

CBSE Class 8 Science Notes Chapter 13: Here are the notes for CBSE Class 8 Science Chapter 13 Light, which are beneficial for students preparing for Class 10 exams. In this chapter, students learn about how light reflects off surfaces, how it bends when it passes through different materials, and how mirrors and lenses form images.

The chapter also explains how the human eye works and how we see colors. It highlights the importance of light in our everyday life and helps students understand its role in nature and technology.

CBSE Class 8 Science Notes Chapter 13 Light Overview

These notes are prepared by subject experts of Physics Wallah for CBSE Class 8 Science Chapter 13, "Light." They provide a comprehensive overview of the chapter, covering key topics such as the behavior of light, including reflection, refraction, and the formation of images by mirrors and lenses. The notes are designed to help students build a strong foundation in understanding the principles of light, which are essential for mastering more advanced concepts in later classes.

CBSE Class 8 Science Notes Chapter 13 Light PDF

The PDF link for CBSE Class 8 Science Notes Chapter 13 Light is available below. These notes provide a detailed and structured explanation of the chapter, covering essential concepts such as reflection, refraction, and the properties of light. They are a valuable resource for students to effectively grasp and revise the key points discussed in the chapter.

CBSE Class 8 Science Notes Chapter 13 Light PDF

CBSE Class 8 Science Notes Chapter 13 Light

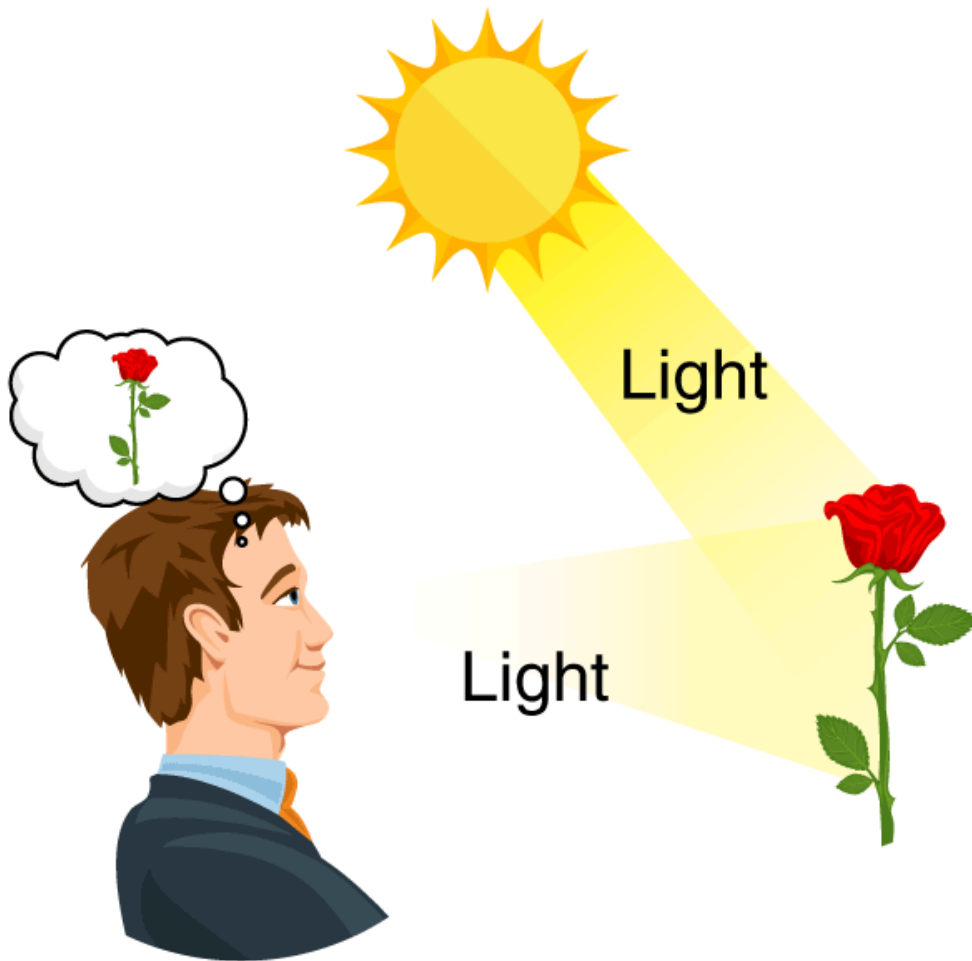
Below we have provided CBSE Class 8 Science Notes Chapter 13 Light for students to help them understand the chapter better and to score good marks in their examination.

