Very Short Answer Questions

Q. 1. Name the part of the eye which gives colour to the eyes. [NCERT Exemplar]

Ans. Iris

Q. 2. Boojho while waving his hand very fast in front of his eyes, observes that his fingers appear blurred. What could be the reason for it?   [NCERT Exemplar]

Ans. Persistence of vision.

Q. 3. The angle between incident ray and reflected ray is 60°. What is the value of angle of incidence?   [NCERT Exemplar]

Ans. $\angle i + \angle r = 60°$

As $\angle i = \angle r$

So, angle of incidence = 30°

Q. 4. The distance between the object and its image formed by a plane mirror appears to be 24 cm. What is the distance between the mirror and the object? [NCERT Exemplar]

Ans. 12 cm

Q. 5. Look at figure given below. Can the image of the child in it be obtained on a screen?   [NCERT Exemplar]

Ans. No, the image of the child cannot be obtained on a screen.

Q. 6. What happens to light when it gets dispersed? Give an example.
[NCERT Exemplar]

Ans. Light is split into its constituent colours. Rainbow is an example.

Q. 7. What is Braille system?

Ans. It is system of raised dots that can be read with the fingers by blind people or people who have low vision.

**Q. 8. What do you mean by dispersion of light?**

Ans. The splitting of white light into seven colours is known as dispersion of light.

Q. 9. What is lateral inversion?

Ans. When an image formed by a plane mirror is such that the left of the object appears on the right and the right appears on the left. This is known as lateral inversion.
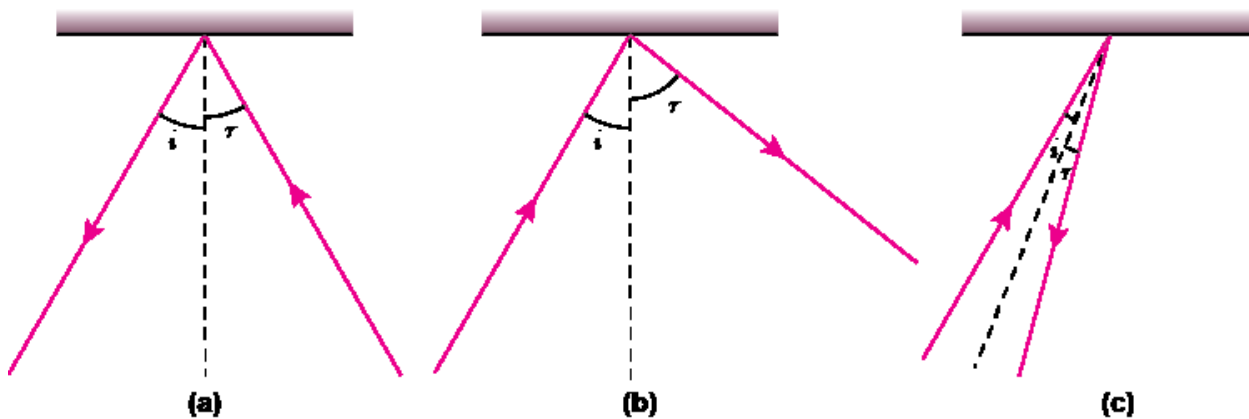
Short Answer Questions

