



Class - VI January Month Class Work Notes

14. Light, Shadows and Reflection

**Technical Words:**

1. Beam - a group of rays travelling in the same direction.
2. Image - the visual representation of an object formed by a plane mirror.
3. Luminous - being able to produce and give out light.
4. lunar eclipse - an eclipse that occurs when the shadow of the Earth falls on the Moon.
5. Non-luminous - not being able to produce and give out light.
6. Opaque - not being able to see through it.
7. Pinhole - camera a simple type of camera.
8. Ray - a very thin column of light travelling in a particular direction.
9. Reflection - the bouncing back of light when it hits any surface
10. Solar eclipse - an eclipse that occurs when the shadow of the Moon falls on the Earth
11. Translucent - able to see through it in a fuzzy way
12. Transparent - able to see through it clearly

**A. Short answer question.**

1. Explain why light is important to life.

[Answer] Light is important to life because it enables us to see, provides energy for photosynthesis in plants.

2. Differentiate between luminous objects and non-luminous objects.

[Answer] Luminous objects produce their own light, while non-luminous objects do not have a light of their own.

3. What are the conditions for the formation of shadows?

[Answer] Shadows are formed when an object blocks light from a source. Conditions include a source of light, an opaque object, and a surface/screen for the shadow to fall on.

4. Differentiate between regular reflection and irregular reflection with only simple diagrams.

[Answer] **Regular reflection:** When the surface is smooth such as a mirror or a shiny metal surface, a parallel beam of light is reflected back as a parallel beam of light. This produces a clear image.

**Irregular reflection:** When the surface is uneven, a parallel beam of light that falls on the surface is reflected back in different directions, thus gets scattered.

(Diagrams: Refer to the textbook)

5. List the characteristics of an image formed by a plane mirror.

[Answer] Characteristics of image formed by a plane mirror are: (i) The image cannot be captured on a screen. (ii) The image is laterally inverted. (iii) It is of the same size as the object. (iv) The image is erect. (v) Distance of image from the mirror will be the same as the distance of the object from the mirror.

6. Briefly describe the characteristics of the image formed in a pinhole camera.

[Answer] In a pinhole camera: (i) the image is real (can be captured on a screen) (ii) inverted (iii) smaller than the object, and often appears dim.

**B. Long answer question.**

1. Differentiate between transparent, translucent and opaque objects with examples.

[Answer] Transparent objects allow all light to pass through completely (for example, clear glass). Translucent objects allow some light to pass through, but scatter it (for example, frosted glass). Opaque objects do not allow light to pass through (for example, a wooden door).

2. With the help of a simple experiment, prove that light travels only in straight lines.

[Answer] Take two pieces of cardboard of the same size. Make a small hole in the middle of the two pieces at exactly the same height. Place the two pieces in a straight line. Place the lighted candle behind the first cardboard in such a way that the candle flame and the holes are in a straight line. Darken the room if needed. The flame is visible. Move one of the cardboard pieces to the left or right. Now the flame is not seen. This shows that light travels in straight lines.

3. Briefly explain the formation of the following with diagrams.  
a. Solar eclipse  
b. Lunar eclipse

[Answer] a. Solar eclipse occurs when the Moon comes between the Sun and Earth. The Moon's shadow falls on Earth, blocking the Sun partially or completely.

(Diagram: Refer to the textbook)

b. Lunar eclipse occurs when Earth comes between the Sun and the Moon. Earth's shadow falls on the Moon, causing it to darken or turn reddish.

(Diagram: Refer to the textbook)

4. With the help of a simple diagram, show how an image is formed by a plane mirror.

[Answer] Two rays from the top of the arrow are taken to find this. Ray A travels parallel to the ground to strike the mirror at point A. Since it strikes the mirror at a right angle, it is reflected back. Ray B travels from the bottom of the arrow and is reflected back too. When the two rays are extended behind the mirror, we see that an image of the arrow is formed behind the mirror. (Diagram: Refer to the textbook)

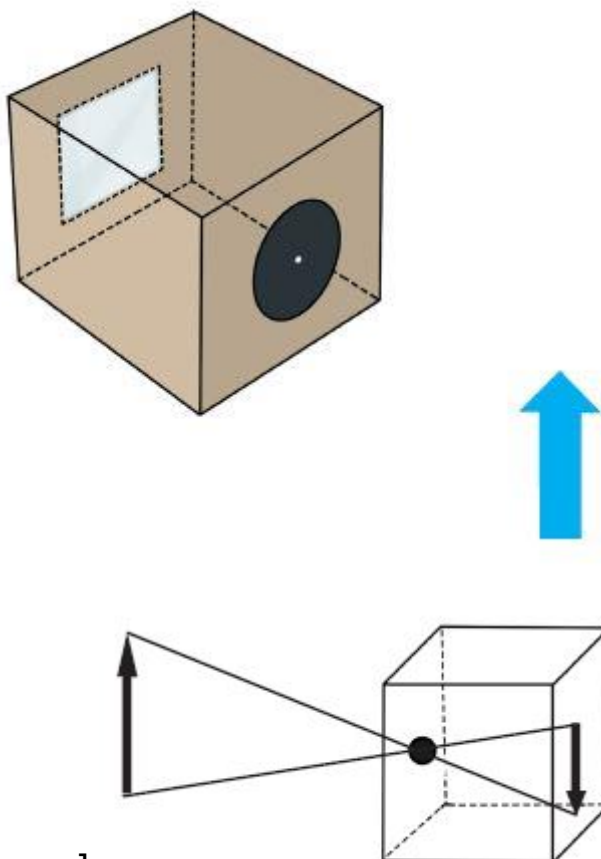
5. With the help of a diagram, explain how an image is formed in a pinhole camera.

[Answer] The light ray from the top of the tree goes through the pinhole in a straight line to fall at point B on the screen. The light ray from the bottom of the tree takes a similar journey to fall at point A. Thus, AB formed on the screen is the image of the tree. The image is inverted and dim.

(Diagram: Refer to the textbook.)

### C. Image-based question.

1. Complete the diagram to show how the pinhole camera forms an image of the arrow on the screen.



[Answer]

1. Assertion: The size of a shadow depends on the distance between the object and the light source.

Reason: When the object is closer to the light source, the shadow is smaller.

Ans: Option B

2. Assertion: A plane mirror forms an image that is laterally inverted.

Reason: In a plane mirror, the left and right sides of an object are swapped in the image.

Ans: Option A