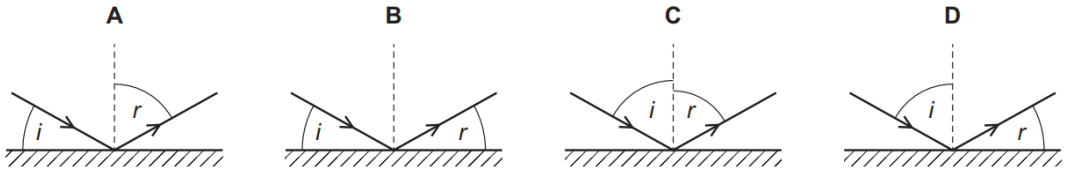
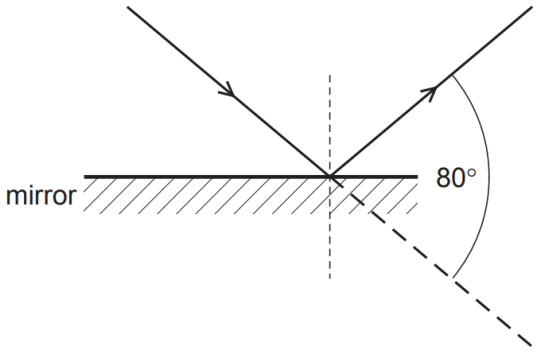
Reflection

MCQ

1 Light is incident on a mirror. The light is reflected from the mirror. The angle of incidence is i and the angle of reflection is r. Which diagram correctly shows i and r?



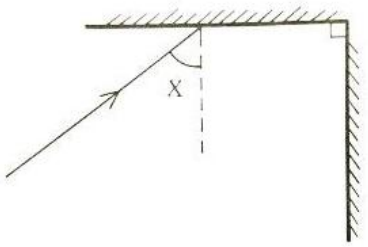
2 Light is incident on a mirror and is reflected as shown.



What are the angle of incidence and the angle of reflection?

	angle of incidence/°	***angle of reflection/°***
A	40	40
B	40	50
C	50	40
D	50	50

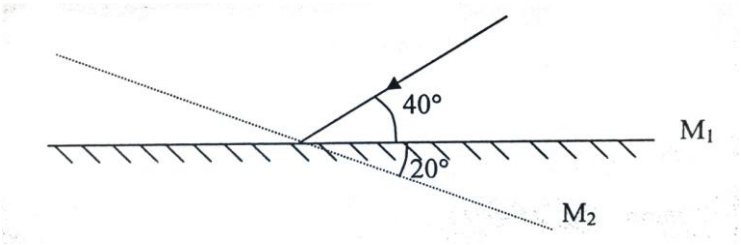
3 Two plane mirrors are normal to each other.



A light ray is incident at one mirror at an angle X as shown in the figure. Find the angle of deviation between the incident ray and the final emerging ray.

A 180° **B** 90° **C** 90° – X **D** X

4 A ray of light strikes a plane mirror M_1 at an angle of 40°. The mirror is now rotated clockwise through an angle of 20° to a new position M_2 without changing the direction of the incident ray.



Due to the change in the position of the plane mirror, the reflected light ray would turn through an angle of

A 40° clockwise
B 40° anticlockwise
C 20° clockwise
D 20° anticlockwise

5 An object is placed in front of a plane mirror. What are the properties of the image produced?

A The image is real and smaller than the object.
B The image is real and the same size as the object.
C The image is virtual and smaller than the object.
D The image is virtual and the same size as the object.

6 A student holds a sheet of paper with letters on it facing a plane mirror. The letters on the paper are shown.

What does the student see in the mirror?

