DAILY PRACTICE PROBLEM

Light, Shadows and Reflection DPP-01

Multiple choice questions

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

(1) Fire (2) Sun (3) Stars (4) Earth

2. When light falls on an object, then object can

(1) Absorb light (2) Reflect light (3) Transmit light (4) All of the above

3. Which of the following is a luminous object ?

(1) Plants (2) Satellites (3) Candle flame (4) Books

True or False

4. Translucent are those objects through which we can see but not clearly.

5. Objects that gives out or emit light of their own are called non-luminous objects.

Fill in the blanks

6. The objects which emit their own light are called _____.

7. Oiled paper is a _____ object.

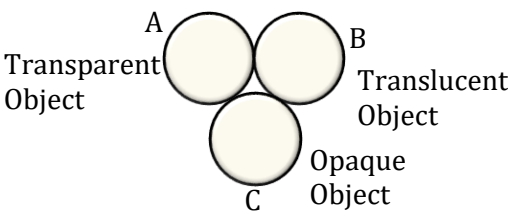
8. _____ materials do not allow any light to pass through.

9. **Match the column**

Column-I		Column-II	
(A)	Transparent	(p)	Star
(B)	Opaque	(q)	Fog
(C)	Translucent	(r)	A sheet of aluminum
(D)	Luminous body	(s)	Air

10. Put the following objects correctly in the given diagram.

Cardboard, air, tinted glass, tracing paper, plastic scale, muddy water, brick, polythene, Earth.



SOLUTIONS DPP-01

1. **Option (4)**

Earth is a non luminous body as the object which do not emit their own light but reflect the light which falls on them.

2. **Option (4)**

When light falls on an object it may be allowed to pass called as transmitted light or turned back without allowing to pass called as reflected light or used up completely called as absorb light.

3. **Option (3)**

The objects which emit their own light are called luminous objects here among all candle flame emit its own light.

4. **True**

Translucent are those objects through which we can see but not clearly.

5. **False**

Objects that gives out or emit light of their own are called luminous objects.

6. The objects which emit their own light are called **Luminous**.

7. Oiled paper is a **translucent** object.

8. **Opaque** materials do not allow any light to pass through.

9. (A) → s, (B) → r, (C) → q, (D) → p

10. (A) Transparent objects – air, plastic scale

(B) Translucent objects – tinted glass, tracing paper, polythene

(C) Opaque objects – Cardboard, muddy water, brick, Earth

DAILY PRACTICE PROBLEM

Light, Shadows and Reflection DPP-02

Multiple choice questions.

1. Propagation of light in straight line is called

(1) rectilinear propagation (2) circular propagation

(3) curvilinear Propagation (4) none of these

2. Choose the correct option for the light travel

(1) Light travel in a straight line. (2) No need of any medium to travel.

(3) Both (1) and (2) (4) None of these

3. The picture below shows Krish and the shadow he creates while standing on the playground one day.

Which of the following best explains why Krish creates a shadow?

(1) Krish changes the colour of sunlight hitting the ground.

(2) Krish reflects sunlight onto the ground.

(3) Krish bends light waves from the Sun.

(4) Krish blocks light from the Sun.

True or False

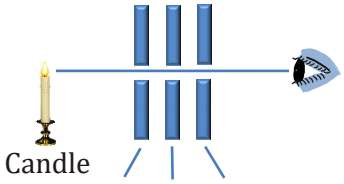
4. A red object casts a red shadow.

5. Shadows consist of matter.

6. Shadow is always formed in the perpendicular direction to the light source.

Short answer type question

7. Rahul observes a candle as shown in the figure below.



Pieces of cardboard with small holes in the middle

What inference can be made by Rahul from the given experiment.

8. What is a shadow?

Long answer type questions

9. Write down the properties of light.

10. What is an image? Write down the difference between real image and virtual image.

SOLUTIONS DPP-02

1. **Option (1)**

Light rays from any source always travel in straight lines this is called rectilinear propagation of light.

2. **Option (3)**

Both (1) and (2) are correct

3. **Option (4)**

Krish creates a shadow by blocking light from the sun.

4. **False**

Shadow is a dark area produced by an opaque object blocking the passage of light. It is only an outline of objects and does not give any detail about the object.

5. **False**

Shadow does not consist of matter i.e. no particles are present in a shadow.

6. **False**

Shadow is always formed in the direction opposite to the light source.

7. Rahul observes that light travels along a straight-line path in a medium. This phenomena also called as rectilinear propagation of light.

8. A shadow is a dark area produced by an opaque object blocking the passage of light.

9. Properties of light

(1) Light is a form of energy that travels in the form of waves.

(2) Light waves spread out in all directions as they move away from a source.

(3) Light can travel through empty space (vacuum), without needing a solid, liquid, or gas medium.

(4) Light rays from any source always travel in straight lines. This is called rectilinear propagation of light.