Q. 1. Draw the figure given below showing the position of the plane mirror. Also label the angle of incidence and angle of reflection on it.   [NCERT Exemplar]
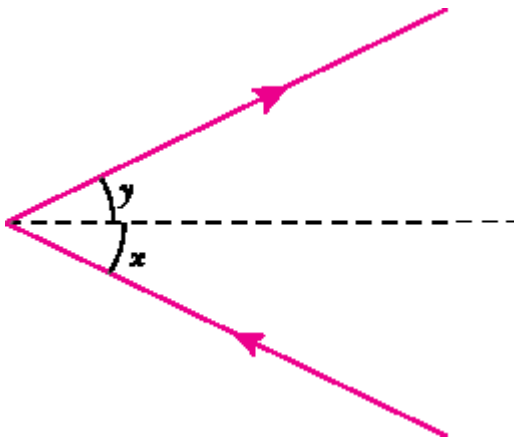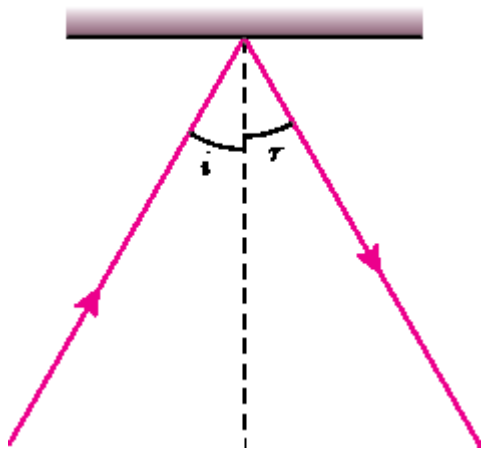

Ans.
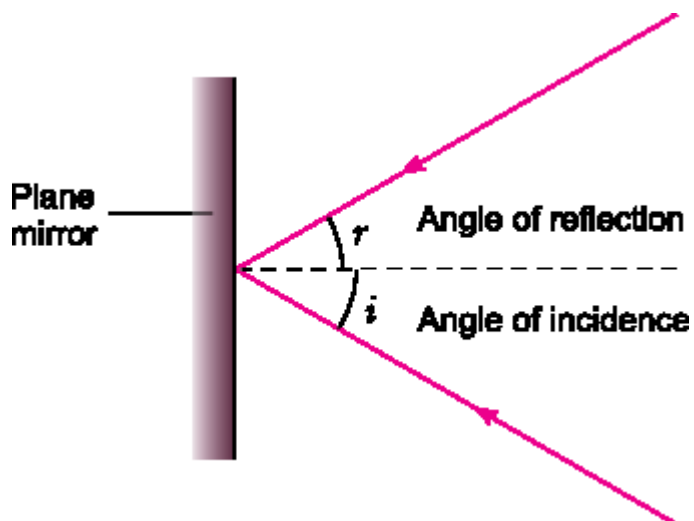
Q. 2. There is a mistake in each of the following ray diagrams given below as (a), (b), and (c). Make the necessary correction (s).   [NCERT Exemplar]

Ans. The figure in all the three cases after correction should be as in the figure given below.

Q. 3. Explain the process which enables us to perceive motion in a cartoon film. [NCERT Exemplar]

Ans. The cartoon film we see is actually the projection of static pictures on the screen in a specific order. Usually the static pictures are shown in a sequence at the rate of 24 pictures per second one after the other giving us the perception of movement.

Q. 4. How is the phenomenon of reflection used in making a kaleidoscope? What are the applications of a kaleidoscope?   [NCERT Exemplar]

Ans. The kaleidoscope gives a number of images formed by reflection from the mirrors inclined to one another. Designers and artists use kaleidoscope to get ideas for new patterns to design wallpapers, jewellery and fabrics.

Q. 5. Figure given below shows the word REST written in two ways in front of a mirror. Show how the word would appear in the mirror.   [NCERT Exemplar]

REST

REST

REST

REST

Ans.

REST

REST

RE2T

T2ER

Q. 6. Eyes of the nocturnal birds have large cornea and a large pupil. How does this structure help them? **[NCERT Exemplar]**

Ans. A large pupil and large cornea allows more light to enter their eyes and they can see objects even in faint light.

Q. 7. What kind of lens is there in our eyes? Where does it form the image of an object? [NCERT Exemplar]

Ans. The type of lens in our eyes is convex. It forms images on the retina.

Q. 8. Which part of the eye gets affected if someone is suffering from cataract? How is it treated? **[NCERT Exemplar]**

Ans. In people suffering from cataract the eye lens becomes clouded. Cataract is treated by replacing the opaque lens with a new artificial lens.

Q. 9. What is meant by 'Persistence of vision'?

Ans. Persistence of vision is the characteristic of human eye to capture image on the retina and this image is retained for 1/16th of a second on the retina. If the time difference between the two pictures is less than one sixteenth of a second then our

eyes will not be able to distinguish the two different pictures rather it will be seen as if the picture is moving.

