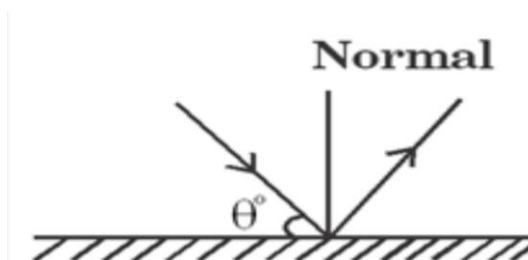


	INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VIII	DEPARTMENT OF SCIENCE 2025-26	DATE: 07/05/2025	
WORKSHEET NO: 3 WITH ANSWERS	TOPIC: LIGHT	NOTE: A4 FILE FORMAT	
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.	

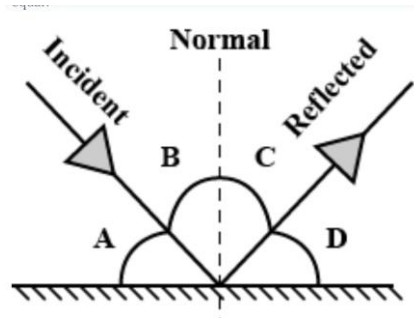
I. OBJECTIVE-TYPE QUESTIONS:

1. Find the angle of reflection from the given diagram.

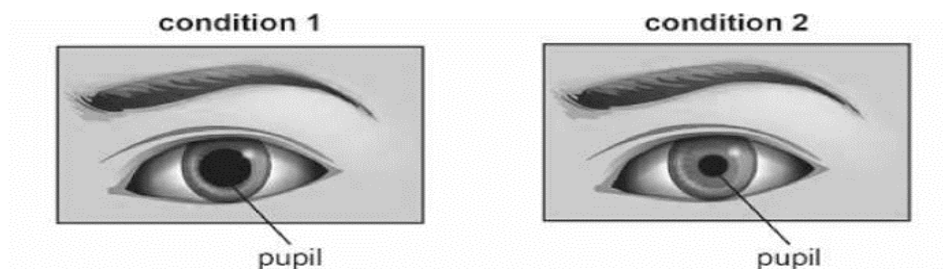


- (a) θ°
 - (b) $90-\theta^\circ$
 - (c) 45°
 - (d) 90°
2. Owls are considered as nocturnal as they are active during the night time. What will be the possible reason for them to be nocturnal?
- (a) More rods and low cones
 - (b) Low cones and low rods
 - (c) Low rods and more cones
 - (d) An equal number of rods and cones
3. In which of the following conditions irregular reflection takes place?

- (a) When a parallel beam of light is reflected by a plane mirror.
 - (b) When a parallel beam of light is reflected by a highly polished metal surface.
 - (c) When a parallel beam of light is reflected by a paper sheet.
 - (d) All the above
4. According to the first law of reflection, which angles will be equal?



- (a) $A=C$
 - (b) $B=D$
 - (c) $A=B$
 - (d) $B=C$
5. Band of colours emerging from a prism is called:
- (a) Wavelength
 - (b) Beam
 - (c) Spectrum
 - (d) Bandwidth
6. The picture shows the size of the pupil under two different conditions.



Which part of the eye regulates the contraction and dilation of the pupil?

- (a) Iris
- (b) Retina

- (c) Ciliary muscles
- (d) Cornea

7. When images are displayed in rapid succession in the range of more than 16 images in a second, the image appears to move. Name the phenomenon responsible for this.

- (a) Reflection of light
- (b) Persistence of vision
- (c) Dispersion of light
- (d) Rectilinear propagation of light

For the questions that follow, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

- i) Both A and R are true and R is the correct explanation of the assertion.
- ii) Both A and R are true but R is not the correct explanation of the assertion.
- iii) A is true but R is false.
- iv) A is false but R is true.

8. **Assertion (A):** The image created by a plane mirror is virtual.

Reason (R): Virtual images can be formed on a screen.

9. **Assertion (A):** The colour of eyes is actually the colour of iris.

Reason (R): The iris controls the amount of light entering into the eye.

