

Light

Question Paper 1

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Light
Booklet	Question Paper 1

Time allowed: 24 minutes

Score: /19

Percentage: /100

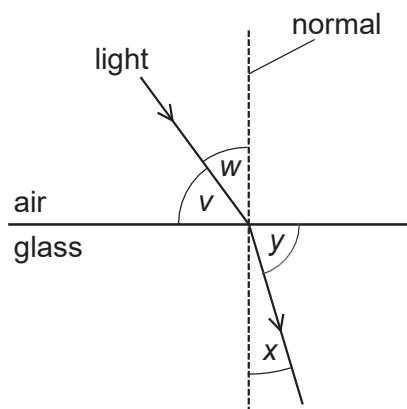
Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

Question 1

The diagram shows light travelling from air into glass.

Four angles v , w , x and y are shown.



Which formula is used to calculate the refractive index n of the glass?

A $n = \frac{\sin v}{\sin y}$

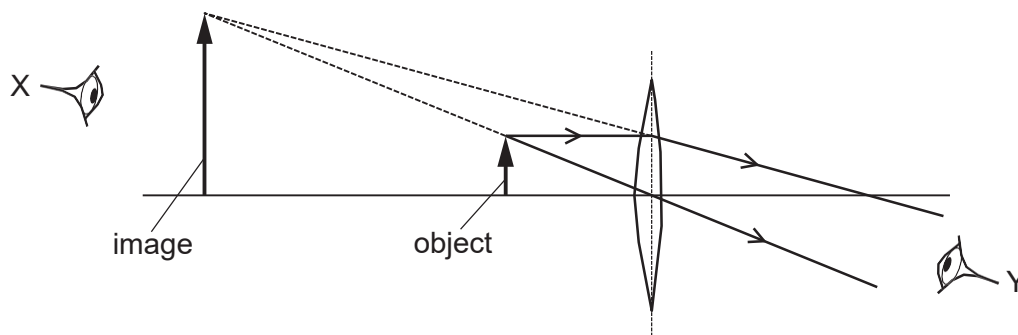
B $n = \frac{\sin v}{\sin x}$

C $n = \frac{\sin w}{\sin y}$

D $n = \frac{\sin w}{\sin x}$

Question 2

The diagram shows a converging lens forming an image of an object.

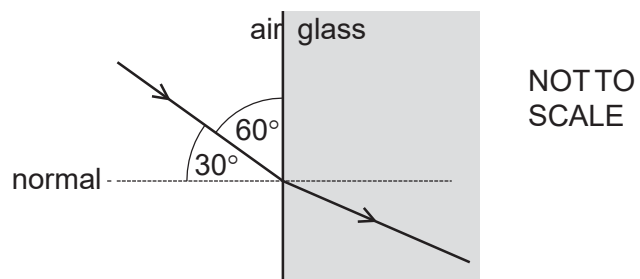


Which statement about the image is correct?

- A It is real and can be seen by an eye at X.
- B It is real and can be seen by an eye at Y.
- C It is virtual and can be seen by an eye at X.
- D It is virtual and can be seen by an eye at Y.

Question 3

The diagram shows light passing from air into glass.



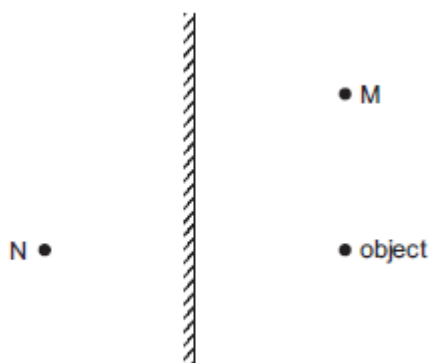
The glass has a refractive index of 1.5.

What is the angle of refraction in the glass?

- A 19° B 22° C 35° D 49°

Question 4

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



At which labelled point is the image formed, and which type of image is formed?

	where the image is formed	type of image
A	at M	real
B	at M	virtual
C	at N	real
D	at N	virtual

Question 5

Light enters a glass block at an angle of incidence of 46° .

