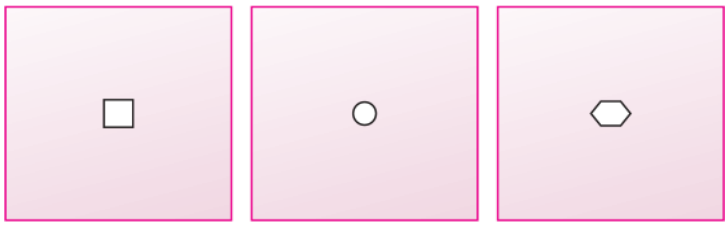
Very Short Answer Questions

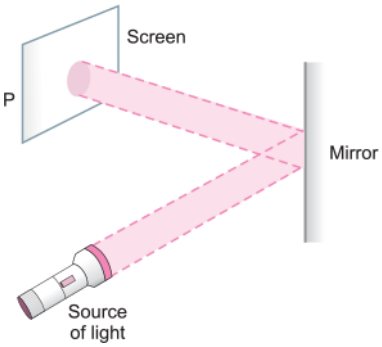
Q.1. You have 3 opaque strips with very small holes of different shapes as shown in figure. If you obtain an image of the sun on a wall through these holes, will the image formed by these holes be the same or different?



[NCERT Exemplar]

Ans. The image obtained will be the same in all the three cases.

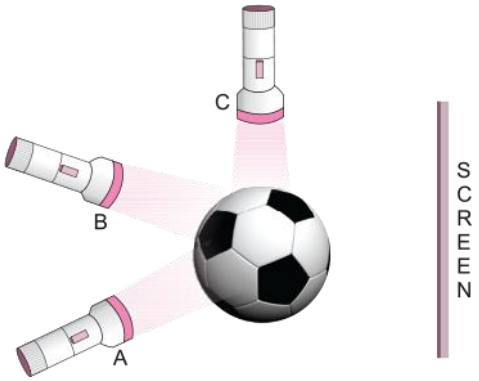
Q.2. Observe the picture given in figure. A sheet of some material is placed at position 'P', still the patch of light is obtained on the screen. What is the type of material of this sheet?



[NCERT Exemplar]

Ans. A sheet of transparent material is placed at 'P'.

Q.3. Three torches A, B and C shown in figure given below are switched on one by one. The light from which of the torches will not form a shadow of the ball on the screen?



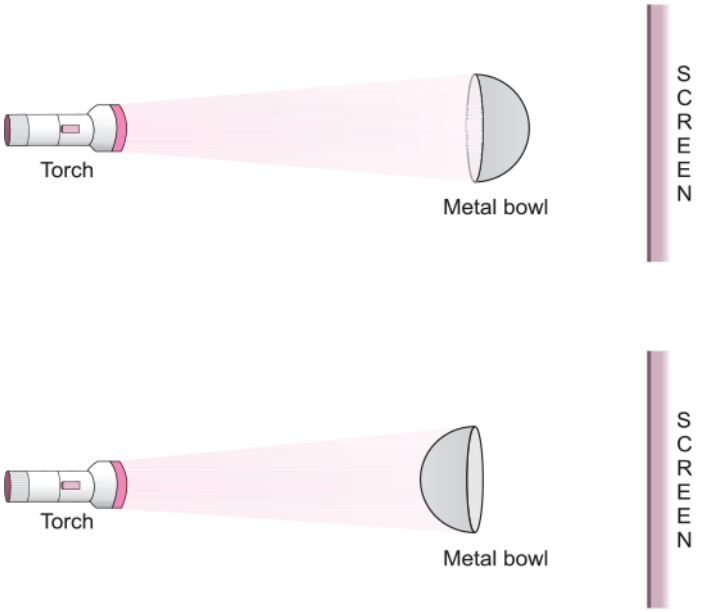
[NCERT Exemplar]

Ans. The light of torch at position C will not form a shadow of the ball on the screen.

Q.4. Define eclipse.

Ans. Eclipse is a shadow formed in space that makes the sun or the moon invisible for some time.

Q.5. Look at the figure.



Will there be any difference in the shadow formed on the screen in A and B? [NCERT Exemplar]

Ans. No

Q.6. How can a transparent sheet be converted into a translucent sheet?

Ans. By greasing the paper with oil or fat.

Q.7. What are the three things required for the formation of shadows?

Ans. Light, space and opaque object.

Q.8. Moon is a non-luminous object. How does it shine at night?

Ans. Moon reflects the light of the sun at night.

Short Answer Questions

Q.1. Correct the following statements. [*NCERT Exemplar*]

Q. The colour of the shadow of an object depends on its colour.

Ans. The colour of the shadow of an object does not depend on its colour.