Q. 10. Calculate the number of images formed when two plane mirrors are kept at following angles:
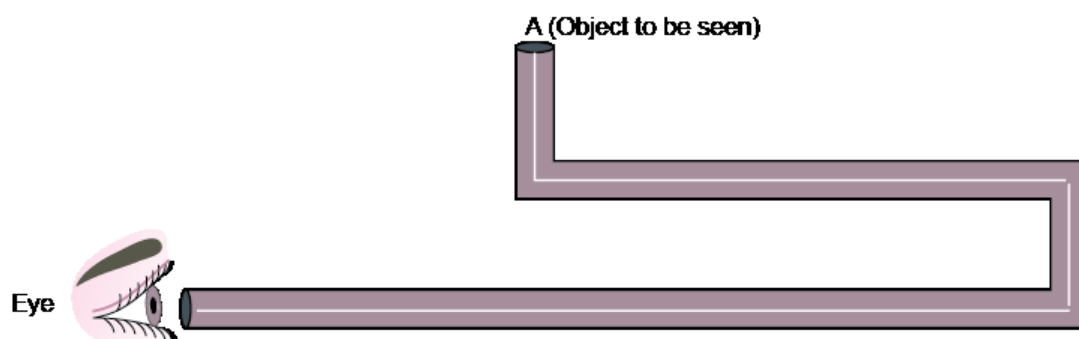
(i) 45°

(ii) 60°

Ans. (i)

$$\text{Number of images} = \frac{360°}{\text{Angle between the mirrors}}$$

$$= \frac{360°}{45°} = 8 \text{ images}$$

(ii)

$$\text{Number of images} = \frac{360°}{60°}$$

$$= 6 \text{ images}$$

Long Answer Questions

Q. 1. Boojho planned an activity to observe an object A through pipes as shown in figure below, so that he could see objects which he could not directly see. [NCERT Exemplar]

A (Object to be seen)

Eye

(i) How many mirrors should he use to see the objects?

(ii) Indicate the positions of the mirrors in the figure.

(iii) What must be the angle with respect to the incident light at which he should place the mirrors?

(iv) Indicate the direction of rays in the figure.

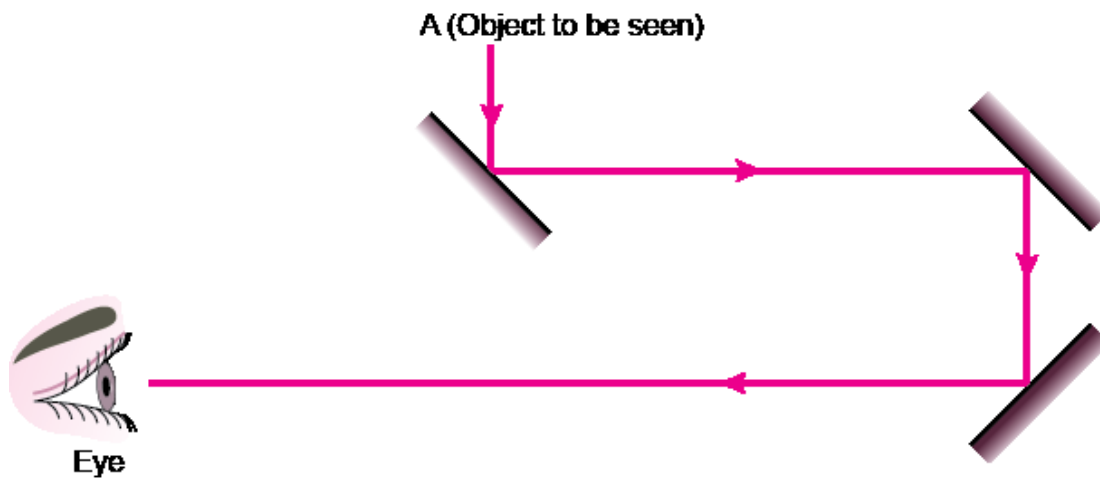**(v) If any of the mirrors is removed, will he be able to see the objects?**
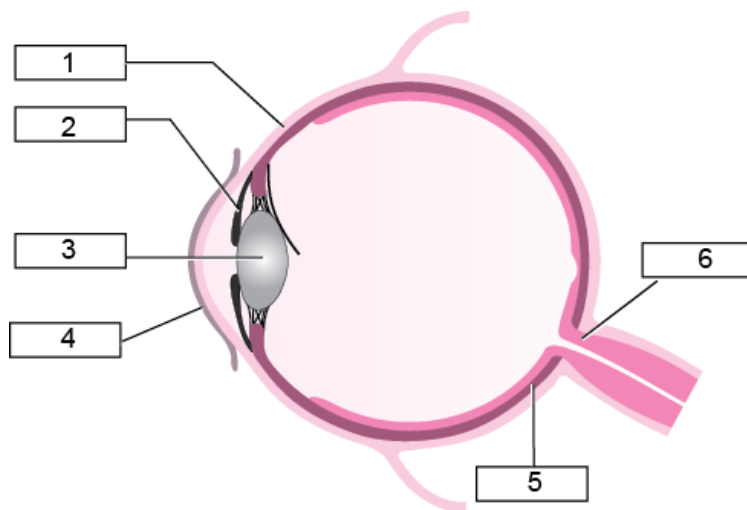
Ans. (i) Three

