

CHAPTER 16: LIGHT

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When light from an object enters the eyes that one can see the object. The light may have been emitted by the same object, or may have been reflected by it

- **Incident ray:** The light ray which strikes any surface, is called the incident ray.
- **Reflected ray:** The ray that comes back from the surface after reflection is known as the reflected ray.
- **Normal:** An imaginary line making an angle of 90° to the line representing the mirror at the point where the incident ray strikes the mirror is known as the normal to the reflecting surface at that point
- **Angle of incidence :** The angle between the normal and incident ray is called the angle of incidence .
- **Angle of reflection :** The angle between the normal and the reflected ray is known as the angle of reflection

Laws of reflection:

1. The angle of incidence is always equal to the angle of reflection.
 2. The incident ray, the normal at the point of incidence and the reflected ray all lie in the same plane. This is another law of reflection.
- **Lateral inversion:** when an image formed by a mirror, the left of the object appears on the right and the right appears on the left. This is known as lateral inversion.
 - **Diffused or Irregular reflection:** The reflection formed is irregular when all the parallel rays reflected from a rough or irregular surface are not parallel.

It is caused by the irregularities in the reflecting surface, example: Cardboard

- **Regular reflection:** The reflection arising from a smooth surface like that of a mirror is called regular reflection. Images are formed by regular reflection.
- **Periscope:** a device used in submarines, tanks and also by soldiers in bunkers to see outside.
- **Multiple images:** When two mirrors are inclined to each other it gives rise to multiple images.

- **Kaleidoscope:** to make a kaleidoscope number of mirrors are kept at an angle from one another to make numerous beautiful patterns. In A kaleidoscope one can never will never see the same pattern again.
- **Composition of sunlight:** it is made up of seven colors. It is called as the white light.

Splitting of light into its colors is known as dispersion of light. Splitting of light can be brought about using prism. Rainbow is a natural phenomenon showing dispersion.

Eyes:

1. It is one of the most important sense organs.
 2. It has spherical shape, the outer eye coat is tough, white and can protect the interior of the eyes from accidents.
 3. Cornea: the transparent part of the eye
 4. Iris: it is a dark muscular structure located behind the cornea. It may have many distinctive colors.
 5. Pupil: pupil is the small opening in the iris. Iris controls the size of the pupil.
 6. Retina: it is a layer at the back of the eyeball. It is sensitive to light. The nerve cell senses the light and transmit the signal to the brain through the optic nerve.
- Retina has two main cell types:
 - Cones: these are sensitive to bright light and sense color.
 - Rods: these cells are sensitive to dim light.
 - Blind spot: the point at which optic nerve and the retina meet no sensory cells are present. Hence there is no vision possible at this spot. Hence the term blind spot.

Eye care:

- In case of any problem associated with the eye, consult an eye specialist.
- Regular checkups are advisable and use of spectacles is a must.
- Do not look at the Sun or a powerful light directly.
- Do not rub your eyes in case of irritation or entry of dust particles in the eyes. wash your eyes with clean water.
- If a person is suffering from night blindness, include food rich in vitamin A in the diet.
- Sources of vitamin A: Raw carrots, broccoli and green vegetables (such as spinach), cod liver oil, Eggs, milk, curd, cheese, butter and fruits such as papaya and mango are also rich in vitamin A.

Helping the visually impaired:

- Braille is the most widely used resource for visually challenged people.
- It was adapted in 1932.
- Braille code has common languages, mathematics and scientific notation.
- Methods of learning braille depends upon recognition by touching where the person has to memorize each character.
- Braille texts can be produced by hand or by machines -Typewriter-like devices
- Printing machines are now available.