



INDIAN SCHOOL AL WADI AL KABIR



Class: VI	DEPARTMENT: SCIENCE 2021 - 22	DATE: 23.01.2022
WORKSHEET NO.: 13 WS WITH ANS	TOPIC: LIGHT, SHADOWS AND REFLECTIONS	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS & SEC:	ROLL NO.

I. VERY SHORT ANSWER TYPE QUESTIONS (1M):

1. Name the most important source of light for the earth. [Hint: Sun]
2. What is light? [Hint- A form of energy which enable us to see things around us]
3. What are the conditions required for the formation of a shadow? [Hint-source of light, an opaque object and a screen]
4. Why can you see the table and chair in a room during daytime? [Hint- when light falls on the object, gets reflected and reaches our eyes]
5. What do you mean by reflection of light? [Hint- The bouncing back of light with the change in direction]
6. Choose the transparent, translucent and opaque materials from the following:
Cardboard, Tracing paper, Clear glass, Water, Air, Brick wall, Aluminium sheet
[Hint: Opaque -Cardboard, Brick wall, Aluminium sheet. Translucent -Tracing paper
Transparent - Clear glass, Water, Air]
7. Name two natural sources of light and two man-made sources of light. [Hint: Natural- Sun and stars. Man-made- Bulb and candle]
8. Why is the moon not considered as a luminous body? [Hint: It shines by reflecting the sunlight falling on it]

For question numbers 9 to11, two statements are given- one labeled Assertion (A) and the other labeled 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 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

9. **Assertion (A):** Opaque object forms a shadow when light falls on it.

Reason (R) : Opaque objects do not allow light to pass through it.

i) Both A and R are true and R is correct explanation of the assertion.

10. **Assertion (A):** Pinhole camera images do not have the colour of the object.

Reason (R) : The image formed in pin hole camera is small and inverted but shows the exact detail of the object.

iv) A is false but R is true

11. **Assertion (A) :** A burning candle cannot be seen through a bent tube .

Reason (R) : Light rays can bend in a bent tube .

iii) A is true but R is false.

II. PASSAGE BASED QUESTIONS:

An object which emits light, is called a source of light. For example, sun, torch, etc.

Non-luminous objects are the objects which do not emit light of their own. Such a body becomes visible when light falls on it. For example, the moon, the planets, etc. An object which comes to the path of the light is called an obstacle. All the opaque objects seem to form a dark shadow of their own. We need a source of light, an opaque object in the way, and a screen to see a shadow. Screen is a surface on which the shadow is formed. It may be a butter paper or simply ground. Shadows give us some information about shapes of objects. The colour of the opaque object does not affect the colour of the shadow.

1. Which of the following is a non-luminous object?

- a) Sun
- b) Star
- c) moon
- d) Tube light

2. Which of the following is not always necessary to observe a shadow?

- a) Sun
- b) Screen
- c) Source of light
- d) Opaque object

3. Shadow of a red object will be:

- a) Red
- b) Black
- c) Blue
- d) Green

4. Natural luminous object among the following is:

- a) Tube light
- b) Bulb
- c) Moon
- d) Stars

5. Shadows give us information about:

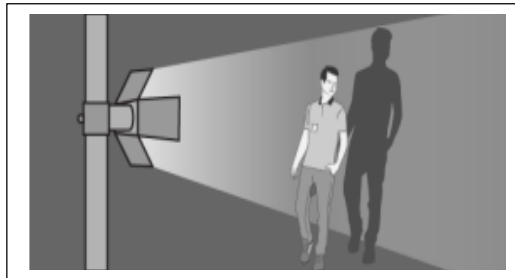
- a) Shape of source
- b) Shape of object
- c) Surface
- d) Size of object

6. Which of the following can never form a circular shadow?

- a) A ball
- b) A flat disc
- c) A shoe box
- d) An ice cream cone

III. CASE STUDY BASED QUESTIONS:

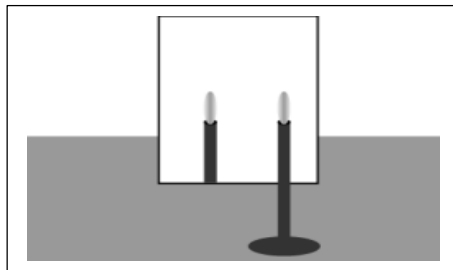
1) A student stands in front of a lamp to produce the shadow of his body. The shadow of the boy is formed on the screen as shown.



What can be concluded from the observation regarding formation of the shadows?

- (a) the screen must be placed in front of the opaque object
- (b) the opaque object must be placed behind the source of light
- (c) the opaque object must be placed between source of light and the screen
- (d) the source of light must be placed between the opaque object and the screen

2) A student is writing conclusion about the nature of reflection shown by a plane mirror. The image given below shows the reflection of a candle.