Introduction to Light

The world is perceived mainly through our senses, with sight being one of the most crucial. We can only see an object when light from it enters our eyes, either because the object emits light or reflects it. Light is a form of energy that allows us to see, with the Sun being a primary source. It typically refers to visible light, which is detectable by the human eye and essential for vision.

How Do We See Objects?

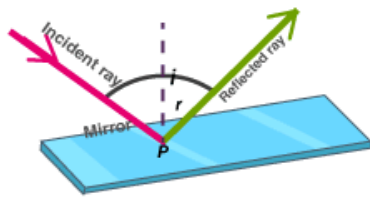
Seeing objects involves more than just our eyes. Light from a source strikes an object and then reflects back into our eyes, enabling us to perceive the object. This process is fundamental to our understanding and interaction with the world around us.



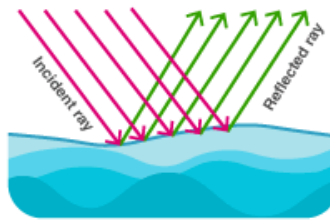
Laws of Reflection

Reflection:

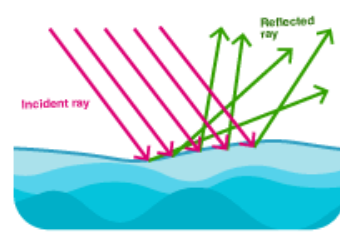
Light reflects off surfaces, and any well-polished or shiny surface can act as a mirror. The process of light bouncing off surfaces is known as reflection.



Mirror reflection



Specular reflection



Diffuse reflection

Laws of Reflection:

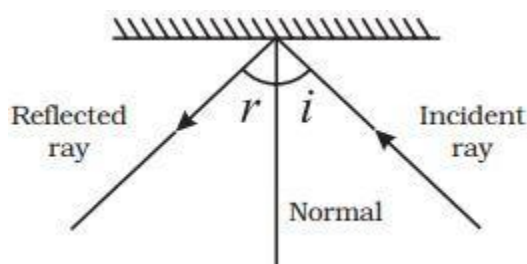
- The ray of light that hits a reflecting surface is called the **incident ray**, and the ray that bounces back is the **reflected ray**.
- An imaginary line perpendicular to the reflecting surface at the point of incidence is known as the **normal**.
- The **angle of incidence** ($\angle i$) is the angle between the incident ray and the normal, while the **angle of reflection** ($\angle r$) is the angle between the reflected ray and the normal.

The laws of reflection state:

1. The angle of incidence ($\angle i$) is always equal to the angle of reflection ($\angle r$), meaning $\angle i = \angle r$.
2. The incident ray, the reflected ray, and the normal all lie on the same plane.

Ray Diagram

A ray diagram is a visual representation that shows the path taken by a narrow beam of light. In these diagrams, light is represented as straight lines or "rays" to illustrate how it travels and interacts with different surfaces. Ray diagrams help in understanding the behavior of light, such as how it reflects off surfaces or refracts when passing through different mediums.