Q. Transparent objects allow light to pass through them partially.

Ans. Translucent objects allow light to pass through them partially or transparent objects allow most of the light to pass through them.

Q.2. Suggest a situation where we obtain more than one shadow of an object at a time. [*NCERT Exemplar*]

Ans. We can obtain more than one shadow of an object if light from more than one source falls on it. For example, during a match being played in a stadium, multiple shadows of players are seen.

Q.3. 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?
[*NCERT Exemplar*]

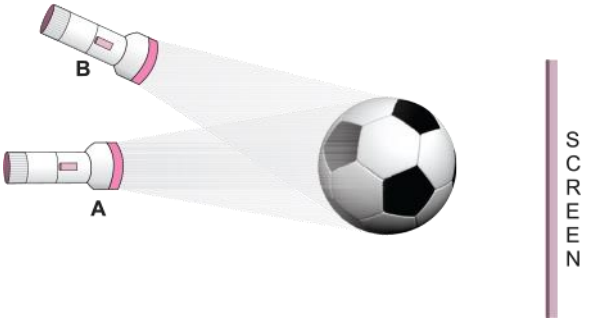
Ans. No. Shadow of the bird can only be seen when the bird is flying very low, close to the ground.

Q.4. You are given a transparent glass sheet. Suggest any two ways to make it translucent without breaking it. [*NCERT Exemplar*]

Ans.

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.

Q.5. A torch is placed at two different positions A and B, one by one, as shown in figure.



The shape of the shadow obtained in two positions is shown in figure given below.

Match the position of the torch and shape of the shadow of the ball. [*NCERT Exemplar*]

Ans. A → a, B → b

Q.6. A student covered a torch with red cellophane sheet to obtain 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. [*NCERT Exemplar*]

Ans. The colour of light will not affect the shadow, because shadow is the dark patch formed when an object obstructs the path of light and hence no light reaches in the shadow region.

Q.7. Is air around us always transparent? Discuss. [*NCERT Exemplar*]

Ans. Air around us is transparent but when thick smoke, thick clouds, etc. are present in the air it does not remain transparent.

Q.8. Three identical towels of red, blue and green colour are hanging on a clothes line in the sun. What would be the colour of shadows of these towels? [*NCERT Exemplar*]

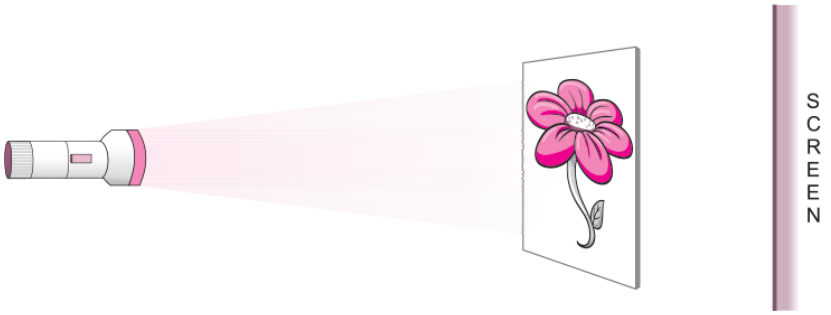
Ans. The colour of shadows of all three towels will be the same. This is because shadows are always black in colour.

Q.9. Using a pin hole camera a student observes the image of two of his friends, standing in sunlight, wearing yellow and red shirt respectively. What will be the

colours of the shirts in the image?
[*NCERT Exemplar*]

Ans. The colours of the image of the shirts will be the same as the colour of the shirt. This is because a pin hole camera has only a small aperture through which light passes and forms the image.

Q.10. In the figure given below, a flower made of thick coloured paper has been pasted on the transparent glass sheet. What will be the shape and colour of shadow seen on the screen?



[*NCERT Exemplar*]

Ans. The shadow formed will be dark or black in colour and of the shape of the flower along with the stalk.

Q.11. How is a shadow formed?

Ans. When a beam of light shines on an opaque object, some light rays are stopped and some pass by the edges. The region without light formed behind the object is called shadow.

Long Answer Questions

Q.1. A football match is being played at night in a stadium with flood lights ON. You can see the shadow of a football kept at the ground but cannot see its shadow when it is kicked high in the air. Explain.

[*NCERT Exemplar*]

Ans. We can see the shadow of football lying on the ground because the ground acts as a screen for it. However, when the football is kicked high, the ground, which is acting as a screen is away from the football, hence no shadow of the football will be formed on the ground.

