Grade:6 Ln.No: 12-**LIGHT,SHADOWS AND REFLECTIONS** Book exercise.

A. Choose the most appropriate answer

1)Light is
(a) visible and also makes objects on which it falls visible.
(b) invisible but makes objects on which it falls visible.
(c) invisible but becomes visible when it falls on an object.
(d) sometimes visible and sometimes invisible but it always makes objects on which it falls visible.

2)The shape and size of a shadow depends on
(a) the shape and size of the object.
(b) the position of the source of light.
(c) the distance between the source of light and object.
(d) all of the above

3)Which of these is not a source of light?
(a) sun
(b) moon
(c) lighted candle
(d) stars

4)Which of these is not a property of an image formed by a plane mirror?
(a) It is of the same shape as the object.
(b) It does not show any details in the object.
(c) it is of the same colour as the object.
(d) It is of the same size as the object.

5)Which of these is true for an image?
(a) It is formed when light is blocked by an opaque object.
(b) It is formed when light passes through a transparent object.
(c) It is of the same shape and colour as the object.
(d) It is always black.

6)A shadow is formed when
(a) light from a luminous object reaches our eyes.
(b) light from a luminous object reaches our eyes after reflection.
(c) light from a luminous object is prevented from reaching our eyes by another object.
(d) light from a luminous object reaches our eyes after passing through a transparent object.

7)The image formed in a pinhole camera is always
(a) erect and of the same size as the object.
(b) erect and either smaller or bigger or of the same size as the object.
(c) inverted and of the same size as the object.
(d) inverted and either smaller or bigger or of the same size as the object.

8)A lunar eclipse occurs when the
(a) earth is between the sun and the moon.
(b) moon is between the sun and the earth.
(c) sun is between the earth and the moon.
(d) in all the above situations

B. Very short answer questions.

1)Can you name anything that can travel faster than the speed of light?

ANS: Nothing can travel faster than speed of light in vacuum/free space.

2)Are most objects around us luminous or non-luminous?

ANS: Most objects around us are non-luminous. Non-luminous objects do not emit their own light, but may shine by reflecting light falling on them.

3)Are stars luminous or non-luminous?

ANS: Stars are luminous as they emit their own light.

4)We depend on light energy for our food. True or false?

ANS: True. We depend upon light energy for food. We all depend either directly or indirectly on the food prepared by plants through photosynthesis in the presence of sunlight.

5)Can a completely transparent object cast a shadow?

ANS: No, a completely transparent object cannot cast a shadow.

6)When does a solar eclipse occur−on a new moon day or on a full moon day?

ANS: The solar eclipse occurs on a new moon day.

7)A beam of light consists of several rays. True or false?

ANS: True, a beam of light consists of several rays.

8)Light can travel through a bent tube just like water can. True or false?

ANS: False, light cannot bend along the tube like flow of water through a tube.

9)Which of these is luminous−sun, earth or moon?

ANS: Sun is luminous. While, both earth and moon are non-luminous and shine because of the sunlight falling on them.

10) If you can see the faint glow of a lighted torch through an object, but not the torch itself, is the substance opaque, translucent or transparent?

ANS: If one can see the faint glow of torch, but are unable to view the torch itself, then such an object is classified as translucent.

11) Which of these is formed by light reflected by an object−image or shadow?

ANS: An image is formed when light is reflected from an object.

12) Can a shadow be formed without a screen?

ANS: No, shadow cannot be formed without a screen.

13) Can an image be formed without a screen?

ANS: Image can be formed without a screen, as it is formed when the reflected light from an object reaches our eyes.

C. Short Answer

1) We see the sun rising $8^1/_4$ minutes after it has actually risen. Why?

ANS: The distance between earth and sun is 1485 lakh kilometres. Due to this, sunlight takes $8^1/_4$ minutes of time to reach earth. Thus, we see the sun rising $8^1/_4$ minutes after it has actually risen.

2) Name two natural sources of light and two human-made sources of light.

ANS: The two natural sources of light are sun and fireflies. Man-made light sources are the electric bulb and the candle.

3) How do we see non-luminous objects?

ANS: When light falls on a non-luminous object, it reflects light in different directions. When this light reaches our eye, we are able to see the object.

4) What is meant by 'rectilinear propagation of light'?

ANS: Light travels along a straight line, this property of light is called as rectilinear propagation of light.

5) What are 'translucent' objects? Give two examples.

ANS: Translucent objects are the ones through which light is only partially transmitted. Butter paper and thin plastic sheets are translucent objects.

6) When is a shadow formed?