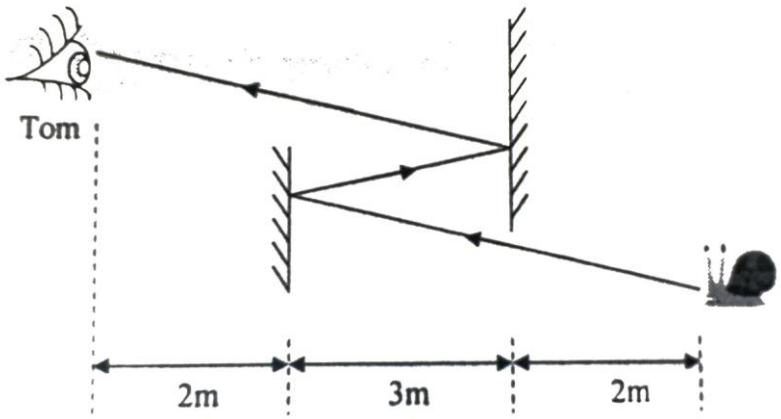
A

B

C

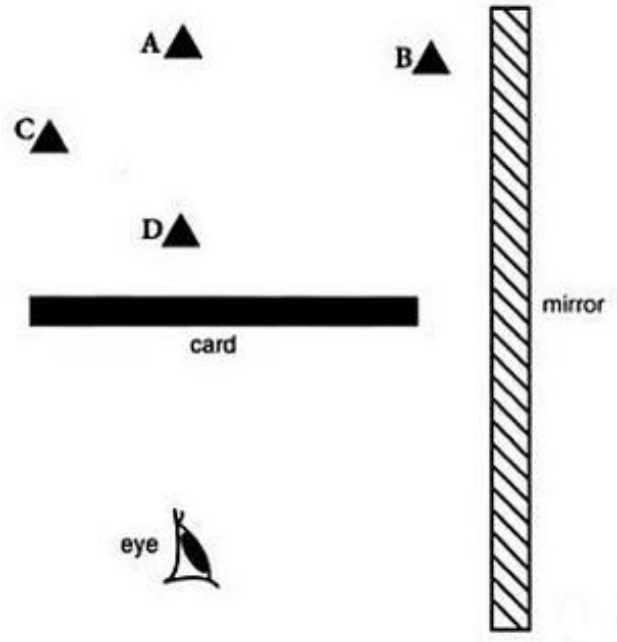
D

7 Tom sees the snail by the reflection of two mirrors as shown in the diagram. What is the horizontal distance of the image from Tom?

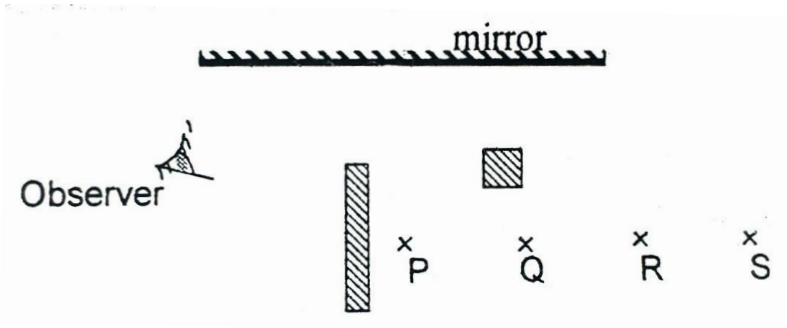


A 7 m **B** 10 m **C** 13 m **D** 15 m

8 The diagram shows four objects in front of a mirror. The card prevents the observer's eye from seeing the objects directly. Which object's image can be seen in the mirror?

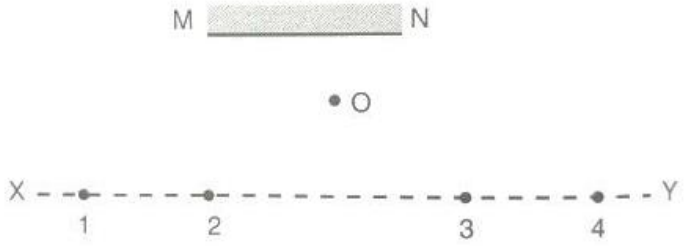


9 There are two opaque objects placed in front of a mirror. Which of the following positions P, Q, R or S can the observer see?



