9. Reflection of Light

Exercises

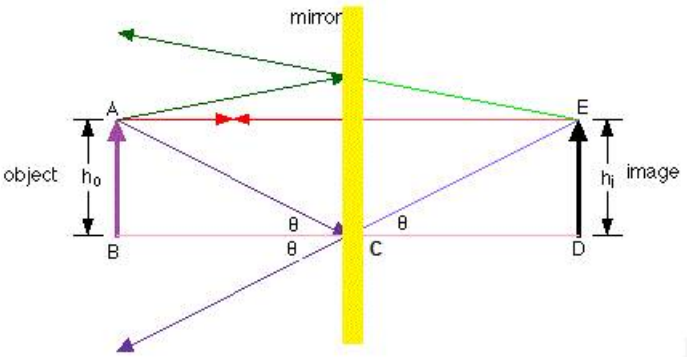
1 A. Question

Answer the following questions.

How many times is an image in a plane mirror bigger or smaller than the object?

Answer

The image in a plane mirror is upright and it is neither smaller nor bigger but is of the same size as that of the object.



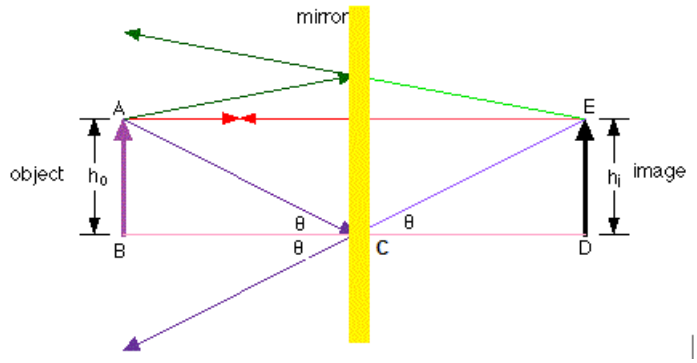
1 B. Question

Answer the following questions.

Where is the image formed in a plane mirror located?

Answer

The image is formed at the back of the mirror and at the same distance from it as the object.



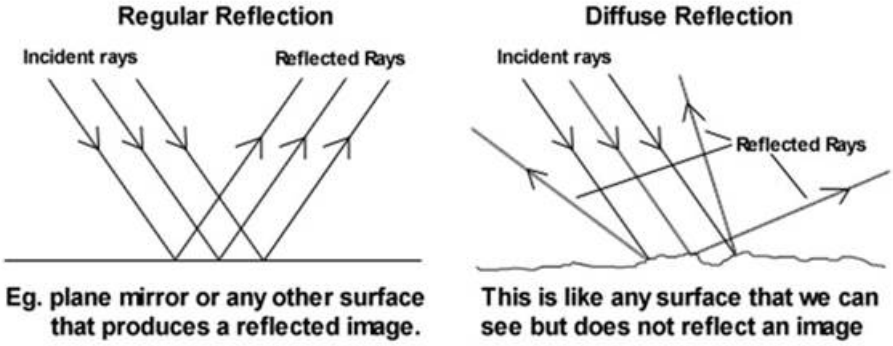
1 C. Question

Answer the following questions.

Explain the difference between regular and irregular reflection.

Answer

REGULAR REFLECTION	IRREGULAR REFLECTION
1. Refection from a smooth surface is called regular reflection. 2. When parallel beams of light strike the smooth surface, their angle of incidence is equal to the angle of reflection and the reflected rays are parallel to each other. 3. Reflection from a mirror is a good example of regular reflection.	1. Reflection from a rough surface is called irregular reflection. 2. When parallel incident rays strike the rough surface, their angle of incidence is not equal to angle of reflection. Reflected rays are not parallel to each other in this case and get scattered over a wider surface. 3. Sun rays striking the earth surface and gets reflected is an example of irregular reflection.



1 D. Question

Answer the following questions.

How many images are obtained in two parallel mirrors?

Answer

Infinite number of images are obtained when two mirrors are placed parallel to each other.

1 E. Question

Answer the following questions.

Why are the two mirrors in a periscope placed parallel to each other?

Answer

In a periscope, two mirrors are placed at an angle of 45 degrees and at the maximum distance. Due to maximum distance between the mirrors, multiple images do not form and light from the object strike the first mirror and its image is formed. This image of first mirror becomes an object for the second mirror and as they are parallel, light from the first mirror gets incident on the second mirror at right angle and the same image is thus formed. Therefore, the mirrors are kept parallel to each other.

