



**BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034**

**SUBJECT:-PHYSICS**

**CHAPTER:- LIGHT**  
**CLASS - VIII**

Week 5<sup>th</sup> to 9<sup>th</sup> October 2020.

Number of Blocks : 01

**TOPIC: LIGHT**

### **GUIDELINES FOR STUDENTS**

Dear Students

- There is only **1 Assignment**.
  - Assignment 1: Based on the sub-topics given below.
- Attempt the assignment in Physics notebook.
- **Video links** have been provided for better understanding of the concept through visuals. Watch the videos carefully as these will help you in attempting the assignment.
- Read the lesson from **NCERT textbook** also.

### **SUB TOPICS:**

- Importance of light in everyday life
- Laws of Reflection
- Characteristics of image formed by plane mirror

### **INSTRUCTIONAL AIDS:**

- YouTube links :
  - <https://youtu.be/skGmQC87Bvg> : Basic concept about Reflection of light.
  - <https://youtu.be/OrobTDEYs2M> : Laws of Reflection
  - [https://youtu.be/g\\_5\\_4Ktamf8](https://youtu.be/g_5_4Ktamf8) : Characteristics of image formed by plane mirror
- NCERT Chapter Link : <https://ncert.nic.in/ncerts/l/hesc116.pdf> (pg. no. 199 & 202)

### **LEARNING OUTCOMES**

By the end of this lesson **each learner will be able to** :

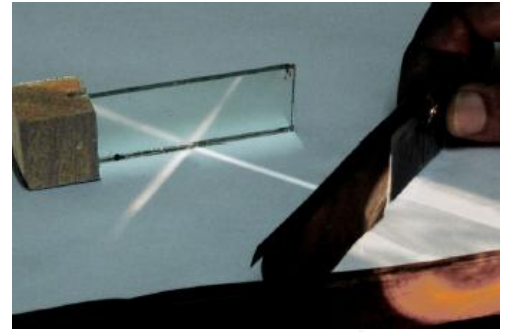
- discuss the importance of LIGHT in everyday life.
- differentiate between Ray & Beam of light.
- explain the reflection of light by reflecting surface.
- state laws of Reflection of light.
- enlist the characteristics of image formed by Plane mirror.
- apply learning of scientific concepts in day to day life.

### **ACTIVITY**

Perform the following activity at your home:

***To verify that angle of incidence is always equal to the angle of reflection***

Fix a white sheet of paper on a drawing board or a table. Take a comb and close all its openings except one in the middle. You can use a strip of black paper for this purpose. Hold the comb perpendicular to the sheet of paper. Throw light from a torch through the opening of the comb from one side. With slight adjustment of the torch and the comb you will see a ray of light along the paper on the other side of the comb. Keep the comb and the torch steady. Place a strip of plane mirror in the path of the light ray.



Draw lines showing the position of the plane mirror, the incident ray and the reflected ray on the paper with the help of your brother or sister. Remove the mirror and the comb.

Draw a line making an angle of 90 degree to the line representing the mirror at the point where the incident ray strikes the mirror. This line is known as the **normal** to the reflecting surface at that point. The angle between the normal and incident ray is called the **angle of incidence (i)**. The angle between the normal and the reflected ray is known as the **angle of reflection (r)**. Measure the angle of incidence and the angle of reflection. Repeat the activity several times by changing the angle of incidence. Record the observations in a table.

## LESSON DEVELOPMENT

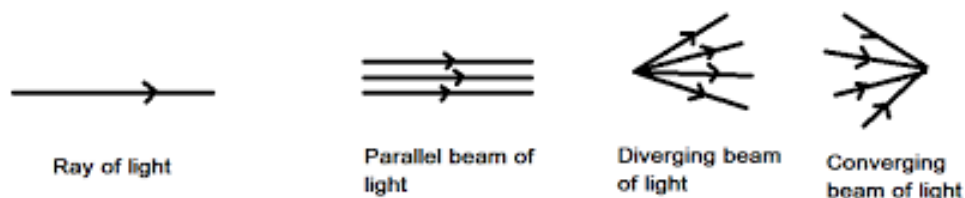
### Importance of Light in Everyday life

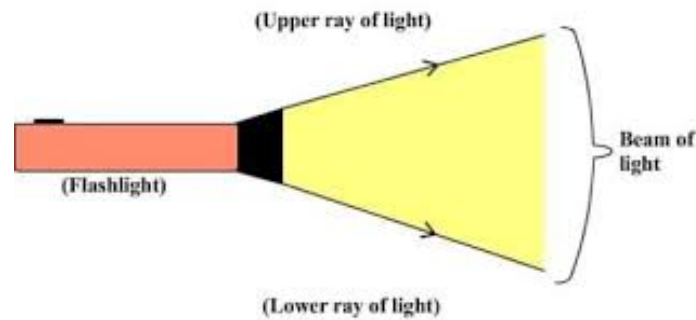
*The word 'Light' usually refers to the 'Visible light'* enabling us to see different objects. We can see the objects only when light from that object enters our eyes. The light may have been emitted by the object or may have been reflected by it. We cannot see an object behind the wall because light from that object does not reach our eyes.

