

## Learning Objectives



After completing this lesson, students will be able to:

- apply the laws of reflection for plane mirrors and spherical mirrors.
- draw ray diagrams to find the position and size of the image for spherical mirrors.
- distinguish between real and virtual images.
- apply the mirror equation to calculate position, size and nature of images for spherical mirrors.
- identify the direction of bending when light passes from one medium to another.
- solve problems using Snell's law.
- predict whether light will be refracted or undergo total internal reflection.

## Introduction

Light is a form of energy which travels as electromagnetic waves. The branch of physics that deals with the properties and applications of light is called *optics*. In our day to day life we use number of optical instruments. Microscopes are inevitable in science laboratories. Telescopes, binoculars, cameras and projectors are used in educational, scientific and entertainment fields.

In this lesson, you will learn about spherical mirrors (concave and convex). Also, you will learn about the properties of light, namely reflection and refraction and their applications.

## 6.1 Reflection of Light

Light falling on any polished surface such as a mirror, is reflected. This reflection of light on polished surfaces follows certain laws and you

have studied about them in your lower classes. Let us study about them little elaborately here.

### 6.1.1 Laws of reflection

Consider a plane mirror  $MM'$  as shown in Figure 6.1. Let  $AO$  be the light ray incident on the plane mirror at  $O$ . The ray  $AO$  is called incident ray. The plane mirror reflects the incident ray along  $OB$ . The ray  $OB$  is called reflected ray. Draw a line  $ON$  at  $O$  perpendicular to  $MM'$ . This line  $ON$  is called normal.

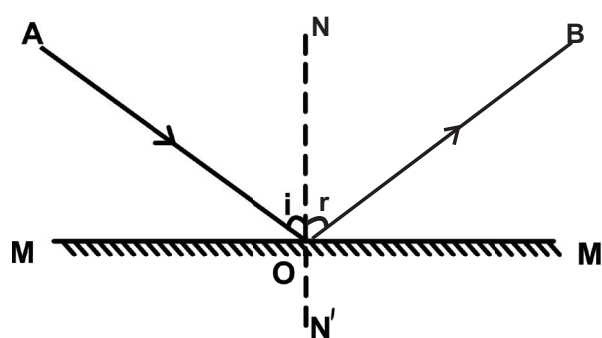


Figure 6.1 Plane mirror