(5) Light travels through space at the fastest speed, about 300000 km/s or 3×10^8 m/s. The speed of light is represented in scientific formulas by the letter 'c'. In other transparent medium like water or glass, the speed of light is slightly less than the speed of light in space.

10. Image : An image of an object is formed when light rays coming from the object meet or appear to meet at a point after reflection from a mirror or refraction from a lens.

Real image	Virtual image
A real image is one formed when the light rays actually meet at a point	A virtual image is one formed when the rays do not actually meet at a point but they appear to meet at a point
It can be obtained on a screen	It cannot be obtained on the screen

DAILY PRACTICE PROBLEM

Light, Shadows and Reflection DPP-03

Multiple choice questions

1. A pin hole camera uses the principle of

(1) Light emission

(2) Bending of light

(3) Reflection of light

(4) Rectilinear propagation of light

2. Increase in the size of the hole in a pin hole camera will result in a

(1) Sharp image (2) Blurred image (3) Erect image (4) Multiple image

3. What happens when you increase the distance between the pinhole and screen in a pin hole camera?

(1) The size of image changes. (2) The brightness of the image changes.

(3) The image remains inverted. (4) All above options are correct

Fill in the blanks

4. When you increase the size of the hole in pin hole camera, the image becomes _____.

5. The size of image formed by a pinhole camera _____ with increase in distance between hole and screen.

Very short answer type questions

6. What type of image is formed in a pinhole camera ?

Short answer type questions.

7. What will happen in the following cases :

(i) If you make the hole larger in a pin hole camera.

(ii) If the length of pin hole camera is made larger.

8. What are the characteristics of image formed by pin hole camera?

9. Why image formed by a pin hole camera is inverted ?

10. What happens when you decrease the distance between the pin hole and the screen in a pin hole camera?

SOLUTIONS DPP-04

1. **Option (4)**

A pin hole camera uses the principle of rectilinear propagation of light.

2. **Option (2)**

With a bigger pinhole the image will becomes brighter but it will be blurred.

3. **Option (4)**

If the distance between the pin hole and screen is increased, the image size will increase and image however will get less bright and also image remain inverted.

4 When you increase the size of the hole in pin hole camera, the image becomes **blurred**.

5. The size of image formed by a pinhole camera **increases** with increase in distance between hole and screen.

6. The image formed in a pinhole camera is real, inverted and small.

7. (i) When the size of the hole in a pinhole camera is made bigger, then the sharpness of the image obtained decreases.

(ii) When the length of pin hole camera is made larger then the image formed will be large.

8. Image formed by pinhole camera is real and inverted. The size of the image may be enlarged or diminished.

9. The image formed by a pin hole camera is inverted due to rectilinear propagation of light as light travels in a straight line. The light rays coming from the top and bottom of the object intersect at the pinhole.

This causes the inversion of the image.

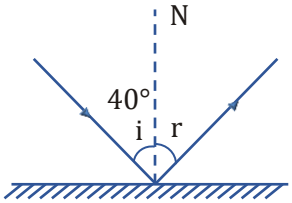
10. When the distance between the pinhole and screen is reduced, the size of the image will decrease and the image will become bright.

DAILY PRACTICE PROBLEM

Light, Shadows and Reflection DPP-04

Multiple choice questions

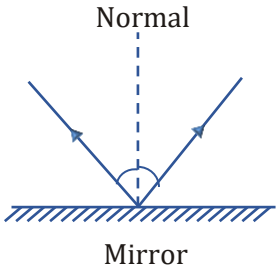
1. In the following figure, find the angle of reflection 'r'.



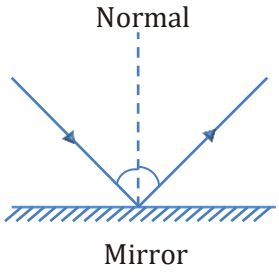
(1) 30° (2) 40° (3) 90° (4) 80°

2. Which figure is correct among the following ?

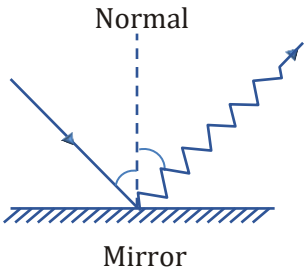
(1)



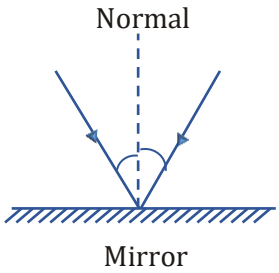
(2)



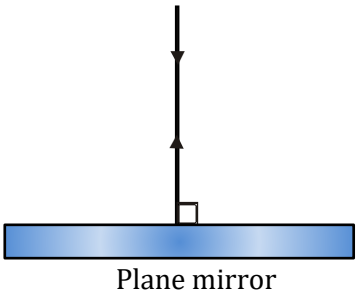
(3)



(4)



3. In the given fig. $\angle i$ and $\angle r$ will be



(1) $\angle i = 90°, \angle r = 90°$ (2) $\angle i = 0°, \angle r = 0°$

(3) $\angle i = 0°, \angle r = 90°$ (4) $\angle i = 90°, \angle r = 0°$

4. The imaginary line which is perpendicular to the surface of mirror is known as _____.

(1) reflected ray (2) normal

(3) absorbed ray (4) incident ray

Fill in the blanks.

