Light – Class 8

1. Introduction to Light

Light is a form of energy that enables us to see objects. Objects are visible when light from them reaches our eyes. Light travels in straight lines and shows various phenomena such as reflection, refraction, dispersion and scattering.

Sources of light are of two types:

- **Luminous objects**: Objects that produce their own light (Sun, candle, electric bulb).
- **Non-luminous objects**: Objects that do not produce light but are seen due to reflection of light (Moon, book, table).

2. Laws of Reflection

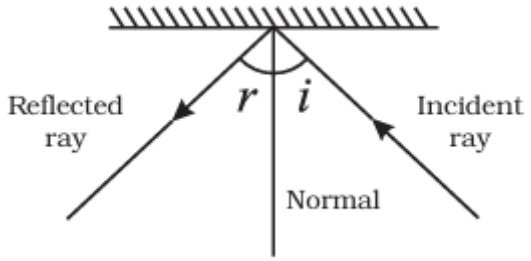
When light falls on a smooth, shiny surface like a mirror, it is reflected.

The two laws of reflection are:

1. The angle of incidence is equal to the angle of reflection.
2. The incident ray, the reflected ray and the normal at the point of incidence all lie in the same plane.

Key terms:

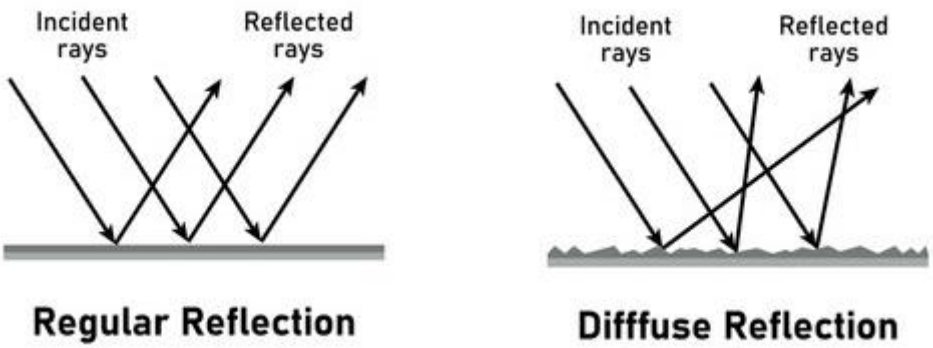
- Incident ray: Ray of light falling on a surface
- Reflected ray: Ray of light coming back after reflection
- Normal: An imaginary line perpendicular to the reflecting surface
- Angle of incidence (∠i)
- Angle of reflection (∠r)



3. Regular and Diffused Reflection

- **Regular reflection**: Occurs on smooth surfaces like mirrors, producing a clear image.
- **Diffused (irregular) reflection**: Occurs on rough surfaces; rays scatter in different directions and no clear image is formed.

Diffused reflection does **not** mean no reflection; it only means irregular reflection.



4. Reflection from Plane Mirrors

A **plane mirror** is a flat reflecting surface.

Characteristics of image formed by a plane mirror:

- Image is **virtual** and **erect**
- Image is of the **same size** as the object
- Image is formed at the **same distance** behind the mirror as the object is in front
- Image shows **lateral inversion** (left-right reversal)

5. Lateral Inversion

Lateral inversion is the phenomenon in which the left side of an object appears as the right side in the mirror image and vice versa.

Example: The word **AMBULANCE** is written in reverse on vehicles so that it can be read correctly in rear-view mirrors.

6. Multiple Reflection

When light is reflected more than once, it is called multiple reflection.

Examples:

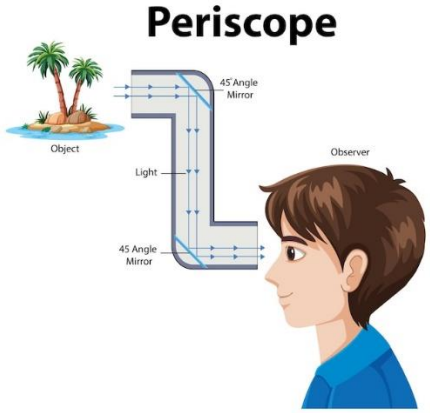
- Image formed between two parallel mirrors
- Periscope
- Kaleidoscope

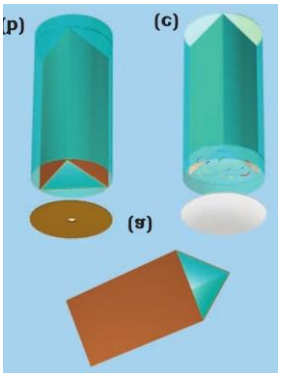
Periscope

A periscope uses two plane mirrors placed at 45° to see objects not directly visible, such as in submarines.

Kaleidoscope

A kaleidoscope uses multiple reflections to produce beautiful patterns. It is used by artists and designers.





7. Dispersion of Light

Dispersion is the splitting of white light into its constituent colours when it passes through a prism.

