 and angle of incidence at boundary 2

B angle of incidence at boundary 1 and angle of refraction at boundary 1

C angle of incidence at boundary 1 and angle of refraction at boundary 2

D angle of refraction at boundary 1 and angle of refraction at boundary 2

14. June/2022/Paper_23/No.24

A plane mirror is fixed to a vertical wall.

A boy looks at the image of himself in the mirror.

Which statement describes the image formed?

A real and upright

B real and upside down

C virtual and upright

D virtual and upside down

15. June/2022/Paper_23/No.25

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

The critical angle for light in a transparent plastic material placed in air is 37°.

What is the speed of light in the plastic material?

A 1.8×10^8 m/s

B 2.4×10^8 m/s

C 3.8×10^8 m/s

D 5.0×10^8 m/s

16. June/2022/Paper_32/No.7

(a) A student investigates refraction through a parallel-sided glass block. Fig. 7.1 shows a ray of red light travelling from the air through the glass block.

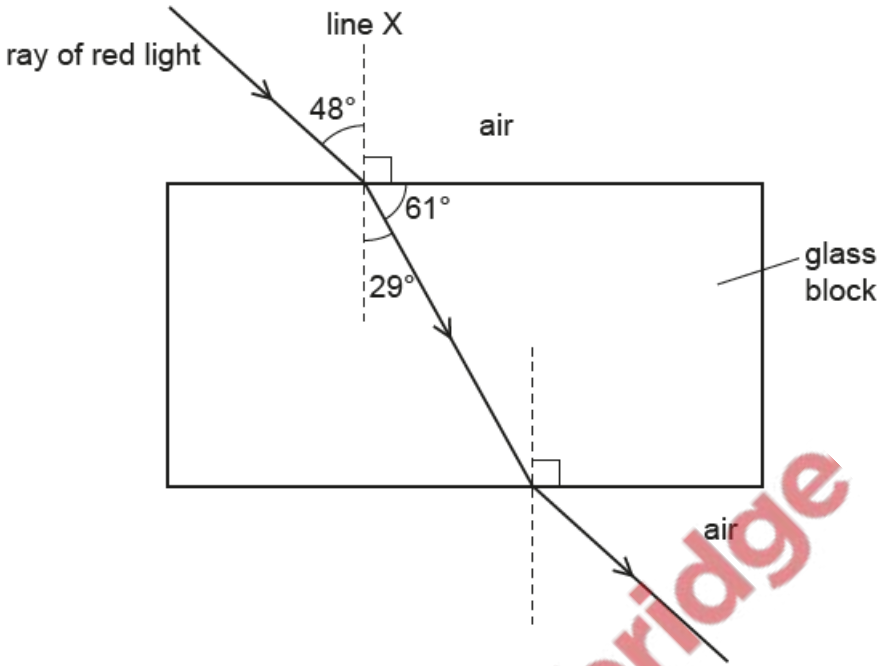


Fig. 7.1

(i) Using the information in Fig. 7.1, state the angle of refraction for the ray of red light travelling from air into the glass block.

angle of refraction = ... ° [1]

(ii) Using the information in Fig. 7.1, state the term used for line X.

..... [1]

(b) Fig. 7.2 shows an object OX to the left of a thin converging lens. The principal focus on each side of the lens is labelled F.