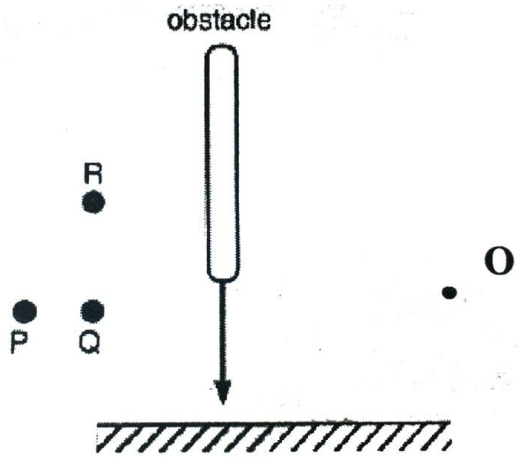
A P and Q only **B** Q only **C** Q and S only **D** R and S only

10 An object O is placed in front of a plane mirror MN as shown in the diagram below. A student moves her eye along the line XY to observe the image of O. Identify the point(s) on the line XY where the image of O cannot be seen.



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

11 Three objects, P, Q and R, are viewed through a plane mirror by an observer at O as shown. When an obstacle is moved down towards the mirror, which object disappears first and which one disappears last?

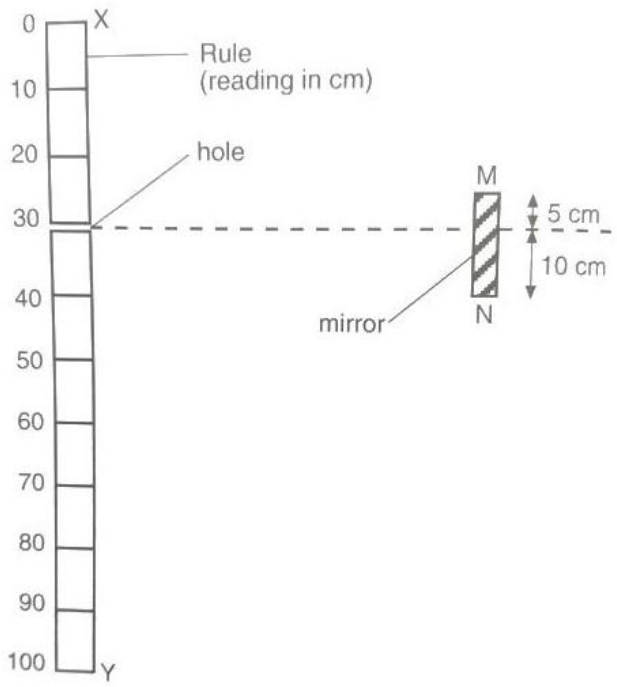


	disappears first	*disappears last*
A	P	Q
B	P	R
C	R	P
D	Q	R

12 A man whose eyes are 1.50 m from the ground looks at his reflection in a vertical mirror 2.00 m away. The top and bottom of the mirror are 2.00 m and 1.00 m from the ground respectively. What distance below his eyes can the man see of himself?

A 0.25 m **B** 0.50 m **C** 1.00 m **D** 1.50 m

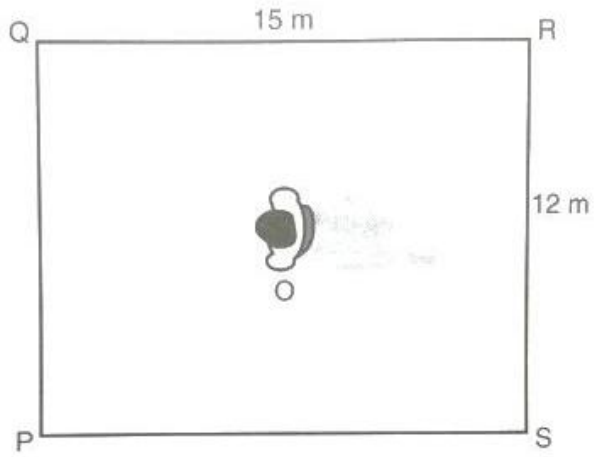
13 The diagram shows a metre rule XY with a small hole drilled at the 30 cm mark. A plane mirror MN is placed in front of the ruler and is parallel to it.



