



LIGHT

Chapter: 15



SCIENCE
CLASS: - 7TH
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Chapter: 15

Light

Q1: Fill in the blanks:

- (a) An image that cannot be obtained on a screen is called **virtual image** .
- (b) Image formed by a convex **Mirror** is always virtual and smaller in size.
- (c) An image formed by a **Plane** _ mirror is always of the same size as that of the object.
- (d) An image which can be obtained on a screen is called a **real** _ image.
- (e) An image formed by a concave **lens** _ cannot be obtained on a screen.

Q2: Mark 'T' if the statement is true and 'F' if it is false:

- (a) We can obtain an enlarged and erect image by a convex mirror. **(F)**
- (b) A concave lens always forms a virtual image. **(T)**
- (c) We can obtain a real, enlarged and inverted image by a concave mirror. **(T)**
- (d) A real image cannot be obtained on a screen. **(F)**
- (e) A concave mirror always forms a real image. **(F)**

Q3: Match the items given in Column I with one or more items of Column II.

Column I	Column II
(a) A plane mirror	(i) Used as a magnifying glass.
(b) A convex mirror	(ii) Can form image of objects spread over a large area.
(c) A convex lens	(iii) Used by dentists to see enlarged image of teeth.
(d) A concave mirror	(iv) The image is always inverted and magnified.
(e) A concave lens	(v) The image is erect and of the same size as the object.
	(vi) The image is erect and smaller in size than the object.

Ans:

<i>Column I</i>	<i>Column II</i>
(a) <i>A plane mirror</i>	The image is erect and of the same size as the object.
(b) <i>A convex mirror</i>	The image is erect and smaller in size than the object.
(c) <i>A convex lens</i>	Used as a magnifying glass.

(d) *A concave mirror*

Used by dentists to see enlarged image of teeth.

(e) *A concave lens*

The image is erect and smaller in size than the object.

Q4: State the characteristics of the image formed by a plane mirror.

Ans: The characteristics of the image formed by a plane mirror are: -

- (a) Same in size to the object.
- (b) The distance of the image same as the distance of object from the mirror.
- (c) Lateral shift.
- (d) Virtual image and upright orientation.

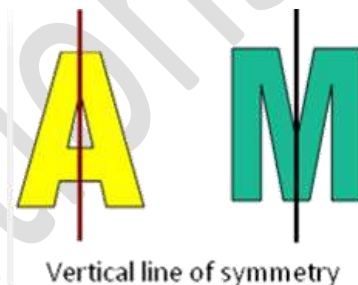


Q5: Find out the letters of English alphabet or any other language known to you in which the image formed in a plane mirror appears exactly like the letter itself.

Discuss your findings.

Ans: A, H, I, M, O, T, U, V, W, X, Y.

The image of these letters of English alphabets in a plane mirror appears like because of vertical symmetry.



Q6: What is a virtual image? Give one situation where a virtual image is formed.

Ans: Virtual image are those which is not seen on screen. The image formed by a convex mirror is known as virtual image.

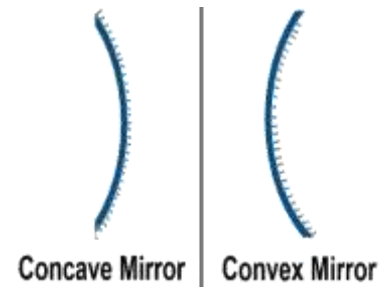
Q7: State two differences between a convex and a concave lens.

Ans:

Convex lens	Concave lens
(a) A convex lens is thicker in the middle and thinner at the edges	A concave lens is thinner in the middle and thicker at the edges
(b) It is a converging lens	It is a diverging lens.

Q8: Give one use each of a concave and a convex mirror.

Ans: A concave mirror is commonly used in headlights or torchlights, and A convex mirror is commonly used as a safety mirror or in rear-view mirrors of vehicles.



Q9: Which type of mirror can form a real image?

Ans: Concave Mirror.

Q10: Which type of lens forms always a virtual image?

Ans: Concave Lens.

Q11: A virtual image larger than the object can be produced by a

- (i) concave lens
- (ii) concave mirror
- (iii) convex mirror
- (iv) plane mirror

Ans: (ii) concave mirror

Q12: David is observing his image in a plane mirror. The distance between the mirror and his image is 4 m. If he moves 1 m towards the mirror, then the distance between David and his image will be

- (i) 3 m
- (ii) 5 m
- (iii) 6 m
- (iv) 8 m

Ans: (iii) 6 m

Q13: The rear-view mirror of a car is a plane mirror. A driver is reversing his car at a speed of 2 m/s. The driver sees in his rear-view mirror the image of a truck parked behind his car. The speed at which the image of the truck appears to approach the driver will be

- (i) 1 m/s
- (ii) 2 m/s
- (iii) 4 m/s
- (iv) 8 m/s

Ans: (ii) 2 m/s

Key Words

1. **Concave lens:** A lens that is thinner at the center and thicker at the edges, causing light rays passing through it to diverge. It is used to correct nearsightedness and forms virtual, erect, and diminished images.
2. **Convex lens:** A lens that is thicker at the center and thinner at the edges, causing light rays passing through it to converge. It is used to correct farsightedness and forms real or virtual, erect, and magnified or diminished images.
3. **Concave mirror:** A mirror with a surface that curves inward, causing light rays to converge. It is used in reflecting telescopes and forms real or virtual, erect, and magnified or diminished images.
4. **Convex mirror:** A mirror with a surface that curves outward, causing light rays to diverge. It is used in security mirrors and forms virtual, erect, diminished, and wide-angle images.
5. **Erect image:** An image that appears upright and in the same orientation as the object.
6. **Magnified image:** An image that appears larger than the object in size.
7. **Magnifying glass:** A convex lens that is used to produce a magnified image of objects when held close to them, often used for reading or examining small details.
8. **Prism:** A transparent optical element with flat polished surfaces that can refract and disperse light. It is often used to split white light into its component colors or to bend light.
9. **Rainbow:** A meteorological phenomenon caused by the refraction, reflection, and dispersion of sunlight in water droplets, resulting in a circular spectrum of colors in the sky.
10. **Real image:** An image formed by the actual convergence of light rays, which can be projected onto a screen. It is formed by convex lenses or concave mirrors.
11. **Rear view mirror:** A mirror in a vehicle that allows the driver to see the traffic behind them without turning their head. It is typically a plane mirror.

- 12.Side mirror:** Mirrors located on the sides of a vehicle, usually convex, that provide a wider field of view to assist with lane changes and monitoring traffic.
- 13.Spherical mirror:** A mirror with a curved surface, either concave or convex, that can be used for reflection and focusing of light.
- 14.Virtual image:** An image that appears to be formed by the extension of light rays, but it cannot be projected onto a screen. It is formed by concave lenses or convex mirrors.

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