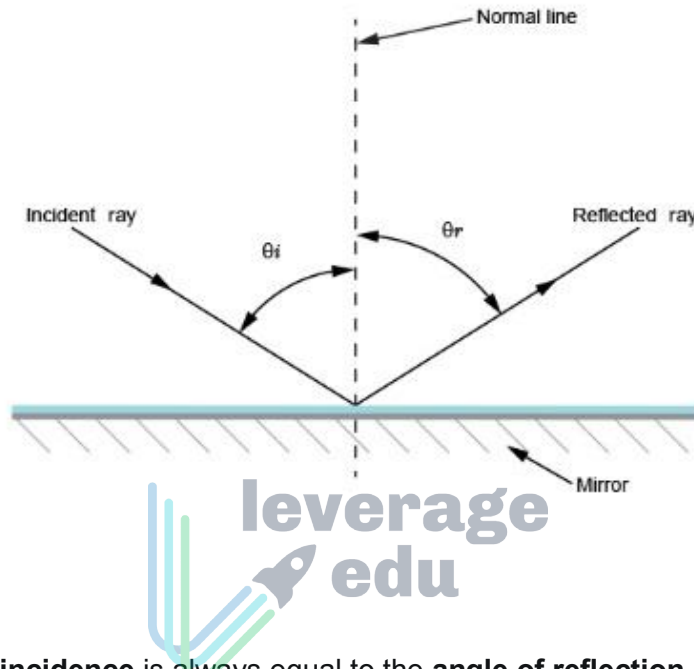


Class 8 Light Notes

Laws of Reflection



- The **angle of incidence** is always equal to the **angle of reflection**. It is the law of reflection.
- 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.
- On striking a mirror or any other object light generally is **reflected** in another direction. The light ray which strikes any surface is called the **incident ray**. The ray that comes back from the surface after the reflection is known as the **reflected ray**.
- The line making an angle of 90° to the line representing the mirror or surface of the object at the point where the incident ray strikes the mirror is known as the **normal** to the reflecting surface at that point.
- The angle between the normal and the incident ray is called the **angle of incidence** ($\angle i$). The angle between normal and the reflected ray is known as the **angle of reflection** ($\angle r$).

Lateral Inversion The image formed by a mirror where the left of the object appears on the right and the right appears on the left is known as lateral inversion.

Types of Reflection

1. **Diffused or Irregular Reflection:** When all the parallel rays reflected from a plane surface are not parallel, the reflection is known as **diffused or irregular reflection**. The diffused reflection is caused by the irregularities in the reflecting surface not due to the failure of the Law of reflection.
2. **Regular Reflections:** Reflection from a smooth surface like that of a mirror is called regular reflection. Images are formed by **regular reflections**.

Types of Objects

Illuminated Objects

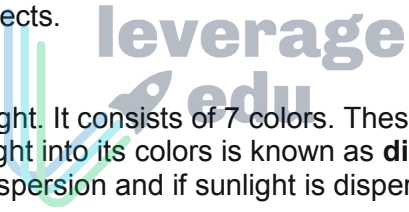
The objects which shine in the light of other objects are called illuminated objects.

Luminous Objects

The objects which give their own light such as the sun, fire, flame of a candle and an electric lamp are known as luminous objects.

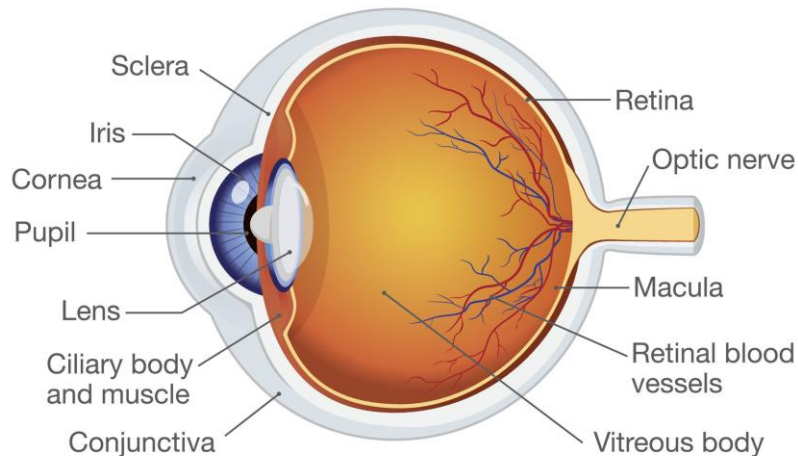
Color of Sunlight

Sunlight is referred to as white light. It consists of 7 colors. These are the same 7 colors as that of the rainbow. The splitting of light into its colors is known as **dispersion of light**. Rainbow is a natural phenomenon showing dispersion and if sunlight is dispersed using a prism it shows these 7 colors on dispersion.



The Human Eye

Human Eye Anatomy



The eye is roughly structured in a spherical shape. The outer coat of the eye is white. It is tough so that it can protect the interior of the eye from accidents. It also is covered by the eyelid so that it can block out the excess light when needed. The eye has many parts which are described below:

Cornea

Its transparent front part is called cornea.

Iris

Behind the cornea is a dark muscular structure called the Iris. The size of the pupil is controlled by the iris. The iris controls the amount of light entering the eye. Iris gives the eye its distinctive color. For example – blue eyes, green eyes, brown eyes etc.

Pupil

In the iris is a small opening called the Pupil.

Retina

The lens focuses light on a layer on the back of the eye called the retina. The retina contains several nerve cells.

Optic Nerve

Sensations felt by the nerve cells are then transmitted to the brain through the optic nerve. There are 2 kinds of cells– cones – which are sensitive to bright light and sense color. Rods are sensitive to dim light.

Blind Spot

The junction of the optic nerve and the retina has no sensory cells so no vision is possible at that spot. Therefore it is called the blind spot.

Sometimes, particularly in old age eyesight becomes foggy due to the eye lens becoming cloudy. When this happens the person is said to have a cataract. There is a loss of vision but it is possible to treat this defect. The opaque lens is removed and a new artificial lens is inserted through technology. You may also be aware of eye problems like myopia and hypermetropia which are problems in seeing farther objects and the closer ones respectively.

Care of the Eyes

Eyes are very important sense organs and therefore it is necessary that you take proper care of your eyes. Given below are some tips on how to take care of your eyes:

- Have a regular checkup. If there is a problem with your eyes you should go to an eye specialist.
- If advised use suitable spectacles.
- Too little or too much light is bad for the eyes. Insufficient light causes strain in the eyes and headaches. Too much light, like that of the sun, a powerful lamp or a laser torch can injure the retina. Therefore do not look at the sun or a powerful light directly.
- Never rub your eyes. If particles of dust go into your eyes wash them gently with clean water. If there is no improvement go to a doctor.
- Wash your eyes with clean water frequently.
- Always read at the normal distance. Do not read by bringing the book too close to your face or keeping it too far.
- Eat a balanced diet. Lack of vitamin A in food is responsible for many eye troubles like night blindness. One should include food like raw carrots, broccoli and green vegetables (such as spinach) and cod liver oil are rich in vitamin A in the diet. Eggs, milk, curd, cheese, butter and fruits such as papaya and mango are also a rich source of vitamin A.

Visually challenged people can also learn to read and write through a special language and other helpful resources. Braille is the most popular language and resources for visually challenged people. It was invented by Louis Braille who was visually challenged himself and published in 1821. The present system was adopted in 1932. There is Braille code for common languages, mathematics and scientific notation and even many Indian languages can be read using this system.