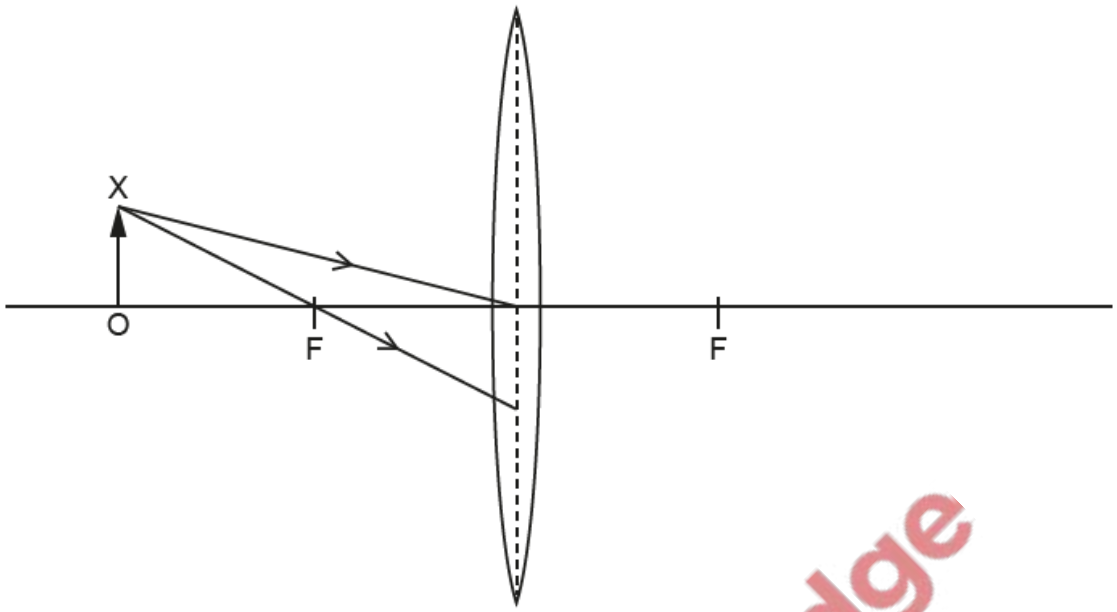


Fig. 7.2

(i) Two rays from the top of the object are incident on the lens, as shown in Fig. 7.2.

On Fig. 7.2, continue the paths of these two rays to show the position of the image of OX formed by the lens. [2]

(ii) Draw the image of OX formed by the lens. [1]

[Total: 5]

17. June/2022/Paper_33/No.6

A diver is swimming under water. She uses a torch emitting red light. Fig. 6.1 shows three rays of red light coming from the torch.

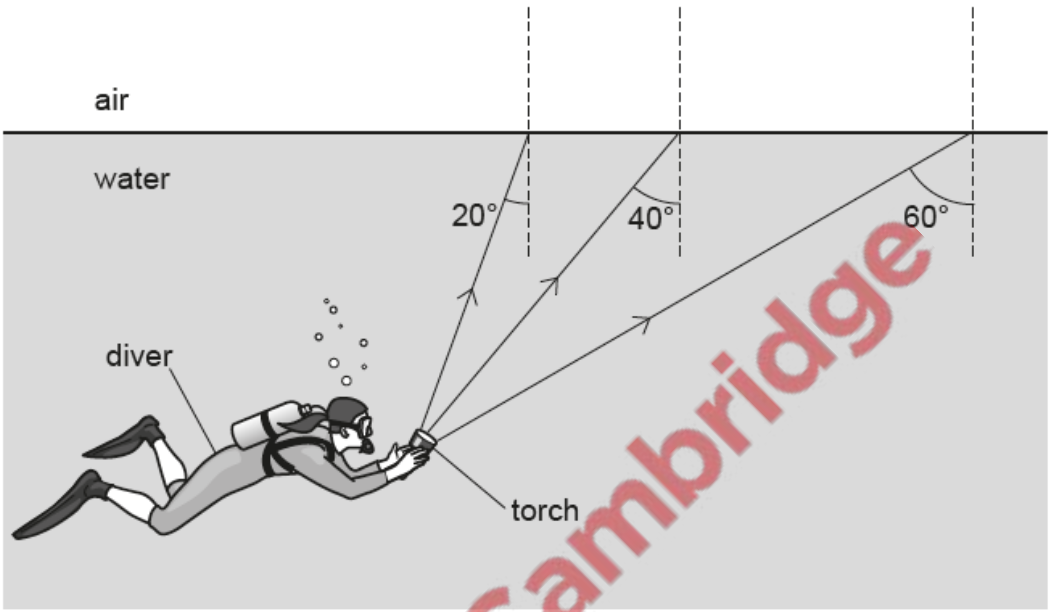


Fig. 6.1

(a) State the name of the dashed lines in Fig. 6.1.

..... [1]

(b) The critical angle for red light travelling from water into air is 48°.

(i) State the meaning of the term critical angle.

.....

