

Revision Notes for Class 8 Science

Chapter 13 – Light

The Law of Reflection

Light behaves in a very predictable manner. If a ray of light is observed while it is reflecting and approaching a flat surface, the behaviour of this light, when reflected, follows a predictable law called the Law of Reflection. The ray of light approaches the mirror and this ray is called Incident Ray and the ray of light that leaves the mirror is called reflected ray.

The law of reflection in class 8 science ch 13 notes will tell you that the point of incidence where this ray strikes and a line is drawn perpendicular to its surface is called a normal line. This line divides the angle between the reflected ray and the incident ray into equal angles. The angle of incidence is the angle which is formed between the incident ray and the normal ray. And the angle between normal and reflected ray is called the angle of reflection.

Regular and Diffused Reflection

Regular and diffused reflection is an important part of light chapter class 8 notes. Regular reflection happens at the surface of a plane surface such as a plane mirror. The reflected rays after a regular reflection are parallel. And diffused reflection occurs at a surface of any rough surface like cardboard.

Reflected Light Can be Reflected Again

Reflected light can bounce off another surface just like the original light. When light reflects off one surface, it can hit another surface and reflect again, changing direction each time. This is why you can see multiple images in mirrors or reflected light in different places.

Multiple Images

Multiple images occur when light reflects off several surfaces, like in a set of mirrors. Each reflection creates a new image, leading to multiple images being visible, especially in parallel mirrors.

Kaleidoscope

A kaleidoscope is a tube with mirrors inside that creates multiple reflections of coloured objects or patterns. As you turn the tube, the reflections change, producing beautiful and ever-changing patterns.

Sunlight — White or Coloured

Sunlight appears white but is made up of many colours. When passed through a prism, it separates into a spectrum of colours, showing that sunlight is a mix of all visible colours.

What is inside Our Eyes?

The eye is crucial for seeing things because it receives light reflected off objects. It has a round shape, with a tough, white outer coat for protection. The front part called the cornea, is transparent, while the iris behind it controls the amount of light entering through a small opening called the pupil. The iris also gives the eye its colour.

Inside the eye, a lens focuses light onto the retina at the back. The retina, containing nerve cells called cones and rods, sends visual information to the brain via the optic nerve. Cones detect bright light and colour, while rods sense dim light. The area where the optic nerve connects to the retina has no sensory cells, creating a "blind spot." This spot can be demonstrated by the fact that images persist on the retina for a short time after the light source is removed.

Care of the Eyes

To keep your eyes healthy, follow these tips:

- **Regular Checkups:** Visit an eye specialist if you have problems.
- **Use Spectacles:** Wear them if advised by a doctor.
- **Light Sensitivity:** Avoid too much or too little light to prevent strain or injury.

- **Protect Your Eyes:** Don't look directly at the Sun or bright lights, and avoid rubbing your eyes. Rinse with clean water if dust gets in, and see a doctor if needed.
- **Read at Proper Distance:** Hold books at a normal reading distance.
- **Eat a Balanced Diet:** Include vitamin A-rich foods like carrots, spinach, eggs, and fruits to prevent eye issues like night blindness.

Visually Impaired Persons Can Read and Write

Visually impaired people can read and write using special methods. They often use Braille, a system of raised dots that they can feel to read. For writing, they use Braille typewriters or computers with screen readers that convert text to speech. These tools help them access information and communicate effectively.

Class 8 Chapter 13 Science Notes: What is the Braille System?

The braille system is an important part of class 8 science light chapter notes. It was discovered by Louis Braille specially designed for the blinds. It is a raised-dot writing which can be touched by the fingers and recognized. All the Braille characters are made of 6 dot positions which are arranged in a rectangle comprising a 2 column of 3 dots each. At any position, a dot can be raised.

Braille codes consist of dot patterns of the alphabet, symbols and other punctuations. It is done by following a specific consistency and referring to the original assignments of Louise Braille. Also, different Braille codes are used to notate systems like mathematics, computer applications music and also chess. The basis of this code remains associated with 64 possible characters of Braille and the new notational elements.

Ch 13 Science Class 8 Notes: Properties of Mirror Image

There are several properties of an image formed by a plane mirror. They are:

- They are of the same size as that of the object
- Left-right inverted
- Virtual and erect

- It occurs behind the mirror at the same distance as the distance of an object in front of the mirror.

Points to Remember

1. Light is the natural agent that allows things to be visible to us. Light is reflected from all surfaces and is a form of energy.
2. Objects which illuminate light on their own are known as luminous objects. Objects which do not give light on their own are said to be non-luminous objects. They reflect the light falling on them. When light is reflected from an object enters our eyes, and the object becomes visible to us.
3. Reflection of Light is the phenomenon of bouncing back of light after striking a shiny or polished surface, kept in the same medium.

Types of Reflection:

- i. Regular Reflection:** When a parallel beam of light rays incidents either on a smooth or on a plane surface, the reflected rays will also be parallel. This is termed regular reflection. The reflection by a plane mirror is an instance of regular reflection.
 - ii. Diffused or Irregular Reflection:** When the light ray incidents on a rough or uneven surface, it gets reflected in many directions because of the irregularities on that surface.
4. If the reflected light ray is reflected again after the incident on another surface, then it is known to be multiple reflections. Multiple reflections is the principle on which periscopes work. Periscopes are mainly used in submarines, war tanks, and by soldiers in bunkers to see distant objects which are not visible directly. In a kaleidoscope, the same principle works as a result beautiful patterns are formed due to multiple reflections.

Laws of Reflection

- i. The angle of incidence is equal to the angle of reflection.
- ii. The incident ray, reflected ray and the normal drawn at the point of incidence to the reflecting surface lie in the same plane.
- iii. Lateral inversion is the effect made by a plane mirror in reversing images from left to right. For instance, our left hand will appear as right in the mirror and vice versa.

The Characteristics of the Image Formed by a Plane Mirror:

- i. Is the same size as that of the object
 - ii. Left-right inverted
 - iii. Erect and virtual
 - iv. Formed behind the mirror at the same distance as that of the object placed in front of the mirror.
5. Multiple images are formed when two mirrors are inclined to each other.
6. Sunlight, also known as white light, is made up of seven colours. The splitting of light into its constituent colours is termed dispersion. Nearby and distant objects are visible to a normal eye.
7. People who are blind can read and write by using the Braille system. They develop their other senses to improve their interaction with their environment.

Human Eye and its Parts

- i. The front part of the eye is covered with a transparent spherical membrane known as the cornea. Light enters the eye by the cornea.
- ii. Space present just behind the cornea contains a fluid known as aqueous humour.

iii. Just behind the cornea is a muscular diaphragm, which is dark-coloured and is known as the iris which has a small circular opening in the middle called the pupil. The black colour of the pupil is due to no light being reflected from it.

iv. The iris is responsible for controlling the amount of light entering the eye by adjusting the size of the pupil.

v. The lens of our eyes is a convex lens made of a transparent jelly-like proteinaceous material. The eye lens is hard in the middle and becomes soft towards the outer edges.

vi. The ciliary muscles hold the eye lens in its position. The ciliary muscles are responsible for changing the curvature and focal length of the eye lens.

vii. The inner back surface of the eyeball is the retina. It is a semi-transparent membrane that is light-sensitive and behaves as the screen of a camera. The light-sensitive receptors present in the retina are rods and cone cells.

viii. The space between the retina and eye lens is filled with vitreous humour.