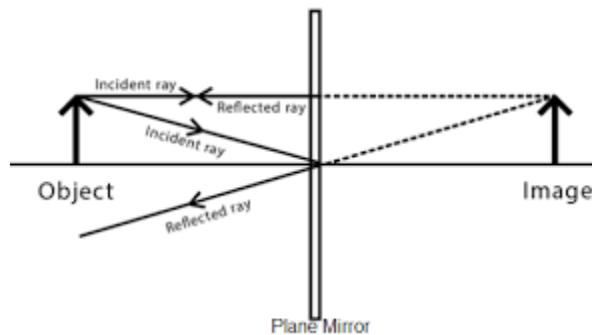


Regular and Diffused Reflection

Reflection can occur in two ways: regular and diffused.

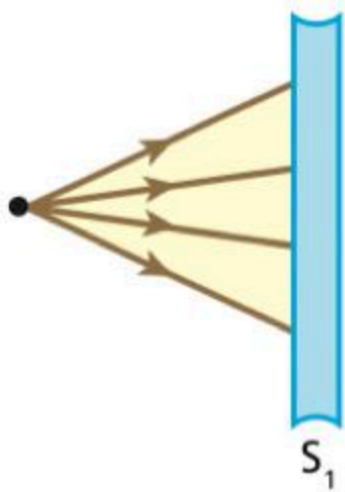
- **Regular Reflection** occurs when light reflects off a smooth, polished surface like a mirror. In this case, the reflected rays are parallel, and the reflection strictly follows the laws of reflection, resulting in a clear image.
- **Diffused Reflection** happens when light reflects off a rough or irregular surface. Here, the reflected rays scatter in different directions, and while the laws of reflection still apply locally, the reflection does not produce a clear image.

Image Formation in a Plane Mirror

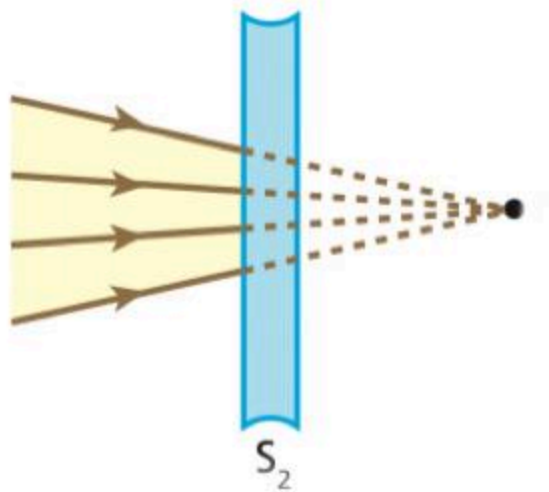


In a plane mirror, the image formed is always virtual (cannot be projected on a screen), erect (upright), and the same size as the object. The distance between the object and the mirror is equal to the distance between the image and the mirror. The image undergoes lateral inversion, meaning the left and right sides are reversed.

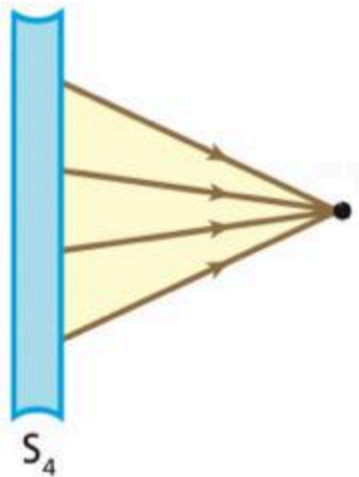
Difference Between Real and Virtual Image



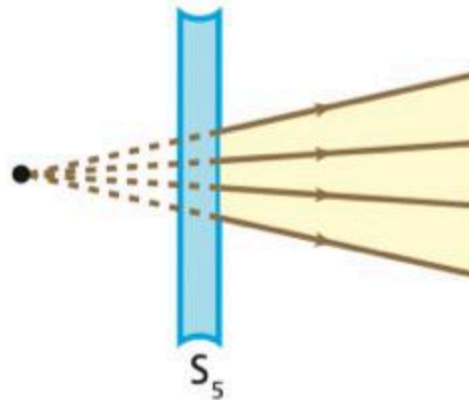
Real object



Virtual object



Real image



Virtual image

Real Image:

- Formed by the actual convergence of light rays.
- Can be projected onto a screen.
- Typically formed by mirrors or lenses when light rays meet at a point.
- Real images are usually inverted (upside down) relative to the object.