..... [2]

(ii) On Fig. 6.1, draw the path of each ray after it reaches the water–air boundary. [3]

[Total: 6]

18. June/2022/Paper_41/No.7

Fig. 7.1 is a full-scale diagram of a small nail N in front of a thin converging lens. The line L represents the lens.

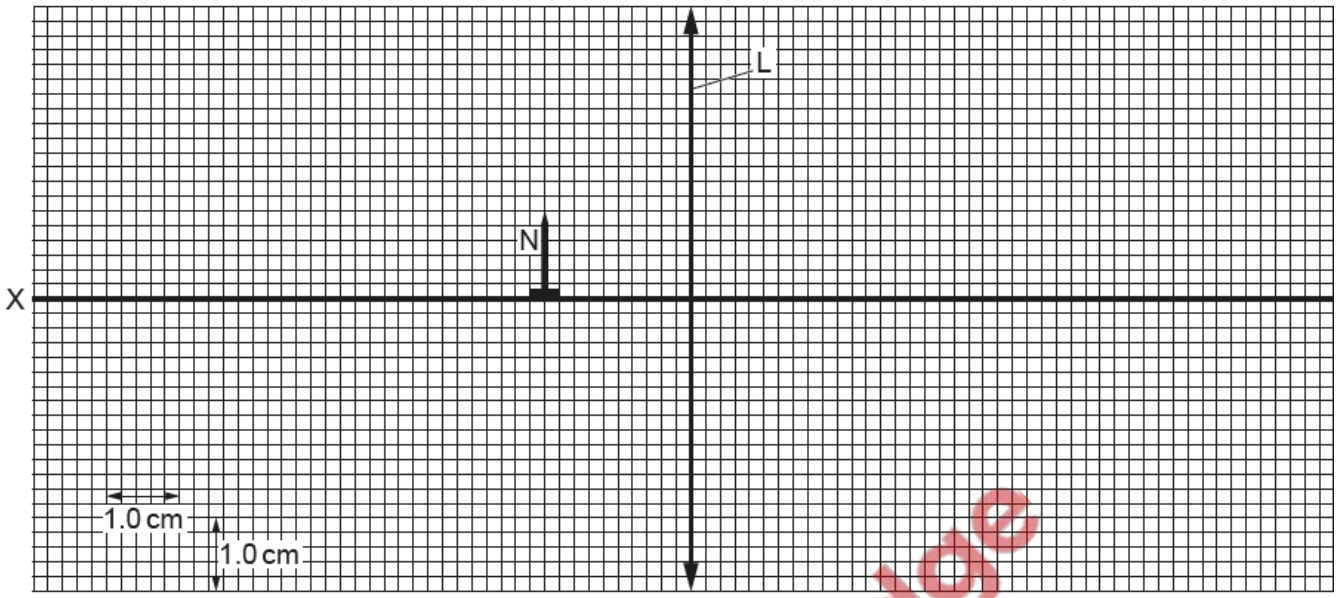


Fig. 7.1 (full scale)

The focal length of the lens is 3.0 cm.

(a) Rays of light, parallel to XY, are travelling towards the lens.

Describe what happens to the light after it passes through the lens.

.....

.....

.....

..... [3]

(b) On Fig. 7.1, mark and label with an F each of the **two** principal focuses of the lens. [1]

(c) The small nail N, of height 1.2 cm, is positioned 2.0 cm to the left of the lens.

(i) By drawing on Fig. 7.1, find the position of the image I of N and add image I to the diagram. [3]

(ii) State and explain whether I is a real or a virtual image.

.....

..... [1]

(iii) State the name given to a lens when it is used in this way.

..... [1]

[Total: 9]

19. June/2022/Paper_42/No.6

Fig. 6.1 is a full-size ray diagram showing the formation of an image by a thin glass lens.