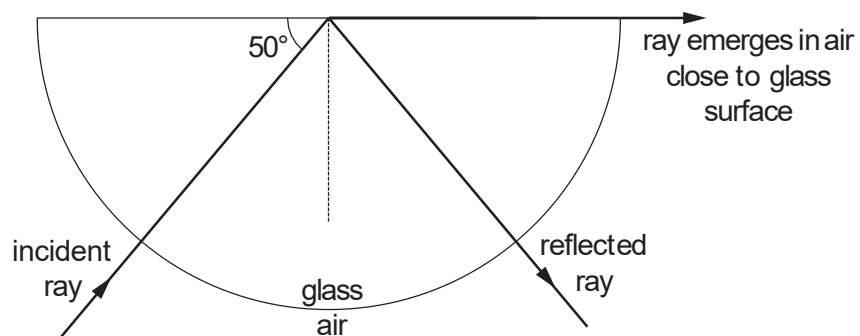
The light refracts at an angle of refraction of 26° .

What is the refractive index of the glass?

- A 0.57 B 0.61 C 1.64 D 1.77

Question 6

The diagram shows a ray of monochromatic light passing through a semi-circular glass block.



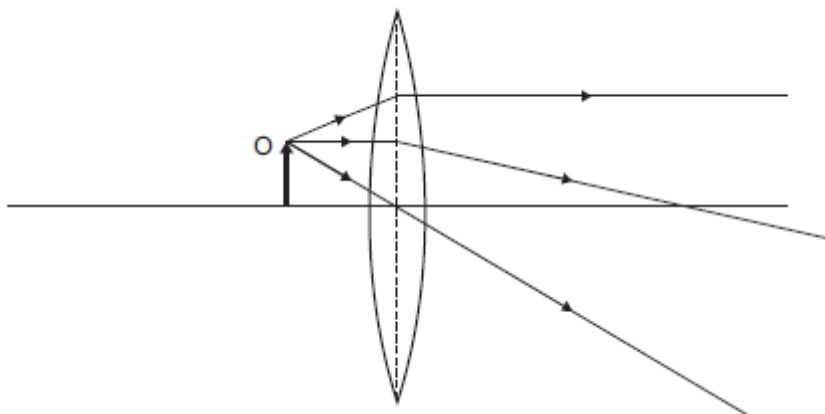
What is the refractive index of the glass?

- A 0.64 B 0.77 C 1.31 D 1.56

Question 7

An object O is placed close to a thin converging lens.

The diagram represents three rays from the top of O passing through the lens.



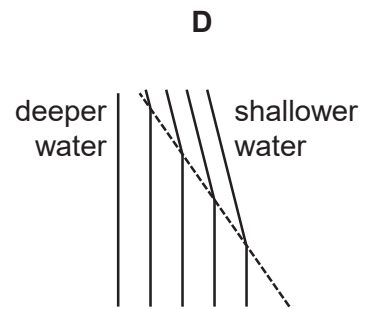
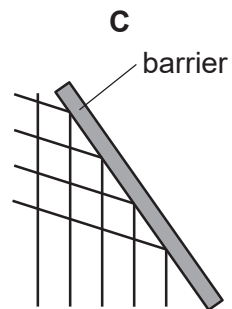
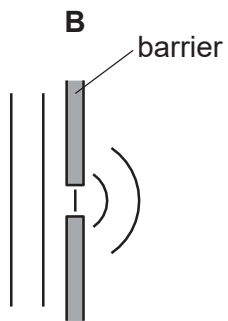
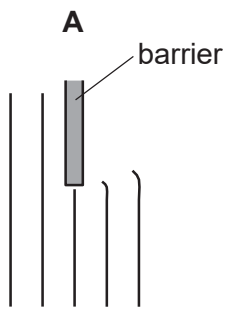
Which type of image is produced by the lens when the object O is in this position?

- A. real and diminished
- B. real and enlarged
- C. virtual and diminished
- D. virtual and enlarged

Question 8

The diagrams represent water waves in a tank.

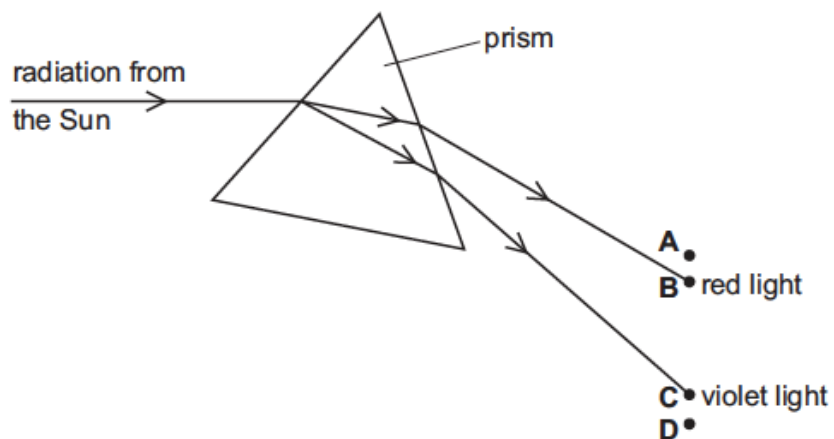
Which diagram represents a wave that changes speed?