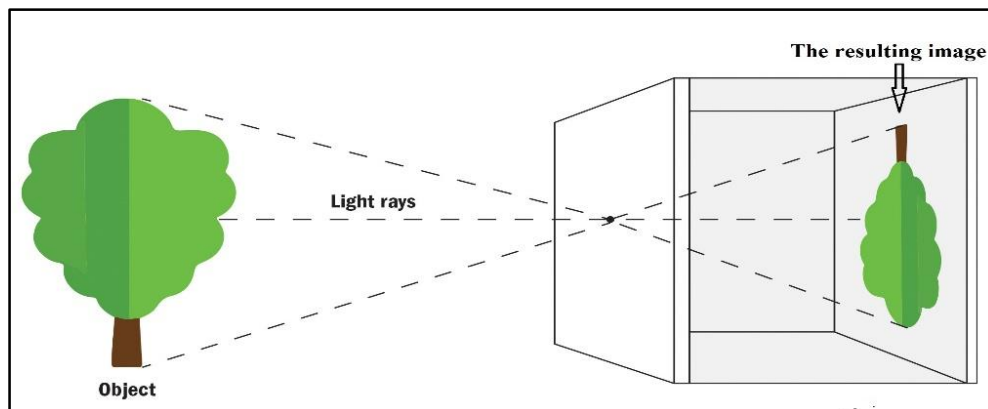


Which statement is correct based on the observation?

- (a) plane mirror produces an upright image of the same size.
- (b) plane mirror produces an upright image of a smaller size.
- (c) plane mirror produces an upside-down image of the same size.
- (d) plane mirror produces an upside-down image of a smaller size.

IV.a) SHORT ANSWER TYPE QUESTIONS (2 M):

1. Explain why, we often see bright circular patches of light on the ground under tree on a sunny day. [Hint- These circular images are, in fact, pinhole images of the Sun. The gaps between the leaves, act as the pin holes]
2. Why is it not advised to observe the sun directly during a solar eclipse? [Hint-The rays from the sun can cause permanent eye damage and blindness]
3. Define eclipse? [Hint- An eclipse occurs when one object in space blocks an observer from seeing another object in space. This happens when one heavenly body cast its shadow on another.]
4. Observe the figure and answer the questions that follow:



- a) Name the device given in the figure. [Hint: A pinhole camera]
- b) On what principle does it work? [Hint: Light travels in a straight line]
- c) What is the nature of the image formed by the given device. [Hint- Inverted image]

5. What do you mean by rectilinear propagation of light? [Hint: The property of light travelling in a straight line]
6. Why we cannot see through a 'T' shaped or an 'N' shaped pipe? [Hint- Light travels in a Straight line and cannot bend]

IV.b) SHORT ANSWER TYPE QUESTIONS (3 M):

1. Can an object form two or more shadows at the same time? How? [Hint: Yes, Multiple shadows will be formed when there are more sources of light]
2. Can you think of creating a shape that would give a circular shadow if held in one way and rectangular shadow if held in the other way? [Hint- When the object is a cylinder]
3. You are given a transparent glass sheet. Suggest any two ways to make it translucent without breaking it.
[Hint: (i) By applying oil, grease, butter on it or pasting a butter paper on it.
(ii) Grinding (rubbing) the surface of the glass by any abrasive material.]
4. Distinguish between:
 - a. Transparent, translucent and opaque objects [Hint: Transparent- object through which we can see clearly. Translucent- object through which we can see, but not very clearly. Opaque- object through which we cannot see through.]
 - b. Luminous and non-luminous objects [Hint: Luminous- objects that produce their own light. Non-luminous- objects that do not produce their own light]
 - c. Image and Shadow [Hint: Image- It is formed when the light is reflected from the object and reaches our eyes and gives information about the object like the colour and features. Shadow- A shadow is formed when an object blocks the light. It is always black in colour. It does not show the feature or colour of the object. It is always formed on a screen.]
5. On a sunny day, does a bird or an aeroplane flying high in the sky cast its shadow on the ground? Under what circumstances, can we see their shadow on the ground?
[Hint: No, they do not cast any shadow on the ground because they are very high in the sky. They can cast shadow only if they are at some lower height, i.e. if they are near to the ground, we can see their shadows.]
6. Using a pinhole camera, a student observes the image of two of his friends, standing in sunlight, wearing yellow and red shirts, respectively. What will be the colours of the shirts in the image?[Hint: Colours of the shirts will remain same. We see them on the screen because pinhole camera forms the image of the object having same colour but upside down. So, yellow shirt will form yellow image and red shirt will form red image.]

V.LONG ANSWER TYPE QUESTIONS (5 M):

- 1.a) A student covered a torch with red cellophane sheet to obtained red light. Using the red light, she obtains a shadow of an opaque object. She repeats this activity with green and

blue light. Will the colour of the light affect the shadow? Explain. [Hint: The colour of light will not affect the shadow, because shadow is the dark patch formed when an opaque object obstructs the path of light and hence no light reaches in the shadow region]

b) A student had a ball, a screen and a torch in working condition. He tried to form a shadow of the ball on the screen by placing them at different positions. Sometimes the shadow was not obtained. Explain. [Hint: Some of the reasons can be- The screen is away from the ball, the torch is kept away from the ball, the beam of light from the torch is falling parallel to the screen on the ball]

2. Write differences between an image and a shadow.

IMAGE	SHADOW
<ul style="list-style-type: none">○ The formation of image takes place when the light rays are reflected by an object.○ Image shows all the details of the object including its colours.	<ul style="list-style-type: none">➤ The formation of shadow takes place when the light falls on an opaque object.➤ Shadow does not give any information about the object as it is always black

PREPARED BY
MRS.SUMA SENU

CHECKED BY
HOD - SCIENCE