Virtual Image:

- Formed when the outgoing rays from a point on an object appear to diverge from a common point.
- Cannot be projected onto a screen because the light rays do not actually meet.
- Virtual images are always upright as seen in plane mirrors.

Multiple Reflections

- **Multiple Reflections** occur when two mirrors are inclined to each other, causing the light to bounce back and forth between them. This leads to the formation of multiple images.
- **Infinite Images:** When an object is placed between two parallel plane mirrors, an infinite number of images can be seen due to continuous reflections between the mirrors. The number of visible images depends on the angle between the mirrors.

Dispersion

- **Dispersion of Light:** Dispersion occurs when light is split into its component colors. This happens because different colors of light bend by different amounts when passing through a medium, such as a prism. This separation of light into its constituent colors creates a spectrum.
- **Example:** A common example of dispersion is the formation of a rainbow. When sunlight passes through water droplets in the atmosphere, it disperses into its component colors (red, orange, yellow, green, blue, indigo, violet) to form a rainbow.

Human Eye



The human eye is a spherical organ, approximately 2.3 cm in diameter, responsible for vision. It enables us to perceive colors, depth, and details in our surroundings. Here's how its various parts contribute to vision:

- **Cornea:** Light first enters the eye through the cornea, a transparent, bulging membrane at the front.
- **Iris:** The iris is a dark, muscular diaphragm surrounding the pupil. It regulates the amount of light entering the eye by adjusting the size of the pupil.
- **Pupil:** This is the small opening in the center of the iris that allows light to pass through.
- **Lens:** Located behind the pupil, the lens helps to focus light onto the retina by adjusting its shape for objects at different distances.
- **Retina:** The retina acts as the screen where images are formed. It contains photosensitive cells known as rods and cones. Rods are sensitive to low light, enabling vision in dim conditions, while cones are sensitive to bright light and are responsible for color vision.
- **Optic Nerve:** This nerve transmits visual information from the retina to the brain, allowing us to interpret and understand what we see.

Visual Defects and Braille

Visual defects can significantly impact one's ability to see clearly. Common issues include:

- **Myopia (Nearsightedness):** Difficulty seeing distant objects clearly while close objects are seen well.
- **Hyperopia (Farsightedness):** Difficulty seeing nearby objects clearly while distant objects are seen better.
- **Cataract:** In older adults, the lens of the eye can become cloudy, leading to impaired vision.

For individuals who are visually impaired or blind, the **Braille system** provides a method to read and write.

- **Braille:** A tactile writing system consisting of patterns of raised dots. Each pattern represents a letter, number, or punctuation mark.
- **Braille Sheets:** These sheets have embossed dot patterns that can be read by touch, allowing visually impaired individuals to read and write. The system helps in communication and access to written information for those who cannot use conventional visual methods.

Benefits of CBSE Class 8 Science Notes Chapter 13

- **Clear Understanding:** These notes provide a structured explanation of fundamental concepts such as reflection, refraction, and the behavior of light. They help students grasp complex ideas through simple and clear descriptions.
- **Visual Aids:** The inclusion of diagrams and ray diagrams enhances comprehension of how light interacts with different surfaces and media, making abstract concepts more tangible.
- **Key Definitions and Laws:** Important terms like regular and diffused reflection, and laws of reflection are clearly defined. This helps in solidifying the foundational knowledge necessary for more advanced studies in optics.
- **Problem-Solving Skills:** By presenting problems and solutions related to light, the notes help in developing problem-solving skills and reinforce learning through practice.
- **Exam Preparation:** These notes are an excellent resource for revision and exam preparation. They cover all essential aspects of the chapter, helping students to review key concepts and perform well in assessments.
- **Accessible Language:** The content is written in straightforward language, making it easy to understand and digest, which is particularly beneficial for students who find complex scientific terminology challenging.