

Ch 16 – Light

1. Define Object

'Object' may be defined as anything from which light rays are coming.

2. Define Image.

An image may be defined as that point, where the light rays coming from an object meet or appears to meet after reflection or refraction.

3. Differentiate real and virtual image

Real Image	Virtual image
1. Light rays actually meet to form a real image.	1. Light do not actually meet to form a virtual image.
2. The image is generally inverted.	2. The image is generally erect.
3. Image can be obtained on the screen.	3. Image cannot be obtained on the screen.
4. This image is in front of mirror and behind the lens.	4. This image is behind the mirror and in front of the lens.
5. We can reach to it.	5. We can't reach to it.
6. E.g. :- Cinema screen	6. E.g. :- Our image in plane mirror.

4. What do you mean by lateral inversion?

When an image is formed by the mirror in such a way that the left side of image is object's right side and right side of image is object's left side. So, this process of change in the sides of the object as well as of image is known as lateral inversion.

5. Differentiate Concave and Convex mirrors

S. No.	Feature	Concave Mirror	Convex Mirror
1	Reflecting Surface	Curved Inward	Curved outward
2	Nature of mirror	Diverging mirror	Converging mirror
3	Centre of curvature	In front of the mirror	Behind the mirror.
4	Focal Point	In front of the mirror	Rear side of the mirror
5	Projection Of Image	Images can be projected onto a screen.	Virtual images are formed that cannot be projected.
6	Image size	Magnified	Shrunk
8	Image (Erect or Inverted)	Generally inverted except for when the object is between the pole and the focal point.	The image formed is always erect.

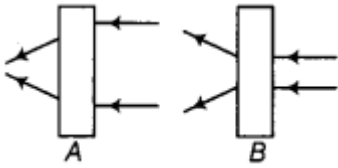
6. What is a Spectrum?

The patterns formed by the seven colors of ordinary white light is called a spectrum.

7. Differentiate lens and mirror.

Lens	Mirror
Light falling on a lens gets refracted	Light falling on a mirror is reflected
There are a huge variety of lenses, including plano-concave, plano-convex, biconcave, biconvex, concave-convex, etc.	Commonly, we have convex, concave, and plane mirrors.
It is formed by the intersection of two spherical surfaces.	Mirrors are made by depositing a layer of silver on the back side of a glass piece.
All distances are measured from the optical centre.	All distances are measured from the pole.
Formula: $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$	Formula: $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$

8. Observe the given figures carefully.



The given figures show the path of light through lenses of two different types represented by rectangular boxes A and B. What is the nature of lenses A and B ? [NCERT Exemplar]

Answer:

Since, in first case light rays are converging towards a point, so the lens A will be convex and in case of lens B, light rays diverge or spread out. So, the lens will be concave lens.

9. In the formation of a rainbow, what acts as tiny prisms?

Answer:

In the formation of a rainbow, the raindrops suspended in the atmosphere acts as tiny prism.

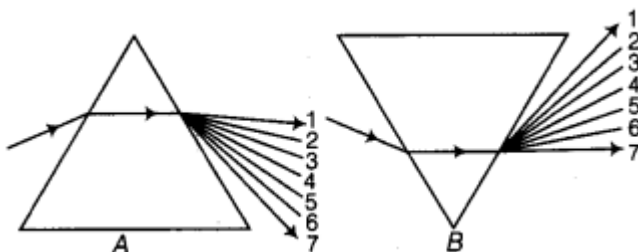
10. Two different types of lenses are placed on a sheet of newspaper. How will you identify them without touching? [HOTS]

Answer:

On identifying the letters of newspaper, we can differentiate the two types of lenses.

If image is large or magnified, then the lens is a convex lens and if the image is smaller or diminished in size for all the positions of object, then the lens is concave.

11. State the correct sequence (1-7) of colours in the spectrum formed by the prisms A and B shown in the figure.



Answer:

When a white light is passed through a prism, it disperses into its seven

constituent colours.

For A	For B
1. → Red	1. → Violet
2. → Orange	2. → Indigo
3. → Yellow	3. → Blue
4. → Green	4. → Green
5. → Blue	5. → Yellow
6. → Indigo	6. → Orange
7. → Violet	7. → Red

12. Assertion(A): Light travels along seven lines

Reason(R): White light is composed of seven colors.

Answer: Both A and R are correct, and R is not the correct explanation for A

13. Assertion(A): when the object is placed very close to the lens , the image is formed is virtual, erect and magnified.

Reason(R): This happens because the convex lens can form real and inverted image when the object place very close.

Ans: Both A and R are correct, and R is the correct explanation for A