

Science

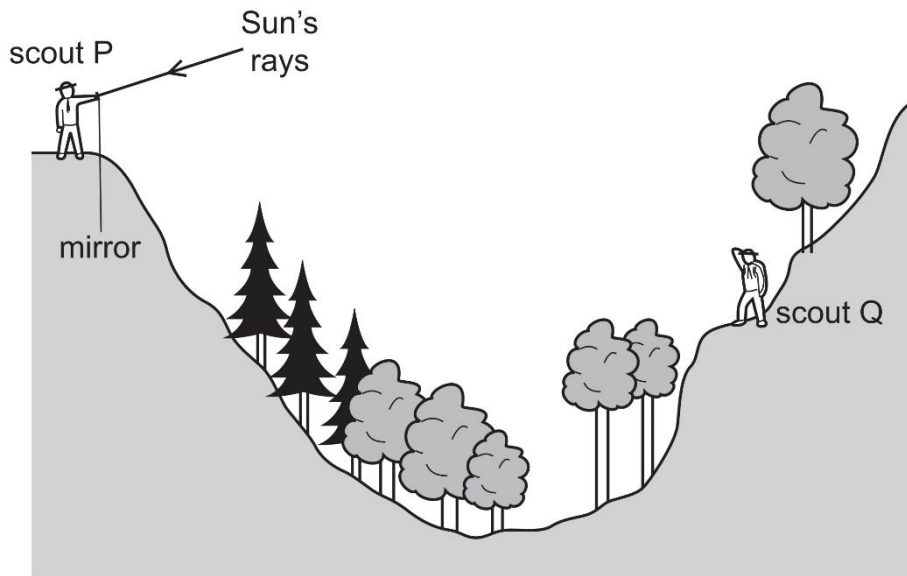
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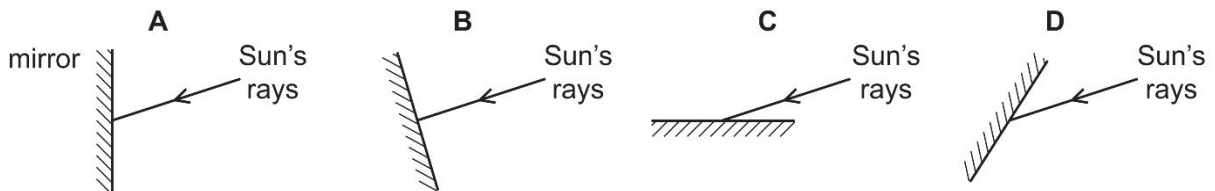
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Multiple-Choice Questions on the Ray Model of Light

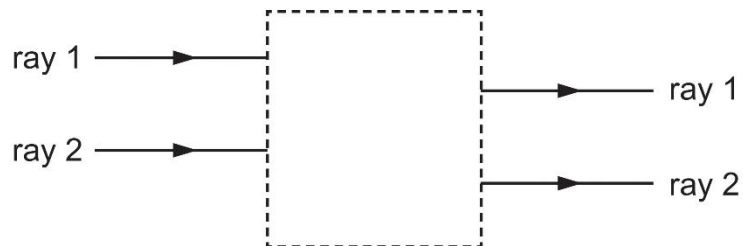
1. Scout P signals to Scout Q on the other side of a valley by using a mirror to reflect the sun's rays.



Which mirror position would allow the sun's rays to be reflected to Scout Q?



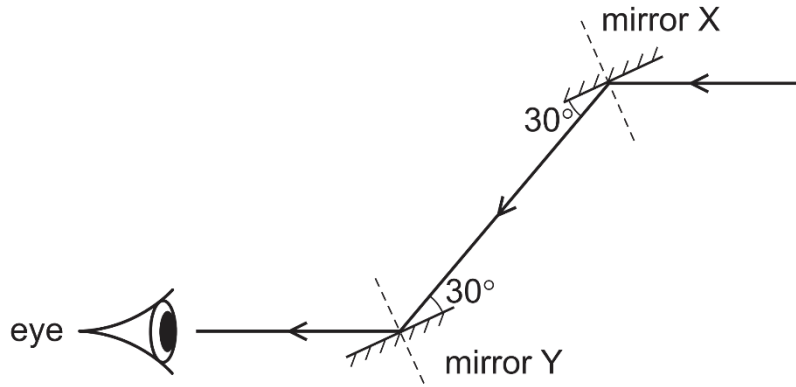
2. Rays of light enter and leave a box.