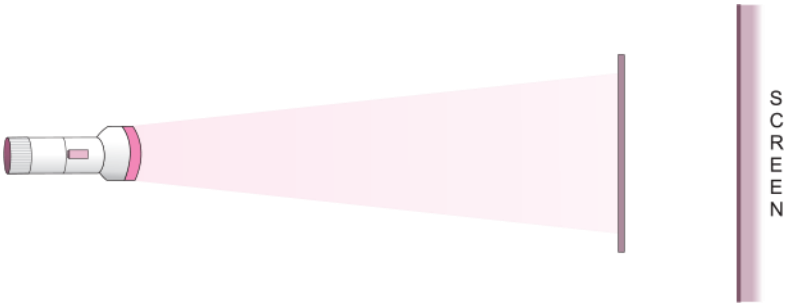
Q.2. A student had a ball, a screen and a torch in working condition. He tried to form a shadow of the ball on the screen by placing them at different positions. Sometimes the shadow was not obtained. Explain.

[*NCERT Exemplar*]

Ans. Some of the reasons can be

i. The screen is away from the ball.
ii. The beam of light from the torch is falling parallel to the screen on the ball.
iii. The torch is kept away from the ball.

Q.3. A sheet of plywood, a piece of muslin cloth and that of a transparent glass, all of the same size and shape were placed at A one by one in the arrangement shown in figure given below. Will the shadow be formed in each case? If yes, how will theshadow on the screen be different in each case? Give reasons for your answer.



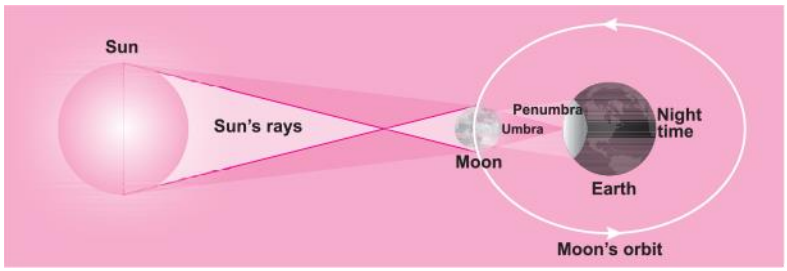
[*NCERT Exemplar*]

Ans. Shadow will not be formed in each case. Shadow will be formed by the sheet of plywood and the piece of muslin cloth. The sheet of plywood will form a dark shadow as it blocks the path of light completely. The piece of muslin cloth will form a lighter shadow as it allows light to pass through it partially.

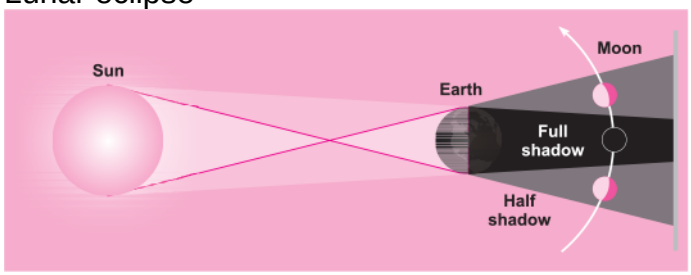
Q.4. Draw the ray diagram for solar eclipse and lunar eclipse.

Ans.

i. Solar eclipse



ii. Lunar eclipse



Q.5. Distinguish between the following.

Q. Opaque objects and Transparent objects

Ans.

S. No.	**Opaque objects**	**Transparent objects**
i. ii.	Objects which do not allow any lightto pass through them. For example, book, brick, etc.	Objects through which light can pass totally. For example, glass, air, etc.

Q. Solar eclipse and Lunar eclipse

Ans.

Solar eclipse	**Lunar eclipse**
When the moon comes in between the sunand the earth, the earth darkens during the day. This is solar eclipse.	When the earth is in between the sun andthe moon, the moon cannot be seen. Thisis lunar eclipse.

Q. Luminous body and Non-luminous body

Ans.

S. No.	**Luminous body**	**Non-luminous body**

i.	Objects which emit their own light.	Objects which do not emit their own light.
ii.	For example, sun, stars, etc.	For example, moon, earth, etc.

Q. Beam and Ray

Ans.

S. No.	Beam	Ray
i.	A group of parallel rays is called beam.	Path of light is called ray.
ii.	It is represented by many arrows.	It is represented by an arrow.

HOTS (Higher Order Thinking Skills)

Q.1. Why is the shadow of an aeroplane flying high in the sky not seen on the ground?

Ans. This is because the size of a flying aeroplane is very small with respect to the ground.

Q.2. Can you only see reflected light?

Ans. No, people can see both direct and reflectd light that means we can see things that reflects visible light and the things that produce visible light.