In the absence of light, we would not be able to see anything. We are able to see beautiful & colorful world around us because of light. Various wonderful phenomena that we observe in real life world are associated with Light like image formation by mirrors, formation of rainbow, the twinkling of stars etc. In other words, **NO LIGHT - NO SIGHT**.

**NOTE:** Light travels in a straight line in the form of a ray & a beam.

Ray is a straight line drawn in the direction of propagation of light Whereas beam is a group of light rays which can be parallel, divergent or convergent.



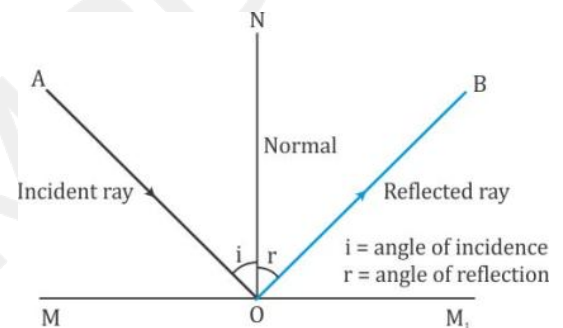


### Laws of Reflection

When light falls on a highly polished surface such as mirror, some of it bounces back in the same medium. This is called **Reflection**. The surface which reflects the light is called reflecting surface. Highly polished surfaces reflect the light better than dull surfaces.

Consider a reflecting surface  $MM_1$ . Let a ray of light  $AO$  falls on the surface  $MM_1$  at  $O$  & then returns along  $OB$

- The ray of light  $AO$  that falls on a mirror is called **Incident ray**.
- The point  $O$  on the surface of mirror at which incident light ray falls is called **Point of Incidence**.
- The perpendicular line drawn at the point of incidence is called **Normal**.
- The ray of light  $OB$  that gets reflected from a mirror is called **Reflected ray**.
- The angles which the incident ray & the reflected ray make with the normal to the surface are termed the **angle of incidence ( $i$ )** & **angle of reflection ( $r$ )** respectively



### LAWS OF REFLECTION

Reflection of light takes place according to the following **two laws**:

- (1) The angle of incidence ( $i$ ) is equal to angle of reflection ( $r$ ).
- (2) The incident ray, the reflected ray & the normal to the surface at the point of incidence, all lie in the same plane.

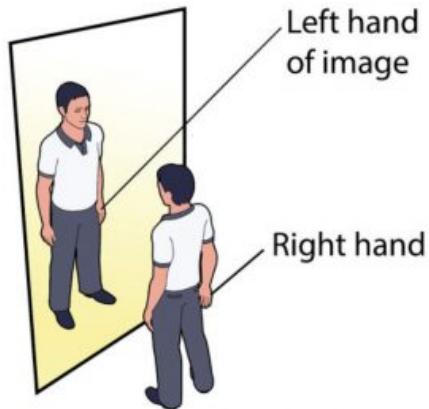
### Characteristics of Image formed by Plane Mirror

All of you must have studied the characteristics features of the image formed by a plane mirror in your previous class. To recall, the characteristics of the image formed by plane mirror are:

- (i) Image is always **virtual & erect**.
- (ii) Image is at the same distance from the mirror as the object.
- (iii) Image is of the **same size** as the object.
- (iv) Image is **laterally inverted** with respect to the object.

**Lateral Inversion:** Lateral relates to side of the object and inversion means reverse.

Have you ever noticed that when an object is placed in front of a mirror, the right side of the object appears as left side of the image & vice versa. This change of side of object in its image is called **Lateral Inversion**. For example, if we stand before a plane mirror & move our right hand, our image appears to move its left hand.



The word **AMBULANCE** is written in laterally inverted manner. The drivers of the vehicle ahead will see the laterally inverted word correctly through his rear-view mirror & then give way to the ambulance.

### ASSIGNMENT 1

- Q.1 The angle between mirror & incident ray is 30 degrees. What is the angle of reflection?
- Q.2 What is angle of incidence & angle of reflection when a ray of light falls normally on the surface of the mirror? Also trace the path of the ray of light.
- Q.3 Let the two mirrors meet at right angle. Complete the path of the ray of light after reflection from the second mirror, when a ray of light incident on the first mirror at an angle of 30 degrees with the normal at the point of incidence.
- Q.4 Calculate the angle of incidence if the reflected ray makes an angle of 90 degrees to the incident ray.
- Q.5 Fill in the blank.  
If you touch your \_\_\_\_\_ ear with left hand in front of a plane mirror it will be seen in the mirror that your left ear is touched with \_\_\_\_\_.
- Q.6 Enlist four characteristics of the image formed by a plane mirror
- Q.7 The distance between the object and its image formed by a plane mirror is 20 cm. What is the distance between the mirror and the object?
- Q.8 A 4 cm tall object is placed in front of a plane mirror. What will be the height of the image? Will there be

any change in its height if the object moves 1 cm towards the mirror?

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BBPS, PITAMPURA