What could be in the box to make the waves behave as shown?

- A A converging lens. B A parallel sided glass block.
 C A plane mirror. D A triangular prism.

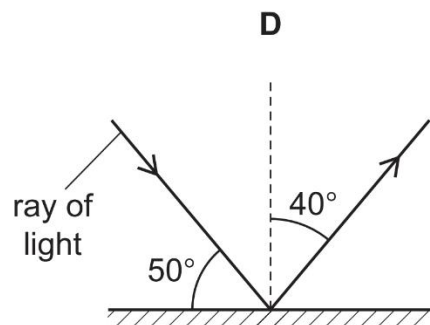
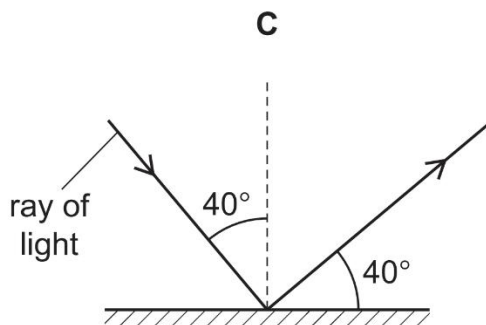
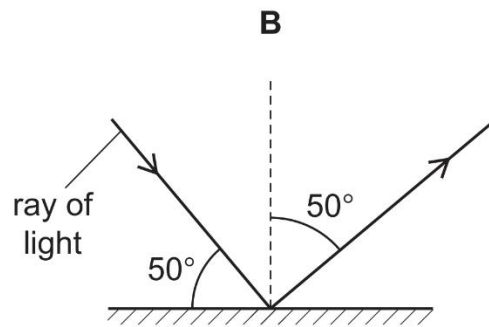
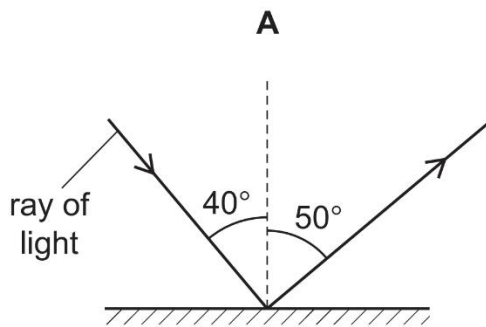
3. A ray of light is reflected by two parallel plane mirrors, **X** and **Y**.



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° .

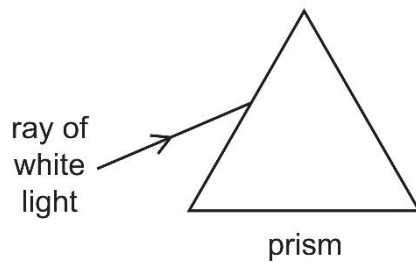
4. Which diagram correctly shows a ray of light reflected by a plane mirror?



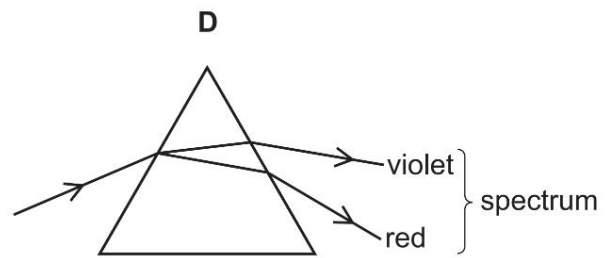
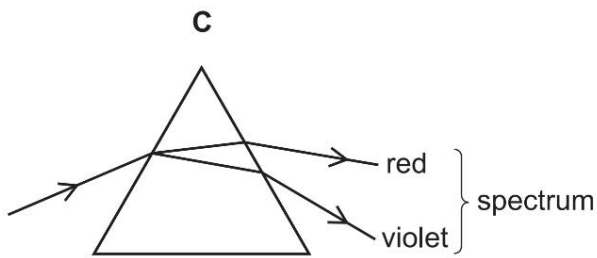
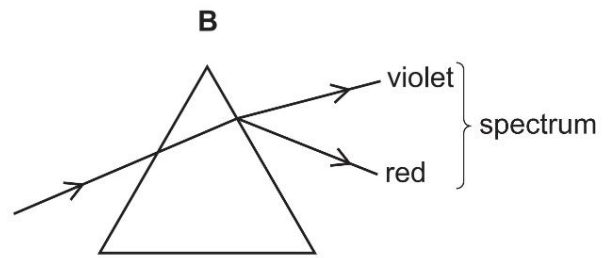
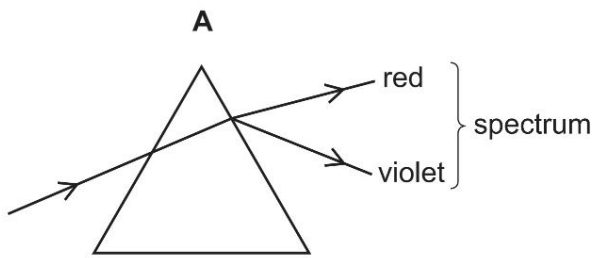
5. Which one of the following is a unit of wavelength?

