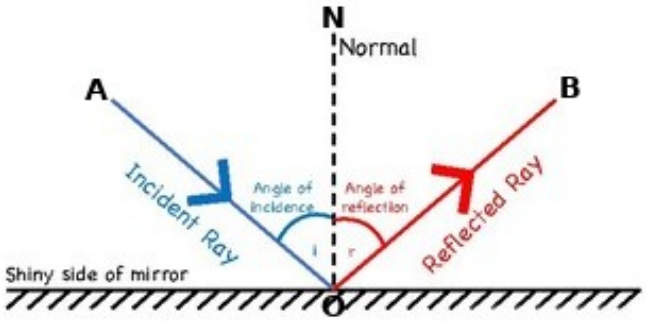
PHYSICS - X-PART-1 CLASS 33

Reflection of light

*** Light falling on the surface of an object comes back to the same medium. This is reflection of light.**

Laws of reflection



- **Which is the incident ray?**
  AO
- **Which is the reflected ray?**
  OB
- **Is there any relation between the angle of incidence and the angle of reflection?**
  angle of incidence is equal to the angle of reflection
- **Are the incident ray, reflected ray and normal to the mirror at the point of incidence in the different planes?**
  In the same plane

Laws of reflection

When light is reflected from a smooth surface, the angle of incidence and angle of reflection are equal. The incident ray, reflected ray and normal to the surface are in the same plane.

Regular reflection and Irregular reflection

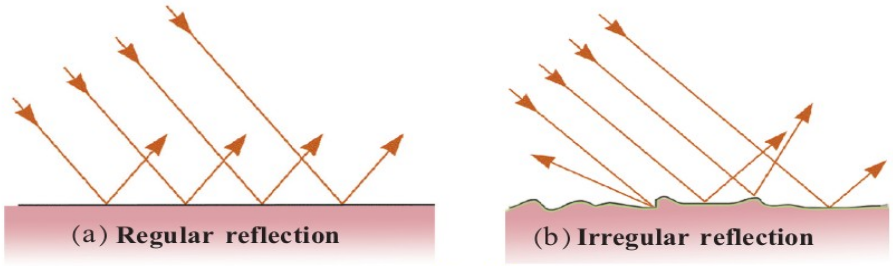


Fig. 4.2

Regular reflection

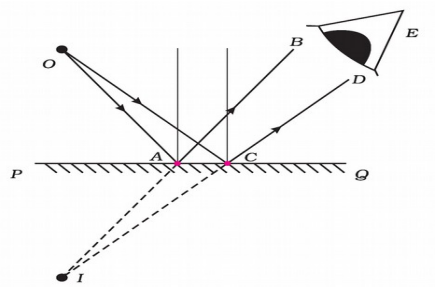
When light falls on a smooth surface, it undergoes an regular reflection. The ray of light travelling parallel after reflection

Irregular reflection

When light falls on a rough surface, it undergoes an irregular reflection. This is scattered reflection.

Image Formation by a Plane Mirror

Arrange a source of light at a point O in front of a plane mirror. Consider that OA and OB are two rays of light incident obliquely on the mirror.

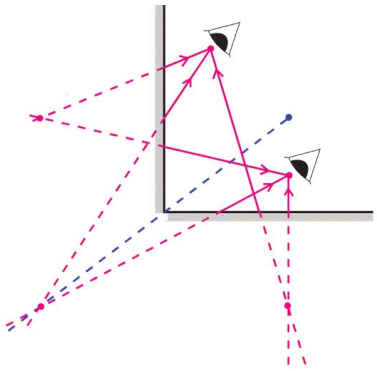


Characteristics of the image

- **The distance from the mirror to the object and the image from the mirror is Equal.**
- **Same size**
- **Image is virtual**
- **Erect image**
- **Shows lateral inversion**

Multiple Reflection and Image Formation

Arrange two plane mirrors in such a way that their edges are in contact as shown in the figure. Place a burning candle in between them.



Angle (θ)	Number of images (*n*)
45	7
60	5
90	3
120	2
180	1

* **How many images can be seen when viewed from A and B?**
  3
* **What if viewed from other positions in between the mirrors?**
  3
* **How much is the angle between the mirrors?**
  90^o
* **What is the relation between the angle between the mirrors and the number of images?**

$$\text{Number of images } n = \frac{360}{\theta} - 1$$

By changing the angle between the mirror we can change the number of images.

Worksheet

1. How many images will be formed if the mirror is arranged at 30^o

2. What should be the angle of the mirrors for the formation of five image?