10. **Assertion:** Kaleidoscope works on the principle of dispersion of light.

Reason: The human eye lens is convex in nature.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1. Why do we see a rainbow after it rains?

[Hint- We see a rainbow after it rains because the raindrops act like tiny prisms dispersing the white light into its different colours the colours of the rainbow are always seen in the order of Violet, indigo, blue, green, yellow, orange and red.]

2. How would you define lateral inversion?

[Hint- In an image formed by a mirror the left of the object appears on the right and the right appears on the left. This phenomenon is known as lateral inversion.]

3. What is the difference between illuminated objects and luminous objects, and can you name some examples of each?

[Hint-Illuminated objects are those that do not produce their own light but can be seen because they reflect light from other sources. Examples include the moon and other objects that shine in the light of the sun or other light sources. Luminous objects, on the other hand, are those that emit their own light. Examples include the Sun, a candle flame, and electric lamps.]

- 4.State the laws of reflection of light.

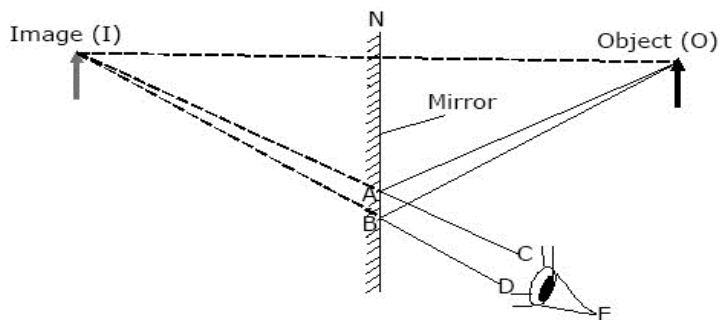
Law 1:The angle of incidence is always equal to the angle of reflection. i.e. $\angle i = \angle r$.

Law 2: The incident ray, the reflected ray, and the normal at the point of incidence all lie in the same plane.]

5. What types of devices are included under auditory aids and electronic aids for the visually impaired?

[Hint: Auditory aids include cassettes, tape recorders, talking books, and other devices that utilize sound to assist visually impaired individuals. Electronic aids, such as talking calculators and computers, are also available for performing many computational tasks. Closed-circuit television, also an electronic aid, enlarges printed material with suitable contrast and illumination. Nowadays, the use of audio CDs and voice boxes with computers is also very helpful for listening to and writing the desired text.]

6. What type of mirror is illustrated in the diagram, and what are the primary characteristics regarding image formation?



[The mirror

illustrated is a plane mirror, which produces a virtual image that is of the same size as the object, the distance from the object to the mirror is equal to the distance from the image to the mirror and the image is laterally inverted.]

III. SHORT ANSWER TYPE QUESTIONS (3M):

1. If an object is placed at a distance of 8 cm from a plane mirror, how far would it be from its image?

[Hint-If an object is placed 8 cm away from a plane mirror, the image will be located at an equal distance of 8 cm on the opposite side of the mirror.]

To find the distance between the object and its image:

Distance from the object to the mirror = 8 cm

Distance from the mirror to the image = 8 cm

The distance between the object and the image is $8\text{ cm} + 8\text{ cm} = 16\text{ cm}$ therefore, the object is 16 cm away from its image.]

2. What is a Kaleidoscope? On what principle does it work and also state its applications.

[Hint- Kaleidoscope is an instrument containing mirrors and pieces of coloured glass whose reflection produces changing patterns when it is rotated. It is based on the principle of multiple reflections of light. Applications are given below:

(i) It is used for decoration purposes, toys, etc. (ii) Kaleidoscope is also useful for designers and artists to get ideas for new patterns to design wallpapers, jewellery, and fabrics.]

3. What is cataract, and what are the medical treatments available for it?

[Hint- In old age, eyesight becomes foggy because the eye lens becomes cloudy. When it happens, people are said to have cataracts. In extreme cases, it leads to loss of vision. It is treated surgically by removing the opaque lens and replacing it with a new artificial lens.]