- A Hertz
- B Metre
- C Metre per second
- D Second

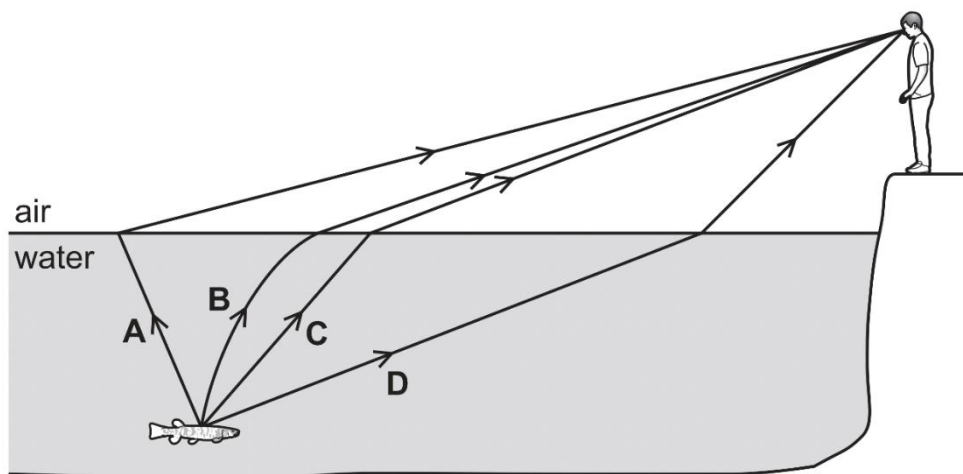
6. A ray of white light is incident on a glass prism.



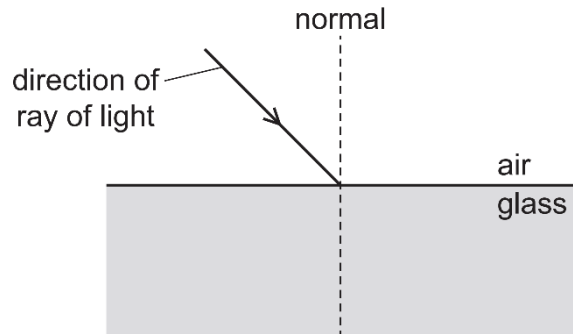
Which ray diagram shows the ray as it passes through the prism and emerges from the opposite side?



7. A boy sees a fish in a lake. Which labelled path is taken by the light travelling from the fish to the boy's eye?



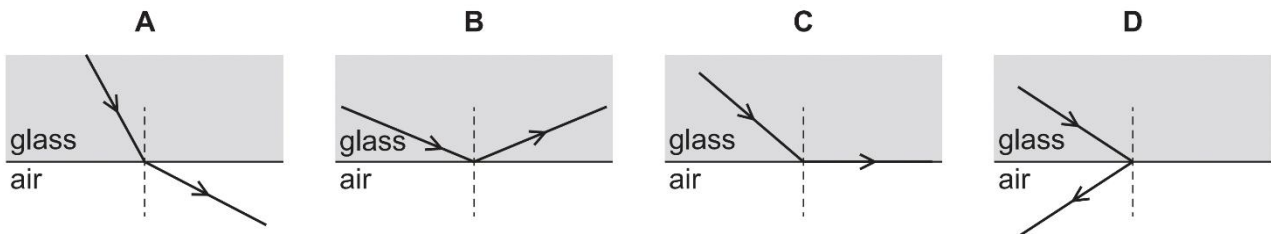
8. A ray of light is incident on the surface of a glass block.



