



13. What is the angle of incidence of a ray if the reflected ray is at an angle of 90° to the incident ray?

Answer:

As per the laws of reflection

The angle of incidence $\angle i$ = angle of reflection $\angle r$

Here as given $\angle i + \angle r = 90^\circ$

$$\therefore \angle i + \angle i = 90^\circ$$

$$\text{or } \angle i = 90/2 = 45^\circ$$

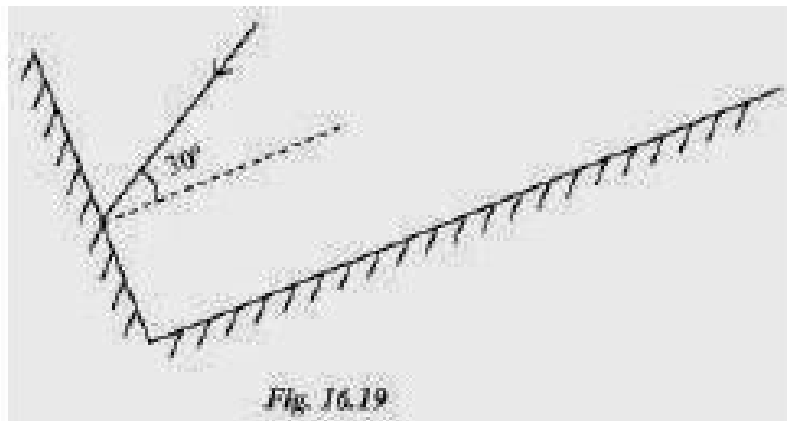
Hence angle of incidence of a ray = 45 degree

14. How many images of a candle will be formed if it is placed between two parallel plane mirrors separated by 40 cm?

Answer:

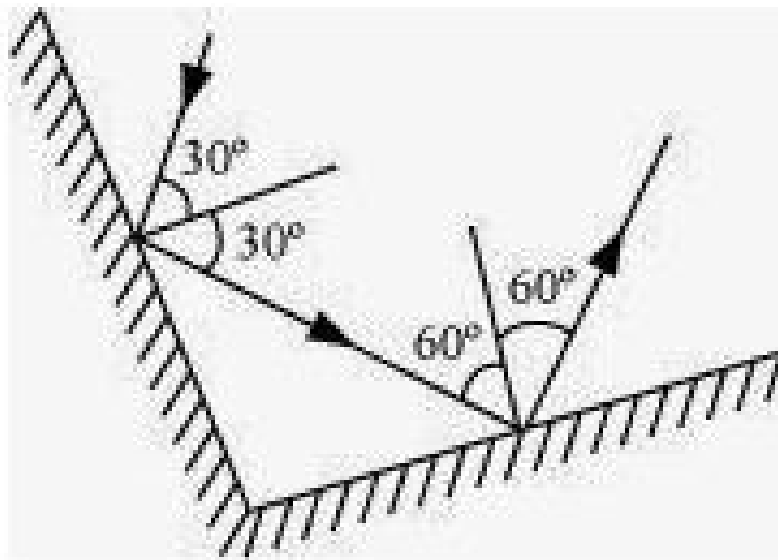
Infinite images of the candle will be formed due to parallel mirrors.

15. Two mirrors meet at right angles. A ray of light is incident on one at an angle of 30° as shown in Fig. 16.19. Draw the reflected ray from the second mirror.



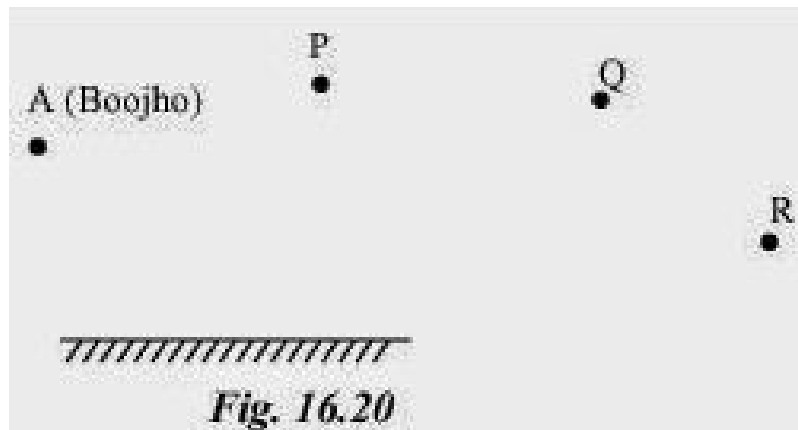
Answer:

The first law of reflection is used to obtain the path of reflected light.