4. Dhruv can see objects close to him clearly but cannot see distant objects so clearly.

On the other hand, his mother cannot see objects nearby clearly but she can see distant objects quite well. What are the two types of visual conditions described above, and how can they be corrected?

[Hint-Dhruv has Short-sightedness. Nearsightedness/ Short-sightedness: Individuals can see nearby objects clearly but have difficulty seeing distant objects.

Dhruv's mother have Long-sightedness. Farsightedness / Long-sightedness: Individuals can see distant objects clearly but struggle to see nearby objects. These defects of vision can be corrected with suitable corrective lenses specifically designed for each condition.]

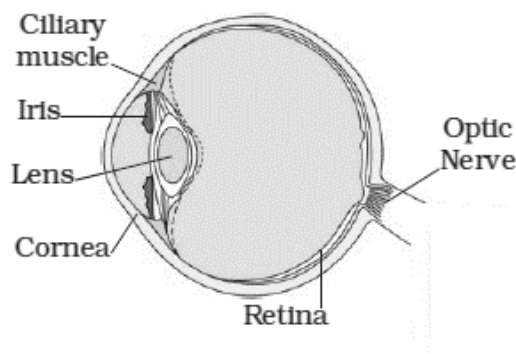
4. What common eye trouble is caused by a deficiency in vitamin A, and which foods are recommended to include in the diet to prevent this issue?

[The common eye trouble caused by a deficiency in vitamin A is night blindness. To prevent this issue, it is recommended to include foods rich in vitamin A in the diet, such as raw carrots, broccoli, green vegetables (like spinach), cod liver oil, eggs, milk, curd, cheese, butter, and fruits such as papaya and mango.]

IV. LONG ANSWER TYPE QUESTIONS (5M):

1. (a) Draw a neat and labelled diagram of the structure of a human eye.
- (b) List the different ways by which we can take care of our eyes.
- (c) What is the minimum distance at which a normal eye can see objects, and how does this distance change with age?

[Hint- (a)



(b) One should go for a regular eye check-up, Wear spectacles if the eyesight is found weak, and always study or watch TV in sufficient light. Excess or insufficient light both can lead to problems. Insufficient light can cause strain and lead to a headache. Do not look at the sharp source of light like the sun directly. Excess light can damage the eyes, If dust enters the eye one should not rub them but rather wash them straightway, Maintain a normal distance while reading or watching TV, Take a balanced diet to ensure that you get the right nutrients.

(c) The minimum distance at which a normal eye can see objects distinctly varies with age, but the most comfortable distance for reading with a normal eye is about 25 cm.]

V. CASE STUDY- BASED QUESTIONS/ PASSAGE BASED QUESTIONS:

1. In the year 1902, an instrument was made by Simon Lake and later perfected by Sir Howard Grubb. This instrument needs two plane mirrors that are placed at an angle of 45 degrees to the vertical. The image formed by one mirror acts as the object for the other mirror. The image formed by the first mirror is virtual and laterally inverted. This image serves as an object for the second mirror, which again produces a virtual and laterally inverted image. As a result, the final image is not laterally inverted.

(i) Name the instrument. What is the use of the instrument?

(ii) What is the principle behind the working of this instrument?

(iii) Explain how the arrangement of the two mirrors in this instrument affects the image formation.

[Hint-(i) A periscope, it is used in submarines to see things above the surface of the water, (ii) It works on the principle of multiple reflection of light. (iii) The arrangement of the two mirrors in the periscope, placed at an angle of 45 degrees to the vertical, allows for a specific image formation process. When light from an object enters the periscope, it first strikes the first mirror, which reflects it to the second mirror. First Reflection: The first mirror creates a virtual image of the object, which is laterally inverted (the left and right

sides are switched). **Second Reflection:** The virtual image from the first mirror acts as the object for the second mirror, which reflects this image again. The second mirror also produces a virtual image that is again laterally inverted. However, since both reflections occur, the final image produced by the second mirror is not laterally inverted. This unique arrangement allows the observer to see the original orientation of the object.

MCQ Question Answers

1-b,2-a,3-c,4-d,5-c,6-a,7-b,8-iii,9-ii,10-iv.

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