Which row describes how the speed and the direction of the ray of light change when it enters the glass?

	speed in glass	direction in glass
A	decreases	closer to the normal
B	decreases	further from the normal
C	increases	closer to the normal
D	increases	further from the normal

9. Light passes from glass into air. Which diagram shows a ray of light passing from the more dense optical medium (glass) to the less dense optical medium (air)?



10. Where do all types of electromagnetic waves travel at the same speed?

- A** Air
- B** A vacuum
- C** Glass
- D** Water

11. The table describes white light that passes through a prism and forms a spectrum.

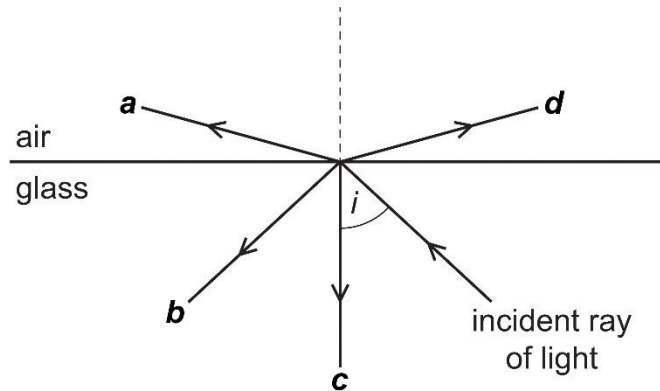
Which row is correct?

	colour refracted the most	colour next to the red
A	red	orange
B	red	yellow
C	violet	orange
D	violet	yellow

12. 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.

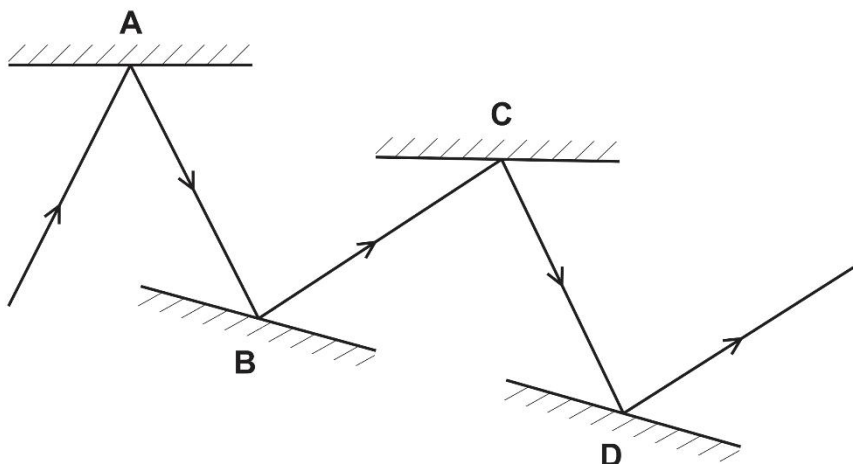
13. The diagram shows light incident at a glass-air boundary. The angle of incidence is i .



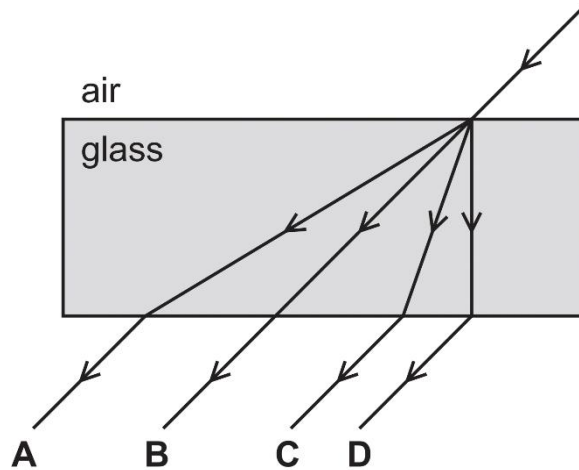
Some of the light is reflected and some of the light is refracted. Which one of the following options correctly describes the path of the reflected ray and the path of the refracted ray?

	path of reflected ray	path of the refracted ray
A	<i>b</i>	<i>a</i>
B	<i>b</i>	<i>d</i>
C	<i>c</i>	<i>a</i>
D	<i>c</i>	<i>d</i>

14. A student draws a ray diagram to show how a ray of light is reflected by a number of mirrors. Which reflection has **not** been drawn correctly?