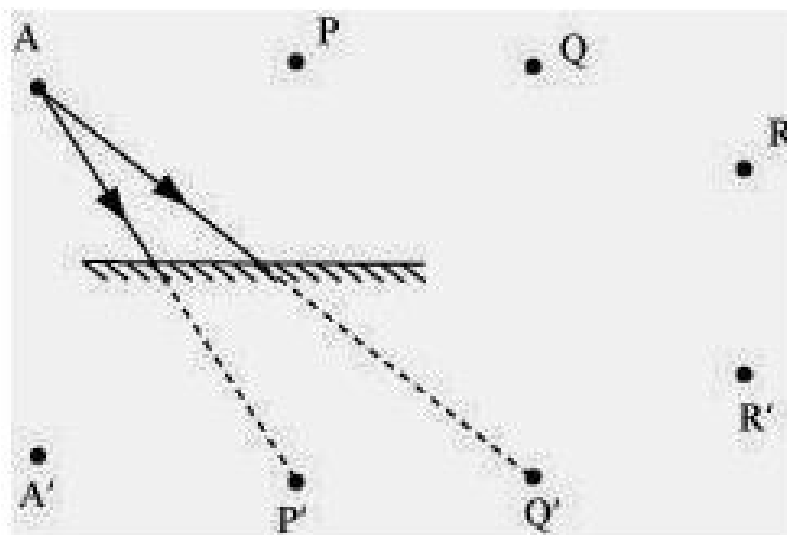
It can be observed that the given ray of light will reflect from the second mirror at an angle 60° .

16. Boojho stands at A just on the side of a plane mirror as shown in Fig. 16.20. Can he see himself in the mirror? Also can he see the image of objects situated at P, Q and R?

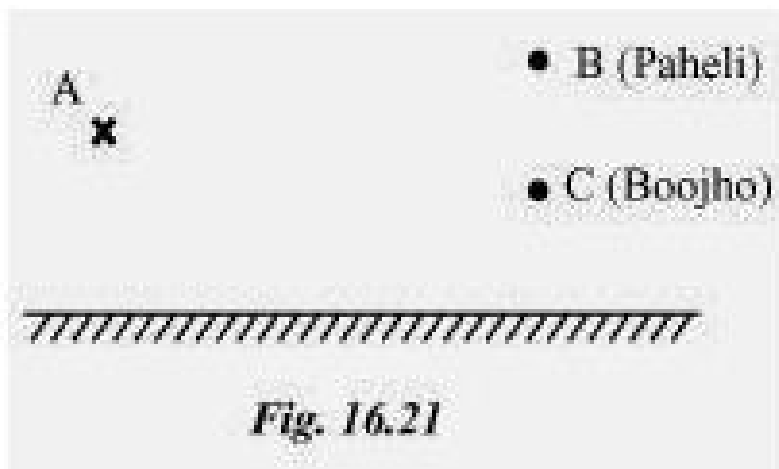


Answer:

A plane mirror forms a virtual image behind the mirror. The image is as far behind the mirror as the object is in front of it. A cannot see his image because the length of the mirror is too short on his side. However, he can see the objects placed at points P and Q, but cannot see the object placed at point R (as shown in the given figure).

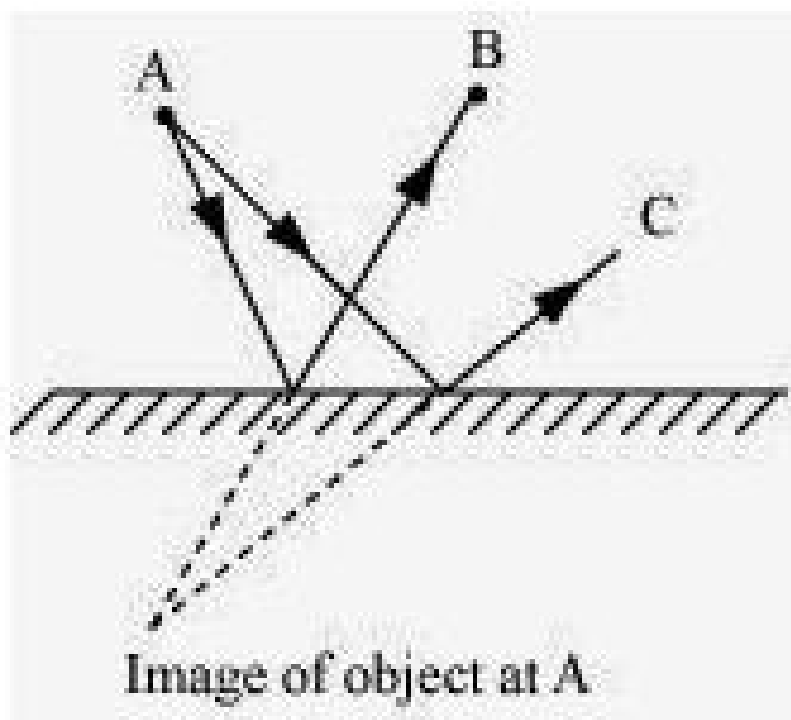


17. (a) Find out the position of the image of an object situated at A in the plane mirror (Fig. 16.21).
(b) Can Paheli at B see this image?
(c) Can Boojho at C see this image?
(d) When Paheli moves from B to C, where does the image of A move?



Answer:

(a) Image of the object placed at A is formed behind the mirror. The distance of the image from the mirror is equal to the distance of A from the mirror. Image of A is shown in the given figure.



- (b) Yes. Paheli at B can see this image.
(c) Yes. Boojho at C can see this image.
(d) Image of the object at A will not move. It will remain at the same position when Paheli moves from B to C.

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