Question 9

Radiation from the Sun is dispersed by a prism. The prism does not absorb any of the radiation. Four identical thermometers are placed, one at each of the labelled positions.

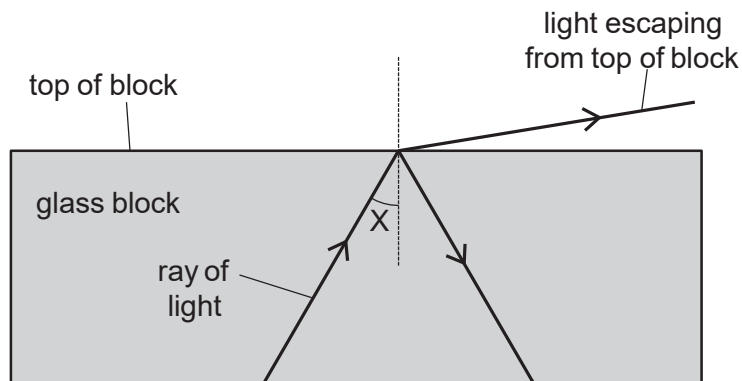
In which position does the thermometer show the greatest rise in temperature?



Question 10

A scientist tries to direct a ray of light in a glass block so that no light escapes from the top of the block.

However, some light does escape.



The scientist changes angle X and stops the light escaping from the top.

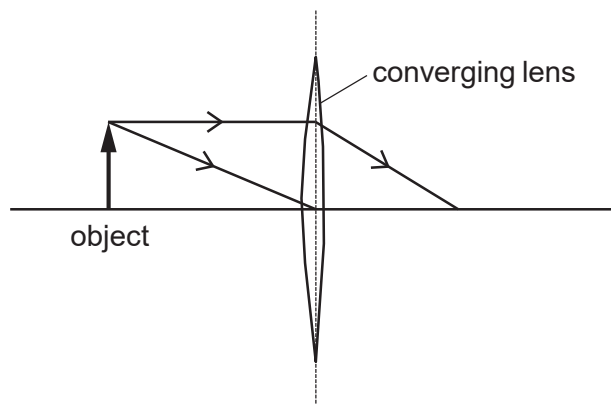
Which row in the table describes the change to angle X and the name of the effect produced?

	change to angle X	name of effect produced
A	decrease	total internal reflection
B	decrease	total internal refraction
C	increase	total internal reflection
D	increase	total internal refraction

Question 11

An object is placed in front of a thin converging lens.

The diagram shows the paths of two rays from the top of the object.



