

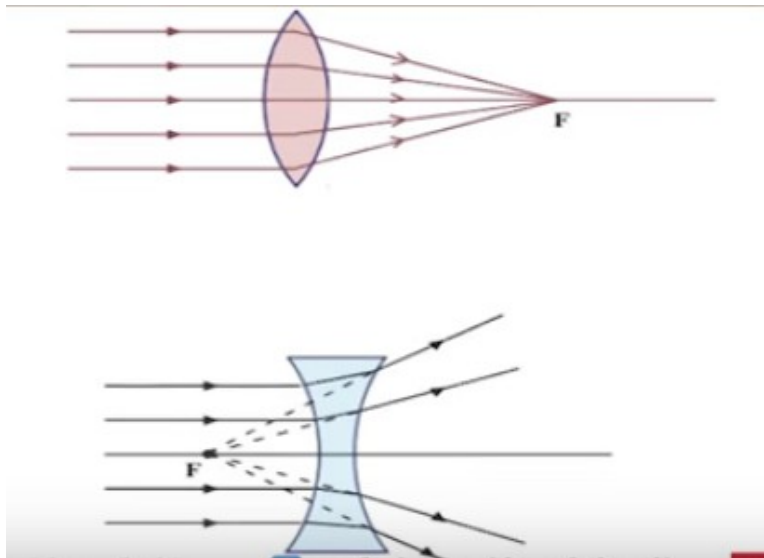
UNIT 5

Refraction of Light

30/12/2020 – Class 44

Assignment Answer

1. Complete the figure by drawing refracted rays and mark the principal focus of the convex lens and concave lens.



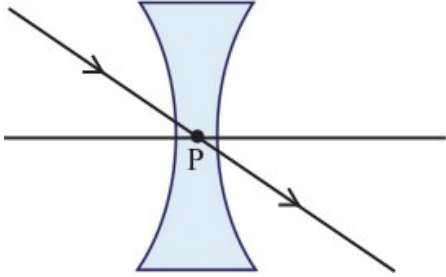
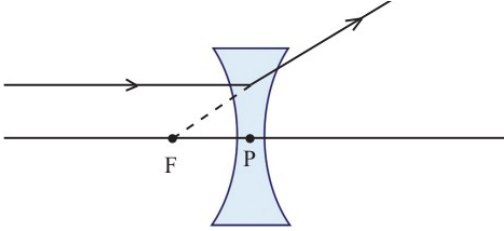
Activity 1

The positions and characteristics of images formed by lenses can also be found out using ray diagrams. Let's see the points to be taken care of while drawing ray diagrams in a convex lens.

	<p>When a ray of light passes through the optic centre of a convex lens, it does not undergo deviation.</p>
	<p>A ray of light falling parallel to the principal axis of a convex lens passes through the principal focus after refraction.</p>
	<p>A ray of light passing through the principal focus of a convex lens passes parallel to the principal axis after refraction.</p>

Activity 2

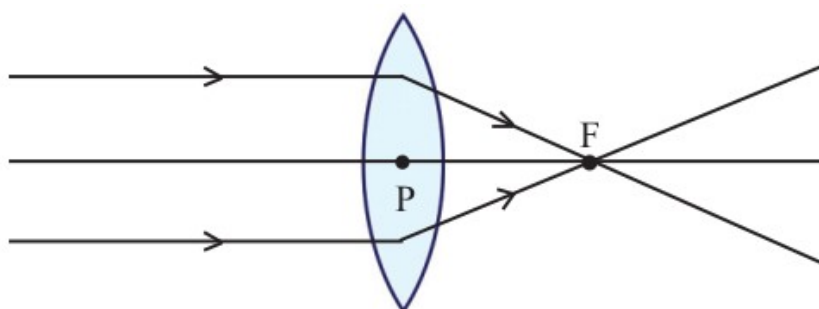
Let's see the points to be taken care of while drawing ray diagrams in a concave lens.

	<p>When a ray of light passes through the optical centre of a concave lens, it does not undergo deviation.</p>
	<p>A ray incident parallel to the principal axis of a concave lens appears to diverge from the focus on the same side of the lens</p>

Activity 3

Let's draw the ray diagram of formation of images by lenses.

Object at infinity



Discussion

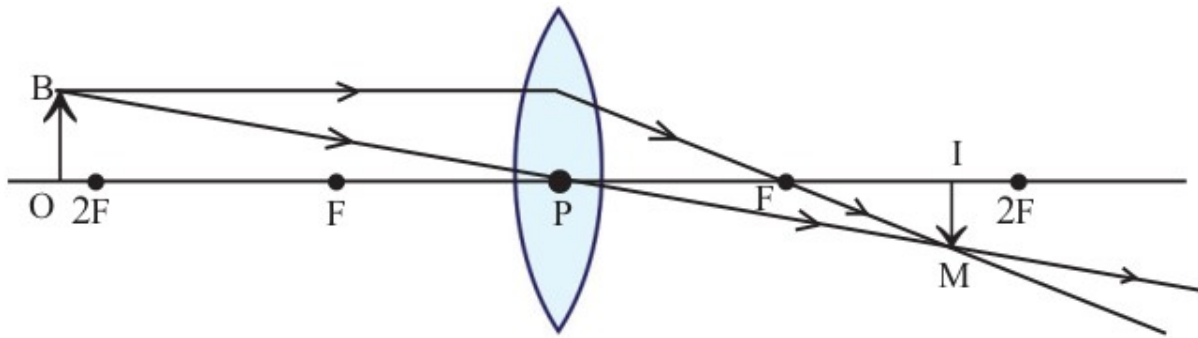
- What is the speciality of the light rays coming from a distant object? **Light rays are parallel to each other.**
- Where will the rays coming parallel to the principal axis converge? **At the principal focus of the lens.**
- Where is the image formed? **At the principal focus (F).**
- The image is real or virtual? **Real.**
- Why? **The refracted rays are actually meet at the focus.**
- Image is inverted or erect? **Inverted.**
- What about the size of the image? **Diminished.**

Inference

The image of a distant object (object at infinity) is formed at the **principal focus** of a convex lens. Image is **real, inverted and diminished.**

Activity 4

Object beyond 2F



Discussion

- Where is the position of the object (OB)? **Beyond 2F.**
- Which are the rays incident on the lens from the object? **One ray is incident parallel to the principal axis and the second ray is incident on the optic centre of the lens.**
- What happens to the ray of light, incident on the lens, parallel to the principal axis? **It passes through the principal focus after refraction.**
- What happens to the ray of light, incident on the optic centre of the lens? **It passes without any deviation.**
- Where does the image formed? **Image is formed at the point, where the two refracted rays are met.**
- Where is the position of the image? **Between F and 2F.**
- What are the features of the image (IM)? **Real, Inverted, Diminished.**

Inference

When the object is placed **beyond 2F** of a convex lens, the image is formed **between F and 2F**. Features of the image are **real, inverted and diminished**.

Assignment

Draw the ray diagrams showing refraction on a convex lens and a concave lens.