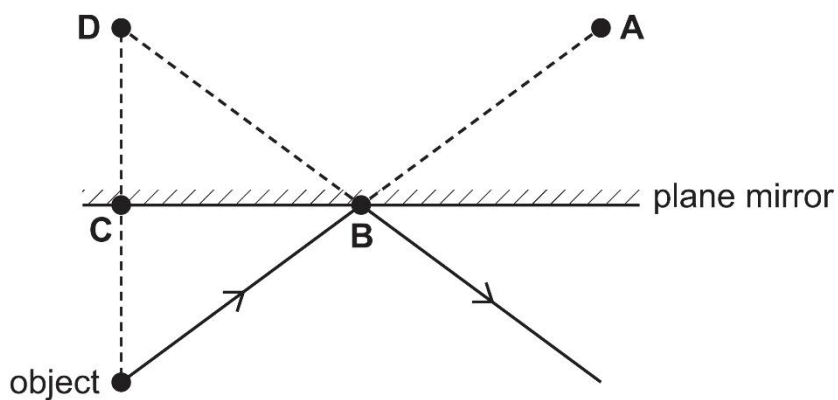
15. Light passes through a glass block. What is the path of the light?



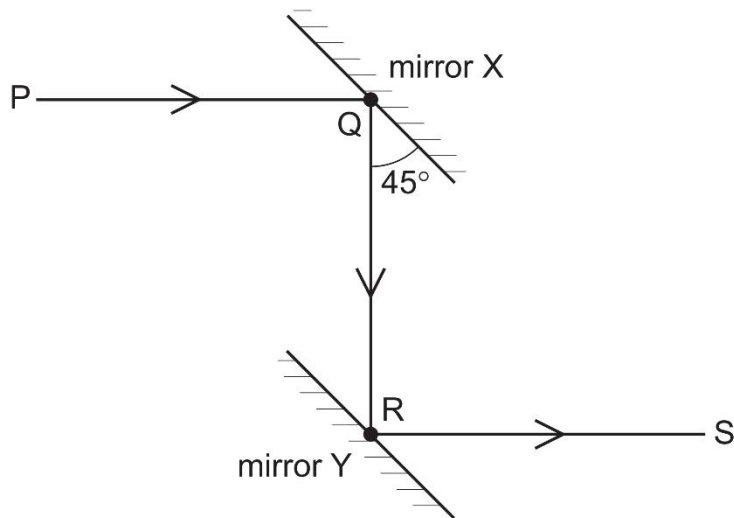
16. A student views her reflection in a plane mirror. Which statement about the student's image in the plane mirror is correct?

	type of image	orientation of image	magnification
A	real	reversed	not magnified
B	real	not reversed	magnified
C	virtual	reversed	not magnified
D	virtual	not reversed	magnified

17. A plane mirror reflects a ray of light from an object, as shown. At which position is the image of the object formed?

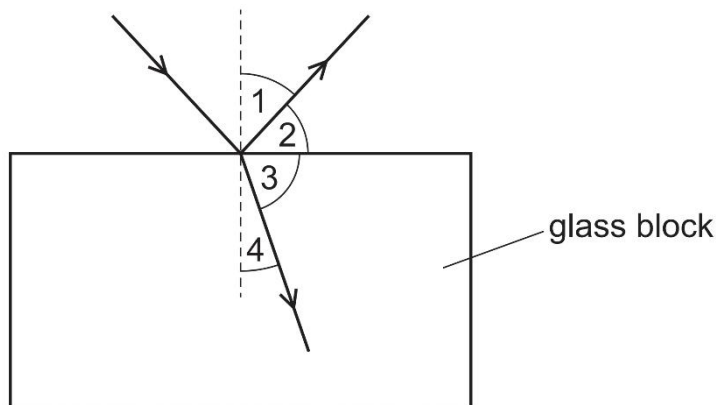


18. The diagram shows a ray PQ reflected by mirror X to a parallel mirror Y. The reflected ray along RS is parallel to PQ.