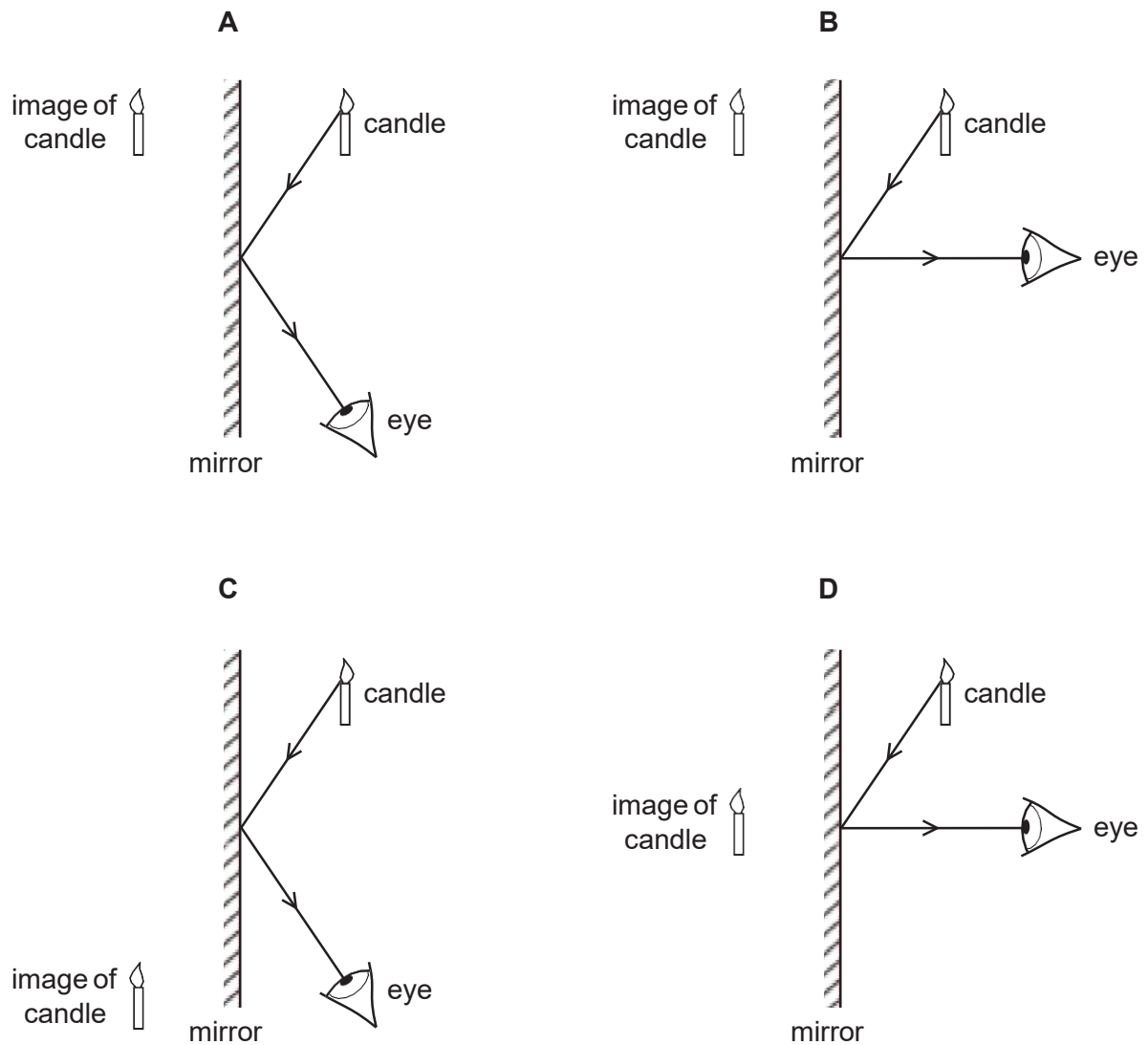
An image of the object is formed on a screen to the right of the lens.

How does this image compare with the object?

- A. It is larger and inverted.
- B. It is larger and the same way up.
- C. It is smaller and inverted.
- D. It is smaller and the same way up..

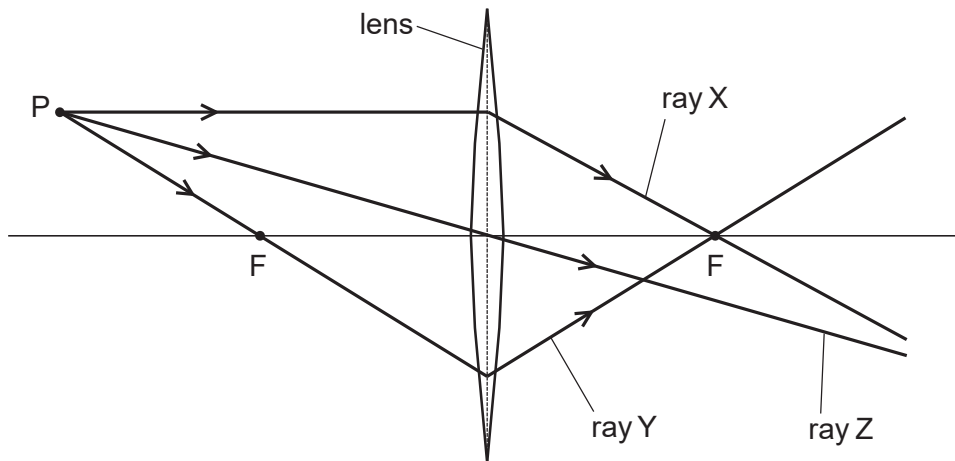
Question 12

Which diagram shows how the light from a candle is reflected by a mirror, and shows the position of the image formed?