(ii)

A (Object to be seen)

Eye

(iii) 45°

(iv)

A (Object to be seen)

Eye
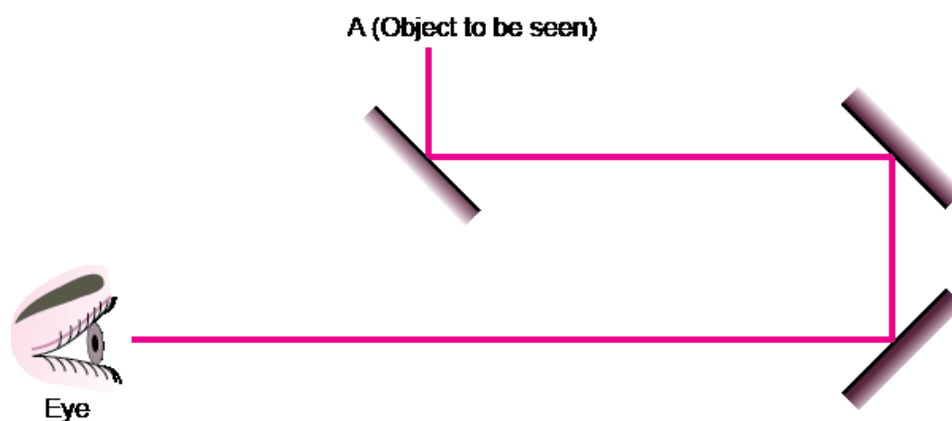
(v) No, he will not be able to see the objects.

Q. 2. Write down the names of parts of the eye marked in the figure given below. [NCERT Exemplar]

Ans. (i) Ciliary muscle
(ii) Iris
(iii) Lens
(iv) Cornea
(v) Retina
(vi) Optic nerve

Hots (Higher Order Thinking Skills)

Q. 1. Why is rainbow usually seen after heavy rainfall?

Ans. The rainbow is usually seen after heavy rainfall because after a rain shower, there are droplets of water in air, when sunlight passes through these water droplets, it splits into seven colours and forms rainbow.

Q. 2. What will happen if there were no photoreceptors in the eye?

Ans. If there are no photoreceptors, the brain will get no information about the image formed at retina and thus nothing could be seen.

Q. 3. A girl looked into a plane mirror and saw the clock as shown below. Can you tell what was the time then?

Ans. The plane mirror forms laterally inverted image.

Image   Object

So, the time was 7:40.

Q. 4. What would happen if light incident on the mirror along the normal.

Ans. ∵ Angle of incidence = Angle of reflection

And ∠i (angle of incidence) = 0

So ∠r (angle of reflection) = 0

So, the light returns back to its path.