

CLASS – 6 PHYSICS CHAPTER – 5 LIGHT EXERCISE SOLUTIONS

A. Choose the correct option.

1. Which of the following material allows light to pass through it?

Answer : (d) Glass

2. We can see objects in a bright room because :

Answer : (b) the objects reflect the light falling on them

3. Which of the following characteristics is not exhibited by the shadow of an object?

Answer : (b) Same colour as object

4. The object that does not give out light on its own is the :

Answer : (d) shining mirror

5. Which of the following are translucent materials?

Answer : (b) B and C

6. In which of the following condition, does the shadow form?

Answer : (c) When the object lies between the source of light and screen

7. When does the lunar eclipse occur?

Answer : (a) When the earth comes between the moon and the sun

8. A shadow is formed when the path of light is obstructed by :

Answer : (c) opaque object

9. Shadow of an object depends on :

Answer : (a) size and distance of the object from screen

B. Fill in the blanks :

1. Objects that do not allow light to pass through are called.....objects.

Answer : opaque

2. The central dark region of a shadow is called the.....

Answer : umbra

3. A shadow shows only.....colour.

Answer : black

4. When the moon comes directly between the sun and the earth, the eclipse formed is.....

Answer : solar scclipse

5. A.....eclipse can be viewed with the naked eye.

Answer : lunar

6. A.....object produces light on its own.

Answer : luminous

7. Light travels in a.....line.

Answer : straight

8. The image formed in a pinhole camera is real and.....

Answer : inverted

9. Lunar eclipse is caused on a.....night.

Answer : full moon

C. Write T for True and F for False statements.

1. Sun is the main source of light on the Earth.

Answer : True

2. Planets are non-luminous.

Answer : True

3. Wood is opaque.

Answer : True

4. Butter paper is transparent.

Answer : True

5. Light does not always travel in straight line.

Answer : False

6. When an opaque object blocks the passage of light, it forms a dark patch on the screen, called shadow.

Answer : True

7. A shadow always resembles the shape and size of the object.

Answer : False

8. A pinhole camera is a simple device used to take photograph of stationary objects.

Answer : True

D. Name the following.

1. This is a form of energy which causes the sensation of vision.

Answer : Light

2. A phenomenon in which animals produce their own light.

Answer : Bioluminescence

3. An object that can emit its own light.

Answer : Luminous

4. A dark patch formed on a screen when an opaque object comes between the source of light and the object.

Answer : Shadow

5. A device working on the principle that light travels in the straight line.

Answer : Pinhole camera

6. An opaque object.

Answer : Wood

7. An object which does not give out their own light.

Answer : Moon

E. Circle the odd one. State a reason for selection in your notebook.

1. Wooden board, Butter paper, Stone Book

Answer : Butter paper

2. Clean water, Glass, Frosted glass, Air

Answer : Frosted glass

3. Electric bulb, Paper, Candle, Sun

Answer : Paper

4. Firefly, Paper bag, Water bottle, Pencil box

Answer : Firefly

F. Answer the following questions in short.

1. Which of the following are the sources of light?

Sun, Table, Moon, Star, Electric bulb, Firefly, Meteor, Planets, Mirror, Chair

Answer : Sun, Star, Electric bulb, Firefly.

2. Why can you see the table and chair in a room during daytime?

Answer : Because of reflection of light from object to our eyes light emit from sun during day time.

3. What name is given to the material (or object) :

(a) Which allows all the light to pass through it at all?

(b) Which does not allow light to pass through it at all?

(c) Which allows light to pass through it only partially?

Answer : (a) Transparent objects.

(b) Opaque objects.

(c) Translucent objects.

4. State any two observations from everyday life which show that light travels in straight lines.

Answer :

(i) The beams of light from the headlights of car, scooter, buses, trucks, aeroplanes, and engines of train go straight in the darkness of night showing that light travels in a straight line path.

(ii) The straight beams of light coming out from the searchlights of airport tower tell us that light travels in a straight line path.

5. Explain why, we often see bright circular patches of light on the ground under a tree on a sunny day.

Answer : The bright circular patches of light under the tree is called pinhole images, the source of the light is the sun, the dry porous leaves and the gaps between the leaves acts as the screen, and the phenomenon is known as diffraction of lights.

6. State the characteristics of images formed in a pinhole camera.

Answer : The image formed in a pinhole camera is real because it can be received on screen. Thus, a pinhole camera forms a real and inverted image of an object.

7. Why is the image formed in a pinhole camera inverted?

Answer : Due to the crossing-over of light rays at the pinhole, the top of the tree comes at the bottom in the image, and the bottom of the tree comes at the top in the image. It appears as if the tree has been turned upside-down in the image. The upside-down image of an object formed by a pinhole camera is called an inverted image.

8. What are the three things required to observe a shadow?

Answer : (i) a source of light.
(ii) an opaque object (to obstruct the path of light).
(iii) a screen on which the shadow can be seen.

9. What conclusion do you get from the fact that when an object is placed in the path of light, a shadow is formed behind the object?

Answer : Conclusion that we get from fact that when an object is placed in the path of light a shadow is formed behind the object is that light always travel in straight line and light rays are never deviated from this straight line and do not show any bending.

G. Answer the following questions in detail.

1. What is meant by (a) luminous objects, and (b) non-luminous objects? Name two luminous objects and two non-luminous objects. State whether moon is a luminous object or a non-luminous object.

Answer : Luminous Objects : An object which gives out its own light is called luminous object.