If an observer peeps through the hole at the mirror, the extent to which he can see the metre rule is between the

A 0 cm and 90 cm mark
B 10 cm and 70 cm mark
C 20 cm and 50 cm mark
D 20 cm and 60 cm mark

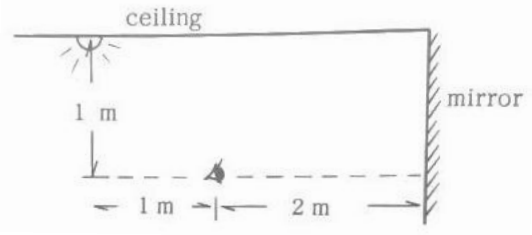
14 The diagram below shows the view from the top of PQRS which measures 15 m by 12 m. An observer O stands at the centre of the room with his back to the wall RS.



The minimum width of a plane mirror, which must be placed at eye level on the opposite wall, PQ, if the observer is to be able to see the whole of the image of the wall RS is

A 2.0 m **B** 4.0 m **C** 6.0 m **D** 12 m

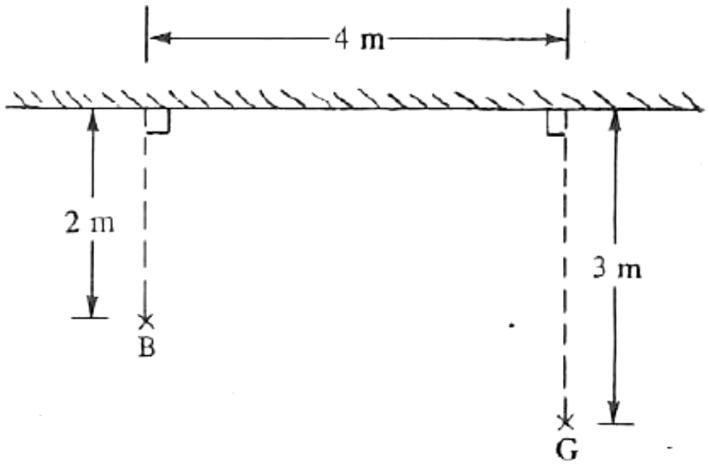
15 A man observes the image of a ceiling light on a plane mirror as shown in the figure. If the eye is 2 m from the mirror, 1 m below the ceiling and 1 m in front of the light, what is the minimum length of the mirror from the ceiling?



A 0.1 m **B** 0.2 m **C** 0.4 m **D** 0.6 m

Structured Questions

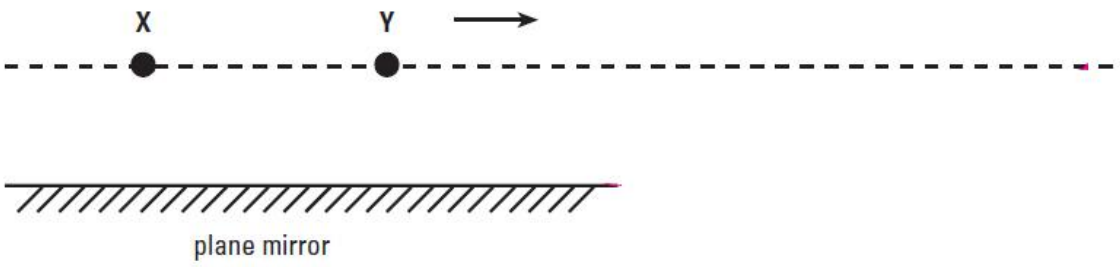
16 In the figure, a boy stands at point B in front of a plane mirror. A girl stands at another point G in front of the same plane mirror.



(a) How far is the image of the girl from the boy?

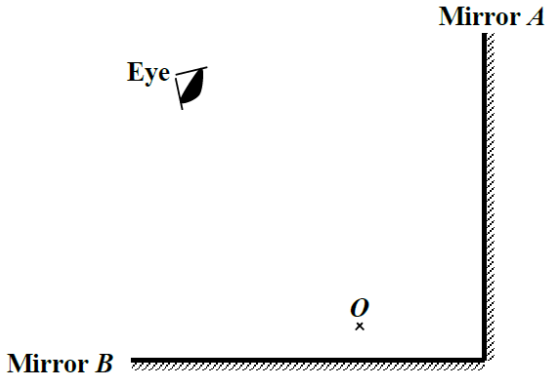
(b) How far is the image of the boy from the girl?