The seven colours of white light (VIBGYOR):

- Violet
- Indigo

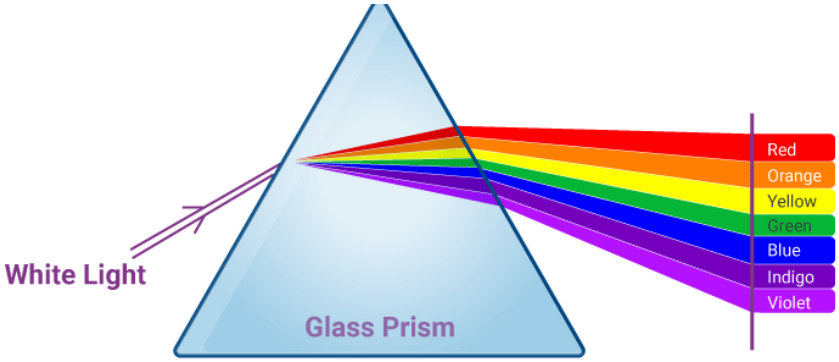
- Blue
- Green
- Yellow
- Orange
- Red

8. Spectrum

The band of seven colours obtained after dispersion of white light is called a **spectrum**.

Examples:

- Spectrum formed by a glass prism
- Natural spectrum seen in a rainbow



11. Human Eye

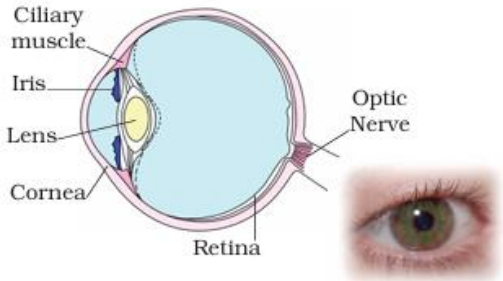
The human eye is a natural optical instrument that helps us see.

Main parts of the eye:

- Cornea
- Iris
- Pupil
- Eye lens
- Retina
- Optic nerve

Functions:

- Iris controls the size of the pupil
- Retina forms the image
- Optic nerve carries messages to the brain



12. Care of the Eyes

To keep eyes healthy:

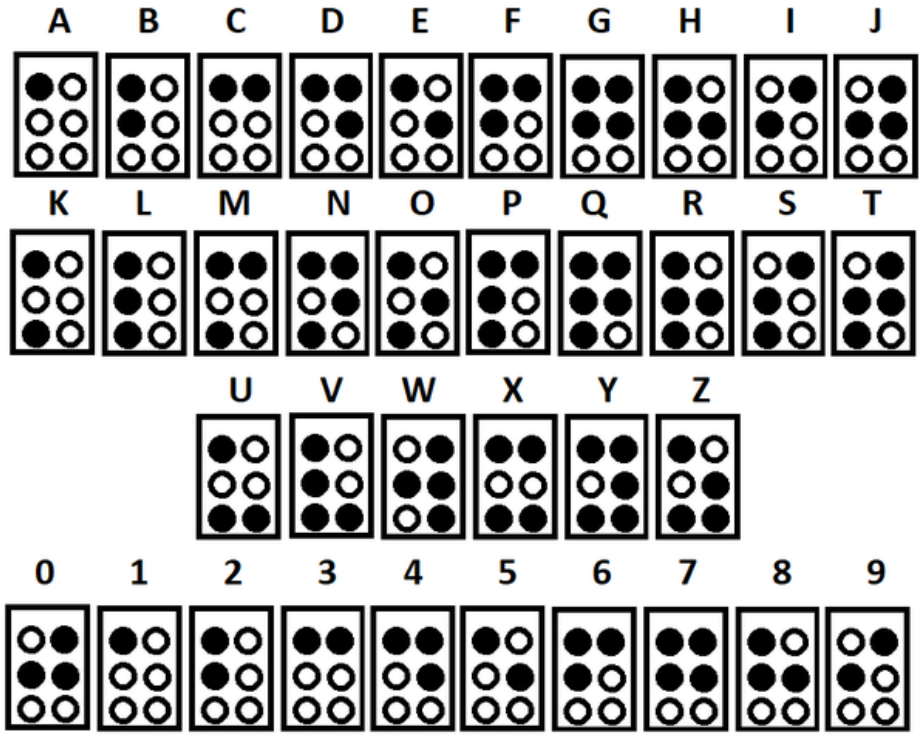
- Read in proper light
- Do not read very close to books
- Eat balanced food rich in Vitamin A
- Avoid looking directly at the Sun
- Get eyes checked regularly

13. Visually Impaired Persons

Visually impaired persons can read and write using:

- Braille system
- Special optical devices
- Audio aids and screen readers

Scientists are working to develop advanced aids for visually challenged people.



M. Srinivasa Rao, SA(PS)
SPSMHS, GUDIVADA
Visit: srini science mind