Question 13

A student draws a diagram representing three rays of light from point P passing through a converging lens. Each point labelled F is a principal focus of the lens.

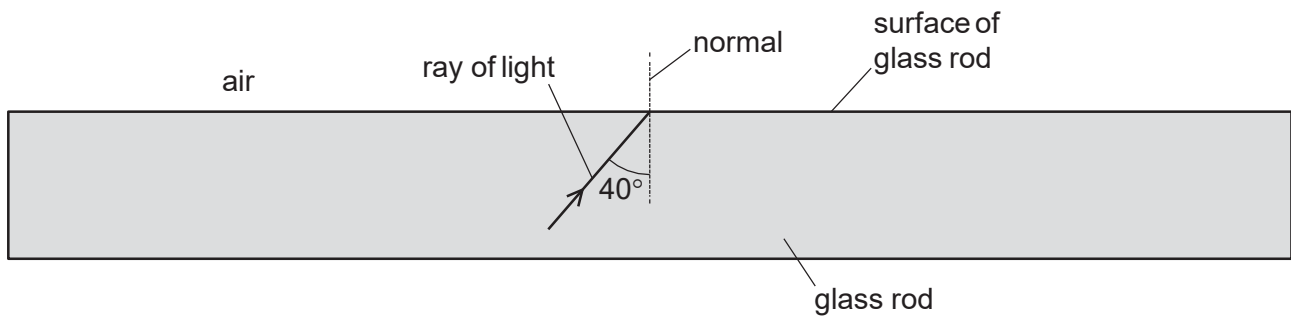


Which of the rays has the student drawn correctly?

- A ray X and ray Y
- B ray X and ray Z
- C ray Y only
- D ray Z only

Question 14

The diagram shows a ray of light inside a glass rod. The critical angle for the light in the glass is 42° .



Which row shows what happens to the light when it reaches the surface of the glass rod?

	any light reflected?	any light refracted?
A	no	no
B	no	yes
C	yes	no
D	yes	yes

Question 15

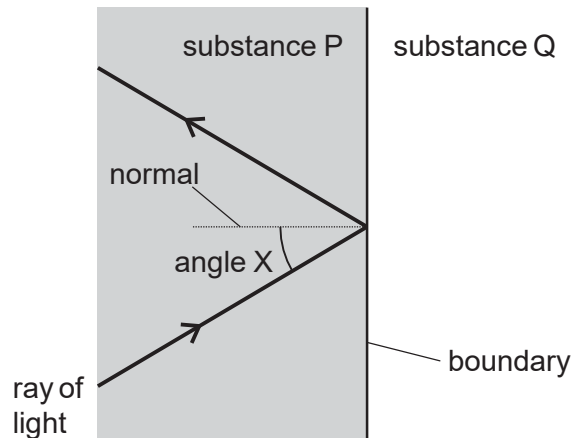
A plane mirror is fitted to a wall.

Which statement about the image formed by the mirror is correct?

- A. The image is real.
- B. The image is left to right (laterally inverted).
- C. The image is smaller than the object.
- D. The image is upside down.

Question 16

The diagram shows a ray of light travelling in a substance P. The ray reaches a boundary with a substance Q. Total internal reflection occurs at the boundary.