17 Two people stand at points X and Y in front of a plane mirror as shown in the figure below. They see each other through reflection in the mirror.



Draw the ray diagram in the figure above showing the furthest point that Y is able to see X in the mirror as Y moves in the direction of the arrow.

18 A point object O is placed in between two plane mirrors inclined at right angles.

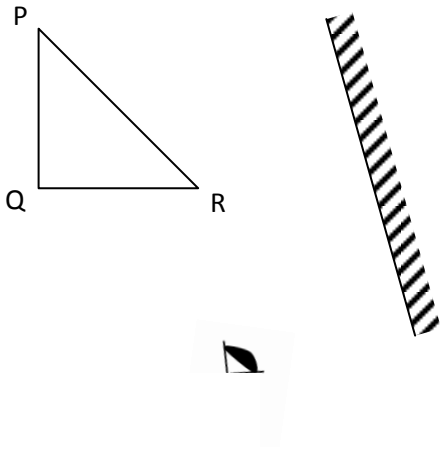


(a) Mark the position of the image of the object O in mirrors A and B, and label the images I_1 and I_2 respectively.

(b) A third image is known to exist, mark the position of this image and label the image I_3.

(c) Draw the ray diagram to show how the eye is able to see I_1.

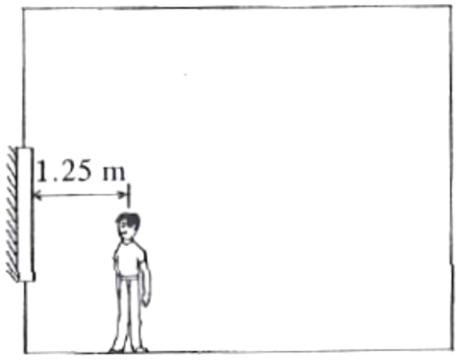
19 A triangular object PQR is placed in front of a plane mirror, as shown below.



(a) Draw the image of triangle PQR. Label it as P'Q'R'.

(b) Draw a cone of light from P to a marked position of an eye, to show how the eye can see the image.

20 The room shown in the figure is 5.00 m long and 4.00 high. A mirror is hung on one of the walls. A boy 1.60 m tall stands 1.25 m from the mirror. His eyes are 0.10 m below the top of his head.



(a) Draw a ray to show how he sees the

(i) top of the opposite wall

(ii) bottom of the opposite wall.

(b) What is the minimum length of the mirror in order to see the whole image of the opposite wall?

(c) How high above the ground should the mirror be hung?

(d) Using the mirror length found in **(b)**, if the boy walks further away from the mirror, can he see the whole height of the opposite wall? Explain your answer.