ANS: A shadow is formed when the light from a source is obstructed by an opaque object.

7) Why does a solar eclipse always occur on a new moon day?

ANS: A solar eclipse occurs when the sun, the moon and the earth are in straight line, with the moon between the sun and the earth. Therefore, during the solar eclipse, the dark side of the moon faces the earth. It occurs on a new moon day.

8)When can you see an image of an object in a plane mirror?

ANS: You can see an image in a plane mirror if an object is placed in front of the plane mirror.

D.Long answer questions

1)We depend on light energy for food and fuel. Explain.

ANS: We know that green plants prepare their food using sunlight, via photosynthesis. All animals including humans rely either directly or indirectly on plants for food. Thus, we depend upon light for food.
For fuel, we use either coal or petroleum. The former is the fossilized remains of plants and trees. These plants and trees store energy in them from sunlight. In the same way, the microorganisms that have turned into oil and petroleum, depended either directly on indirectly on sunlight. Thus, we also depend upon light for fuel.

2)Describe a simple experiment to show that light travels in straight lines.

ANS: Take three cardboard pieces of similar dimension and make a hole in the centre of each. Align these three cardboard parallel to each other in such a way that all the holes are exactly along the same line. Now, take a lit candle, align it at one end and view the candle from the other end.

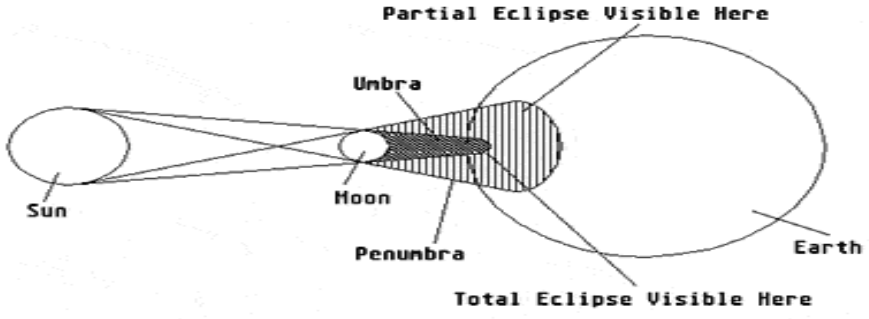
You will only be able to see the candle if the holes in the cardboard are all in a straight line. Even if one cardboard is moved to the left or right, your view of the candle will be blocked. This shows that light travels in a straight line.

3)List three properties of a shadow.

ANS: Three properties of a shadow are as follows:
(1) The shape of the shadow depends on the shape of the object and the position of the light source.
(2) The colour of the shadow is always black or grey, independent of object.
(3) Apart from shape of an object, no other detailing of the object can be viewed in the shadow.

4)Draw a diagram to show the eclipse of the sun. Mark the areas where you can see
(a) total solar eclipse.
(b) partial solar eclipse.

ANS: The following diagram shows a solar eclipse and also indicates regions of partial and total eclipse.



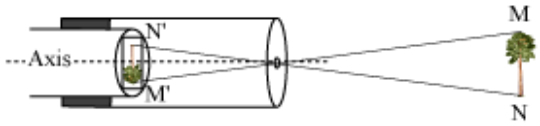
5)In what ways is an image different from a shadow?

ANS: The differences between image and shadow are:

Image	Shadow
Image has the same colour as the object.	Shadow is always black or grey, independent of object.
An image has not only the same shape as an object but also all the details similar to that of the object.	The shape of shadow is similar to that of an object, but has no other details visible.

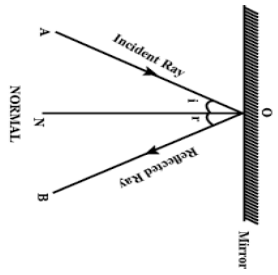
6)Draw a diagram to show the formation of the image of a distant tree by a pinhole camera.

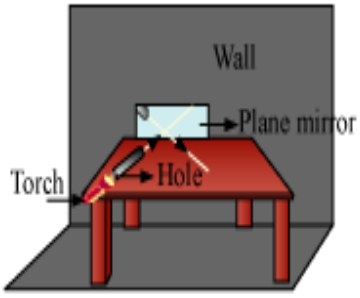
ANS:A pinhole camera showing the formation of the image of a distant tree is shown in the figure below:



7) Draw a diagram to show reflection of a ray of light by a plane mirror.

ANS: The diagram showing reflection of light from a plane mirror is shown below:





E. Hots questions

Complete the hots questions in your own words.