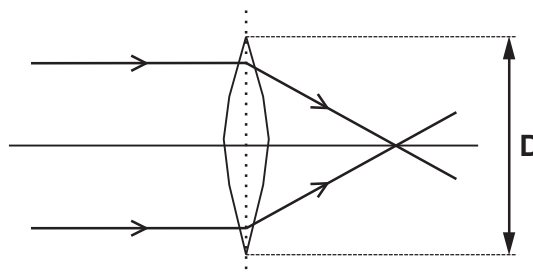
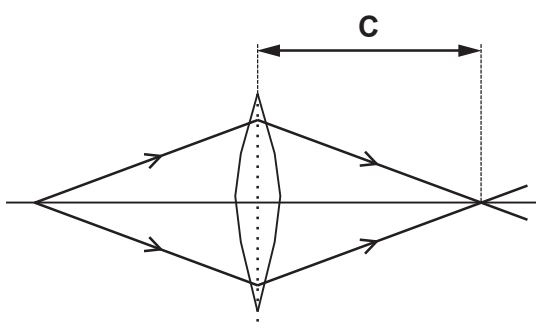
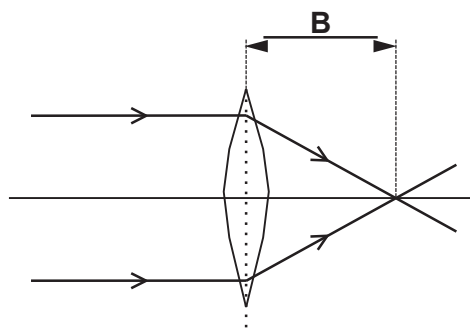
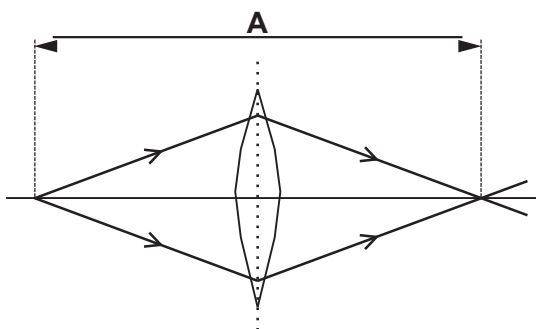


Which row contains correct statements about angle X and about the optical density of substance Q?

	angle X	substance Q
A	smaller than the critical angle	less dense than substance P
B	smaller than the critical angle	more dense than substance P
C	greater than the critical angle	less dense than substance P
D	greater than the critical angle	more dense than substance P

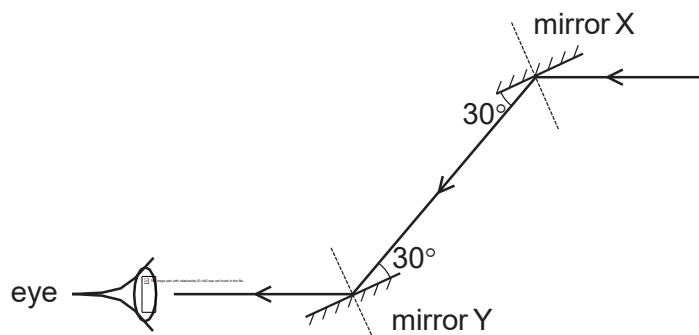
Question 17

Which labelled distance is the focal length of the lens?



Question 18

A ray of light is reflected by two parallel plane mirrors X and Y.

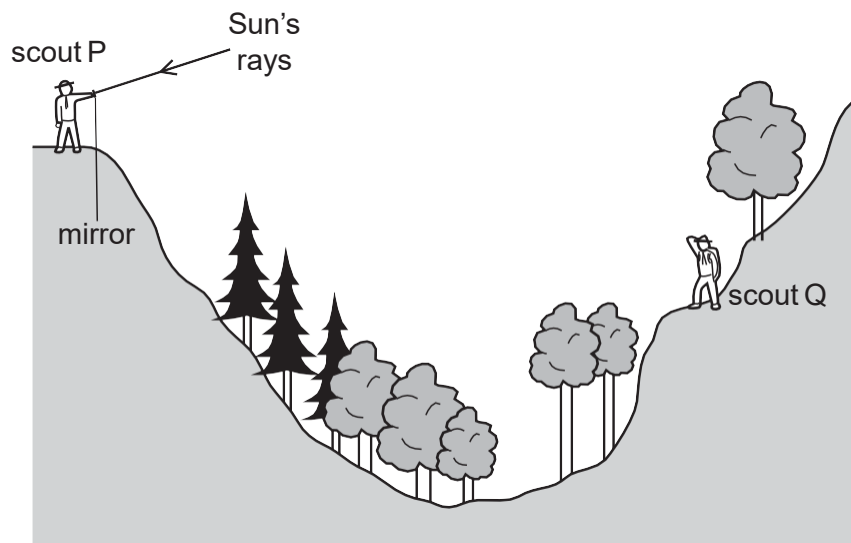


Which statement is correct?

- A The angle of incidence at mirror X is 30° .
- B The angle of incidence at mirror Y is 60° .
- C The angle of reflection at mirror X is 120° .
- D The angle of reflection at mirror Y is 0° .

Question 19

Scout P signals to scout Q on the other side of a valley by using a mirror to reflect the Sun's rays.



Which mirror position would allow the Sun's rays to be reflected to scout Q?