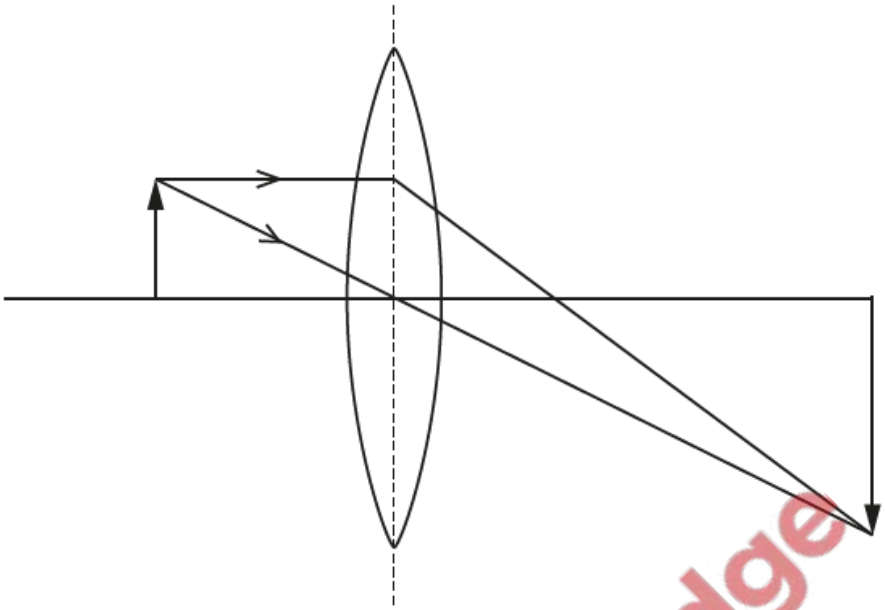


Fig. 6.1 (full size)

(a) Determine the focal length of the lens.

focal length = ... [1]

(b) Circle **three** items in the list which describe the nature of the image formed.

enlarged	**same size**	**diminished**	**inverted**
upright	**real**	**virtual**	

[3]

(c) State **one** feature of a virtual image.

..... [1]

[Total: 5]

20. June/2022/Paper_43/No.7

(a) Fig. 7.1 shows a plan view of a room. There is a plane mirror on one wall and a picture across the whole of wall AB.

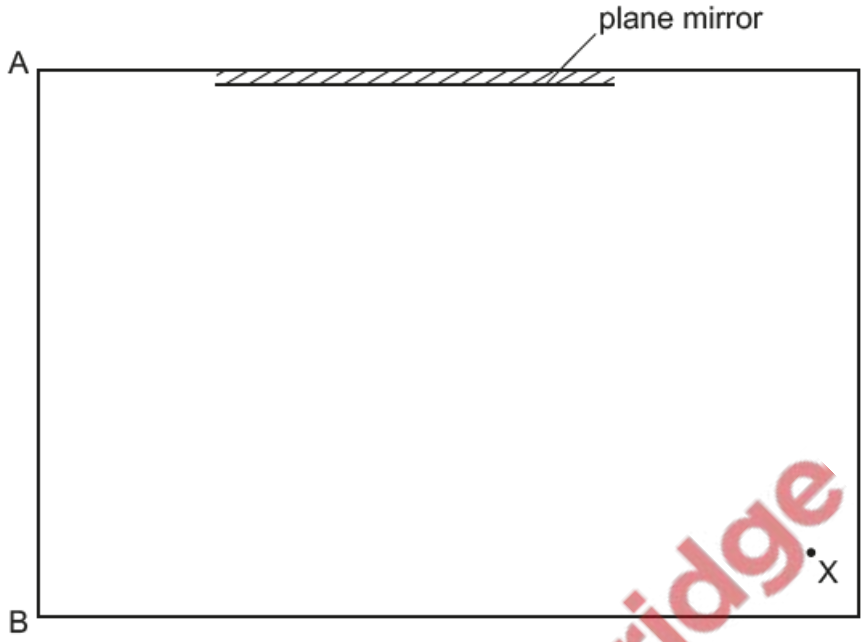


Fig. 7.1 (plan view)

A person is standing at point X and is looking at the mirror. The person cannot see all of the picture on wall AB reflected in the mirror.

There is a point P on wall AB which is the closest point to A that the person can see reflected in the mirror.

On Fig. 7.1, draw a reflected ray and an incident ray to show the position of the point P. [2]

(b) State **two** properties of the image formed by the mirror.

1. .....

2. .....

[2]

(c) Visible light is an electromagnetic wave.

State the name of **one** region of the electromagnetic spectrum in which the waves have:

(i) shorter wavelengths than visible light

..... [1]

(ii) longer wavelengths than visible light.

..... [1]

[Total: 6]