Answers

MCQ

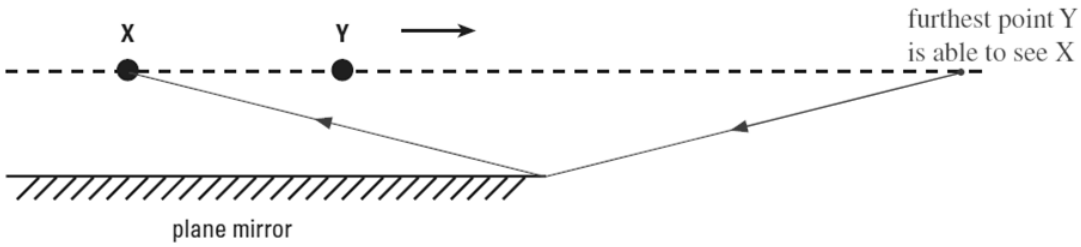
CDAAD BCACD CCCBD

Structured Questions

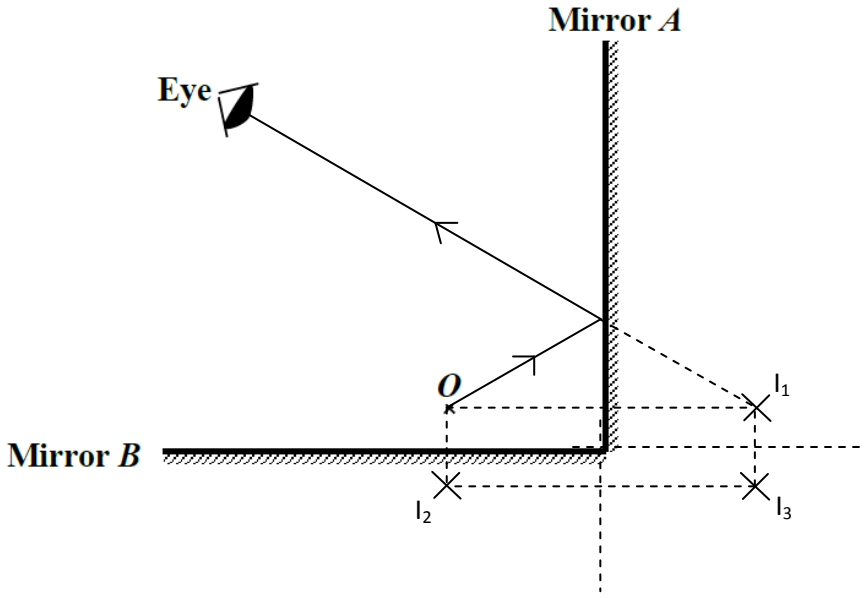
16 (a) 6.4 m ≈ 7 m

(b) 7 m

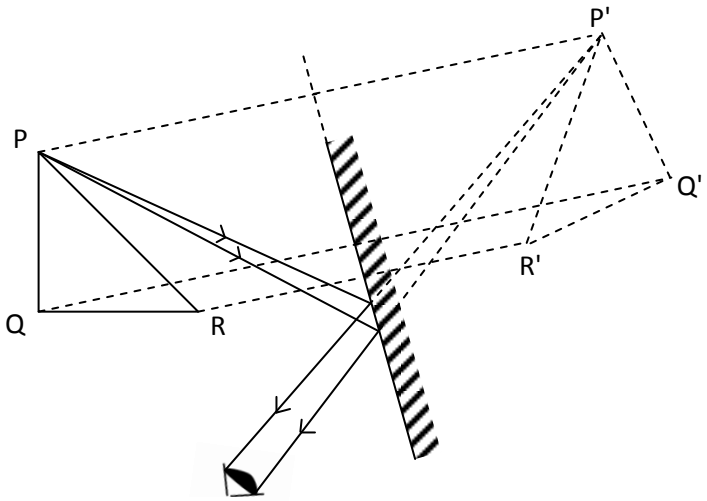
17



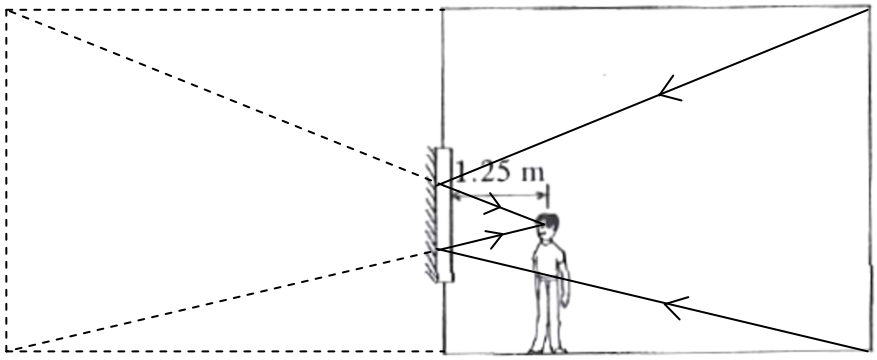
18



19



20 (a)



(b) 0.800 m

(c) 1.20 m

(d) No, he cannot. The mirror isn't long enough.