Which statement is correct?

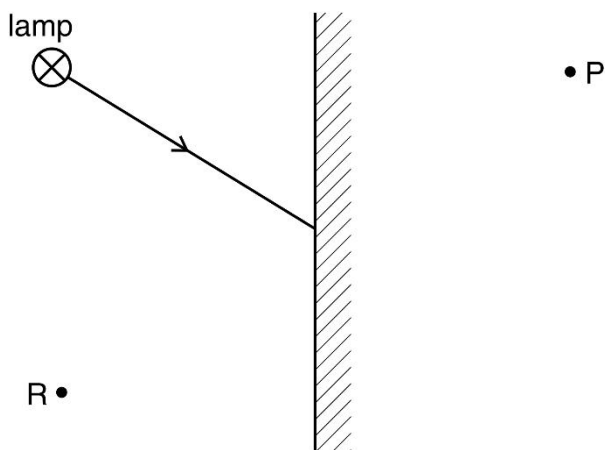
- A The angle between PQ and QR is 45° .
 - B The angle between QR and RS is 180° .
 - C The angle of incidence of PQ on mirror X is 60° .
 - D The angle of incidence of QR on mirror Y is 45° .
19. The diagram shows a ray of light incident on the surface of a glass block.



The ray of light is partially reflected back into the air and partially refracted into the glass block. Which row correctly identifies the angle of reflection and the angle of refraction?

	angle of reflection	angle of refraction
A	1	3
B	1	4
C	2	3
D	2	4

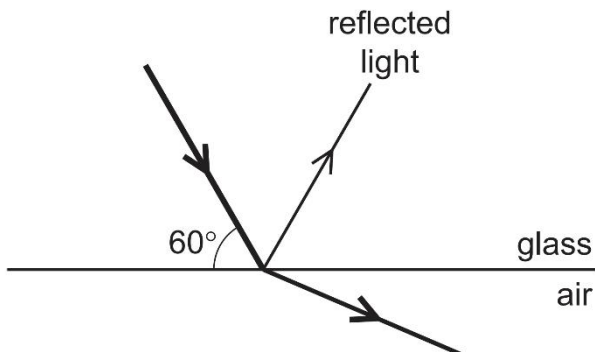
20. The diagram shows a ray of light from one point on a lamp striking a plane mirror.



Which statement describes the image of the point on the lamp formed by the mirror?

- A The image is at P and is real.
- B The image is at P and is virtual.
- C The image is at R and is real.
- D The image is at R and is virtual.

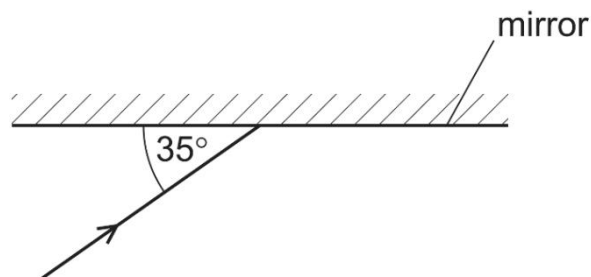
21. The diagram shows a beam of light travelling through glass and meeting a glass-air interface.



Which row correctly describes what is happening at the glass-air interface?

	angle of incidence at the interface	observation
A	30°	some internal reflection
B	30°	total internal reflection
C	60°	some internal reflection
D	60°	total internal reflection

22. The diagram shows a ray of light incident on a plane mirror.



The angle between the ray and the mirror is 35° . The ray is reflected by the mirror. What is the angle of reflection?

- A** 35° **B** 55° **C** 70° **D** 145°

23. Which are the three primary colours of light, and which are the three secondary colours of light?

	primary colours	secondary colours
A	blue, red and yellow	green, cyan and magenta
B	blue, green and red	cyan, magenta and yellow
C	cyan, magenta and yellow	blue, green and red
D	green, magenta and red	blue, cyan and yellow

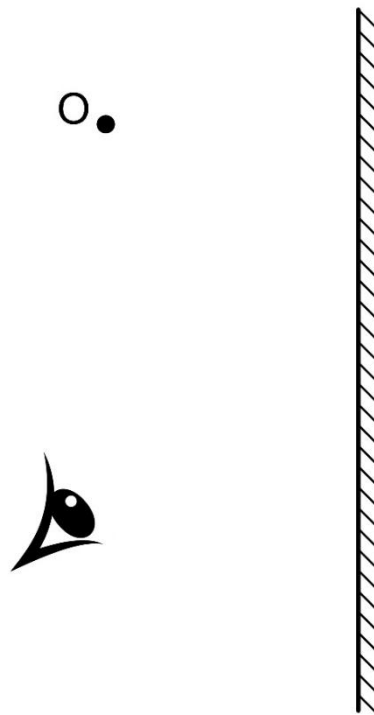
24. Which two colours combine together to give white light?