2. Question

Give reasons.

(a) Letters appear laterally inverted in a plane mirror.

(b) Numerous images are seen in the 'Palace of Mirrors'.

(c) The image formed in water is of the same size as the object

Answer

(a) Due to lateral inversion that is the right and the left sides get interchanged between image and the object, letters appear laterally inverted in a plane mirror.

(b) ‘Palace of Mirrors’ have numerous mirrors placed at different angles. When a person enters the palace, light from him gets reflected by all the mirrors at different angles and due to multiple reflection, multiple images are formed.

(c) Image formed in water is of the same size as water acts as a plane mirror and light rays get reflected from it thus producing image of same size.

3. Question

Match the following.

'A'	'B'
a. Image in a plane mirror	1.Fluorescent paint
b. Regular reflection	2.Smooth surface
c. Angle of incidence=30°	3.As big as the object
d. A shiny image	4.Angle of reflection =30°

Answer

'A'	'B'
a. Image in a plane mirror	3.As big as the object
b. Regular reflection	2.Smooth surface
c. Angle of incidence=30°	4.Angle of reflection =30°
d. A shiny image	1.Fluorescent paint

4. Question

Fill in the blanks.

(a) The incident ray, the normal and the reflected ray are all in the same.....

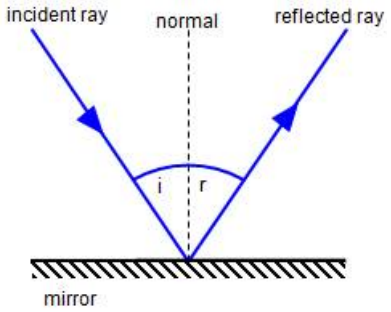
(b) Reflection from a rough surface is called .....reflection.

(c) In a periscope, we sec ..... reflection of an object.

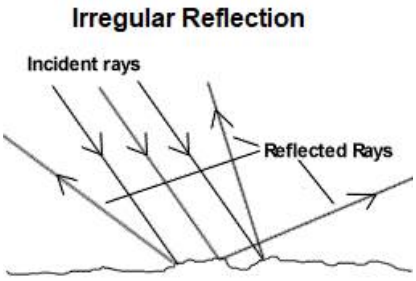
(d) In a plane mirror, the image is..... inverted.

Answer

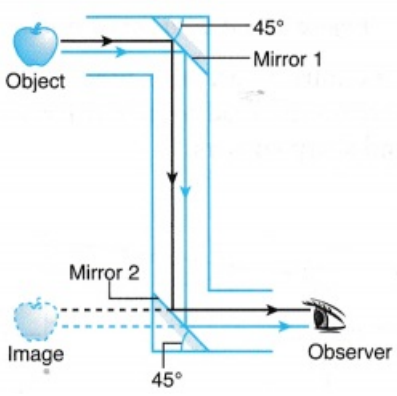
(a) The incident ray, the normal and the reflected ray are all in the same...plane.....



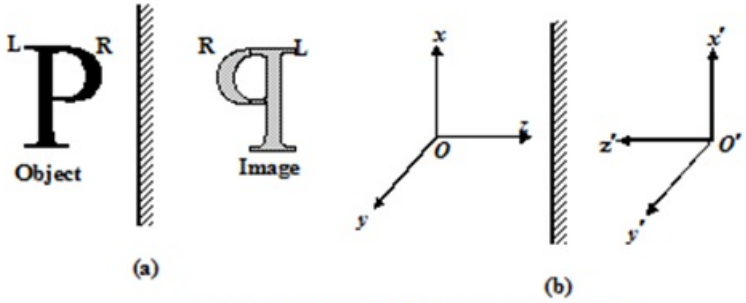
(b) Reflection from a rough surface is called ...irregular.....reflection.



(c) In a periscope, we see ...second..... reflection of an object.



(d) In a plane mirror, the image is...laterally..... inverted.



Lateral inversion of the image occurs in the plane perpendicular to the mirror

Activities

1. Question

Place two mirrors parallel to each other and count the number of images formed in them.

Answer

Place two mirrors of same size parallel to each other. Now, take a pencil and hang it in between them so that it is at equal distance from the two mirrors. Now try to count the number of images thus formed. You will find that there are infinite number of images formed. Well it will be wrong to say infinite number of images as image is formed only once but it gets reflected infinite times.