For example : Sun, burning candle, lighted electric bulb, firefly (jugnu), etc.

Non-luminous Objects : An object which does not give out its own light is called a non-luminous object.

For example : Table, chair, book, flower-pot, plants, trees, clothes, etc.

Moon is a non-luminous object which does not have its own light. We can see the Moon because it reflects sunlight into our eyes.

2. What is meant by (a) transparent materials, (b) translucent materials, and (c) opaque materials? Give two examples each of transparent, translucent and opaque materials.

Answer : Transparent materials : Those materials which allow all the light to pass through them are called transparent materials.

For example : The materials like glass, polythene, air, water and groundnut oil are transparent materials.

Translucent materials : Those materials which allow only some of the light to pass through them are called translucent materials.

For example : The materials like ground-glass (frosted glass), butter paper (tracing paper), tissue paper, oiled paper, muddy water, etc are translucent materials.

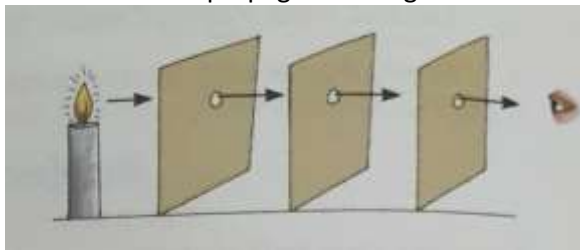
Opaque materials : Those materials which do not allow any light to pass through them are called opaque materials.

For example : The materials like cardboard, book, wooden, door, metal sheet, brick wall, stone, etc. are all opaque materials.

3. Prove that light travels in a straight line with the help of an activity.

Answer : Take three cardboards of the same size. Stack them together and make a hole in each by driving a nail through all of them. Mount each cardboard upright on the table using moulding clay, plasticine or even kneaded atta (dough). Take a candle with the wick at about the same height as the hole in the upright cardboard. Mount the candle and light it. Adjust the three cardboards 1, 2 and 3 in a line. Now check if all the three holes are in a straight line. You can use a candle and thread to check this. Now you see the light through card 3 and if you move any card about 1 cm then you couldn't see the light.

This observations shows that light travels in a straight line. Hence, we cannot see the light when we move the card. This property of light is called rectilinear propagation of light.



4. What are the factors that affect the size of the image produced by a pinhole camera?

Answer : The size of the image formed by a pinhole camera depends on the distance of the object from the camera. The size of image formed by a pinhole camera can be smaller than the object, equal to the object or bigger than the object depending on the distance of the object from the pinhole camera. Farther the object from the pinhole camera, smaller will be its image.

5. What are eclipses? Write the difference between a lunar eclipse and a solar eclipse.

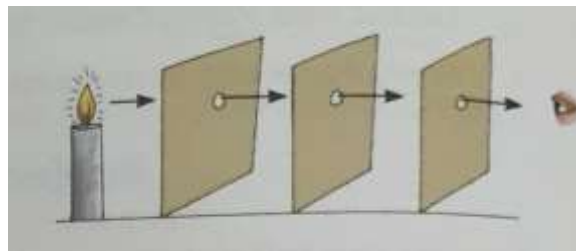
Answer : Eclipse : An astronomical event that occurs when one celestial object moves into the shadow of another.

Difference between a lunar eclipse and a solar eclipse :

Lunar Eclipse	Solar Eclipse
When the moon remains hidden as the shadow of the Earth falls on it.	When the light from the sun gets blocked by the moon, thus casting a shadow on the Earth.

Picture-Based Questions

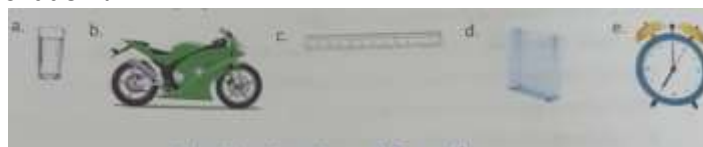
1. Jagan has made holes in three cardboards of equal size. He then mounts them on a table in such a manner that they are at the same height and in a straight line. He moves a board about 1 cm. He places a candle at the other end of the board. Can he see the candle?



Answer : Observation : (i) When the all three holes present in the cardboard are in a straight line then we can see the light coming from the candle and this shows that light travels in a straight line. This property of light is called rectilinear propagation of light.

(ii) When we move any card about 1 cm then we cannot see the light. This also shows that light travels in a straight line.

2. Which of the following objects form a shadow?



Answer : Objects (b) and (c) forms a dark shadow because these are opaque objects. Objects (a), (c) and (d) forms a light shadow because these are translucent objects.

Application-based Questions

1. Do the following activity and fill in the blanks.

A Natural Pinhole Camera

You can observe pinhole camera effect in everyday life. On a sunny day, pass under a tree covered with a very large number of leaves, you

can see bright circular patches of light on the ground (under the tree). These bright circular patches of light are the pinhole images of the sun. This is because the small holes between the clusters of leaves act as.....and light coming from the sun passes through these natural pinholes to form bright circular images of the.....on the ground below the shady tree. In this case, the sun is the....., the tiny gaps between leaves are the.....and the ground acts as the.....

Answer : pinholes, sun, object, pinholes, screen.

2. Go to a room. Switch off all the lights and pull the curtains of the window(s) and close the door(s). Can you observe any shadow?

Answer : No, we cannot observe any shadow in a dark room. Because shadows are form when an object is placed in front of a source of light, but here there is no source of light. That's why we cannot observe any shadow in a dark room.