- A** Blue and green.
B Green and red.
C Red and yellow.
D Yellow and blue.

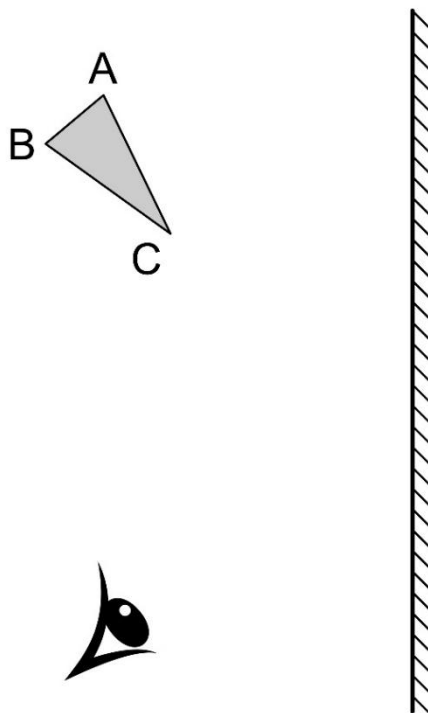
25. The leaves of photosynthetic plants appear green in daylight. What is the best explanation for this?

- A** The leaves absorb both green light and red light.
B The leaves reflect both green light and red light.
C The leaves absorb green light and reflect red light.
D The leaves reflect green light and absorb red light.

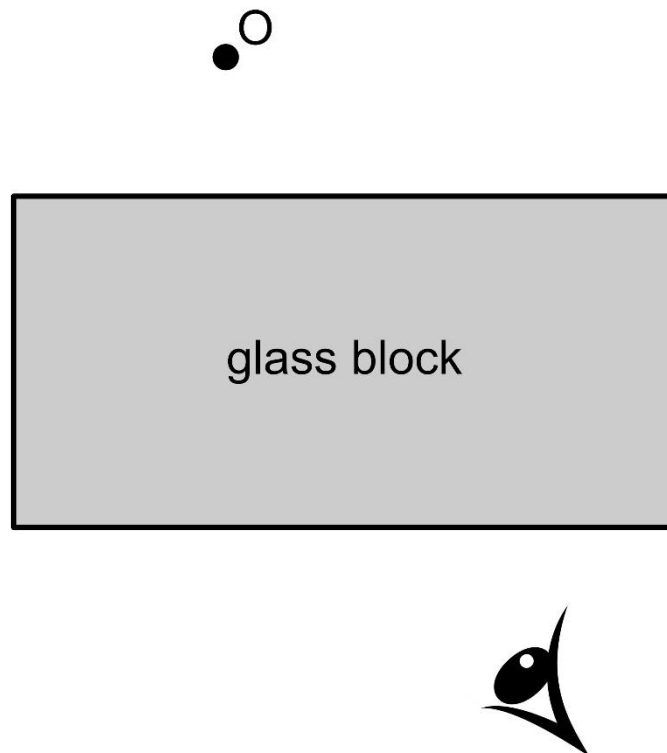
26. Complete the ray diagram to show how the observer can see the reflected image of object O in the plane mirror. The diagram should be completed using **two** rays of light.



27. Complete the ray diagram to show how the observer can see the reflected image of object ABC in the plane mirror. Light rays should be drawn for point C only. The diagram should be completed using **two** rays of light.



28. Complete the ray diagram to show how the observer can see the refracted image of object O through the regular glass block. The diagram should be completed using **one** ray of light.



- Scan the QR Code below to view the answers to this assignment.



http://www.nygh.sg/lower_secondary_science/sec_one_science/sec_one_physics/ray_model_of_light_ans.pdf