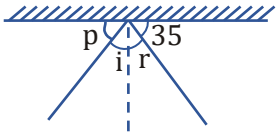
5. The point at which the incident ray falls on the mirror is called point of _____.

6. Left right inversion is also called _____.

Short answer type questions

7. If ∠i = 30°, then find the angle of reflection.

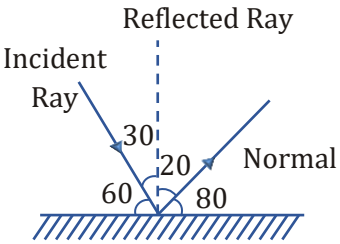
8. Calculate angle i and angle r in the given figure.



9. What happens to a light ray that is incident on a plane mirror normally?

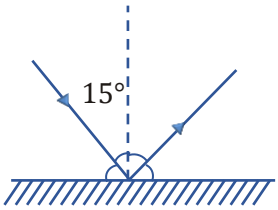
10. What will be the angle between surface of mirror and reflected ray when the angle of incidence is equal to 70°.

11.

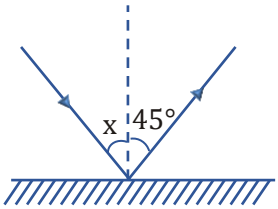


There are 3 wrong things in above figure. Identify and correct them.

12. If ∠i = 15°, then find the angle of reflection.



13. What is the value of x in the following figure?



14. If the angle between the mirror and incident ray is 15° the angle of reflection is 15° 45° 55° 75°.

15. State the laws of reflection.

SOLUTIONS DPP-04

1. **Option (2)**

According to law of reflection $\angle i = \angle r = 40°$

2. **Option (2)**

Incident ray is incoming ray and reflected ray is outgoing ray and angle between surface and incident ray is equal to angle between surface and reflected ray.

3 **Option (2)**

$\angle i = 0°$, $\angle r = 0°$

4. **Option (2)**

Normal is a imaginary line which is perpendicular to the surface of **mirror**.

5. The point at which the incident ray falls on the mirror is called point of **incidence**.

6. Left right inversion is also called **lateral inversion**.

7. The angle between an incoming light ray and a surface is equal to the angle between the reflected light ray and the same surface $\angle i = \angle r = 30°$.

8. $P = 35°$

$90° - \angle i = 35°$

So, $\angle i = 55°$ and $\angle r = 55°$

9. After getting incident on a plane mirror normally, light ray get reflected back making 0° with the normal.

10. If angle of incidence is 70° then angle between surface and incident ray is 20° which is equal to the angle between the surface of mirror and the reflected ray.

11. Three wrong things in the given figure are as follows

1. $\angle i = \angle r$ so, reflected angle will be 30°

2. Normal is perpendicular to the surface of plane mirror which is kept wrong

3. Reflected ray placed wrong

12. According to the laws of reflection

$\angle i = \angle r$,

$\angle r = 15°$

13. $\angle i = \angle r$,

$\angle r = 45°$

$x = 45°$

14. Here, $\angle i = 90° - 15° = 75°$

So, according the laws of reflection $\angle i = \angle r$

$\angle 75° = \angle r$

15. Laws of reflection

1. The incident ray, the reflected ray and the normal at the point of incidence all lie in the same plane.

2. The angle of incidence is equal to the angle of reflection.

$\angle i = \angle r$

$\angle i$ = angle of incidence

$\angle r$ = angle of reflection

DAILY PRACTICE PROBLEM

Light, Shadows and Reflection DPP-05

Multiple choice questions

1. The image formed by a plane mirror is formed

(1) on the surface of the mirror

(2) just in front of the mirror.

(3) just behind the mirror.

(4) as much behind the mirror as the object is in front of the mirror

2. Image formed by plane mirror is always _____.

(1) Virtual and erect

(2) Real and inverted

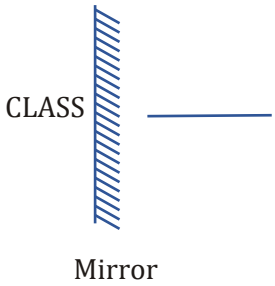
(3) Real and erect

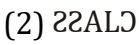
(4) Virtual and inverted

3. Which of the following is the correct image of English alphabet B when seen through a plane mirror ?

(1)  (2) B (3) (4)

4. The mirror image of CLASS will be



(1)  (2)  (3) (4)

Fill in the blanks

5. Mirror those are curved out are called _____ mirror.

6. The position of the image depends on the position of the _____ from the mirror.

True or False

7. Mirrors always have flat surfaces.

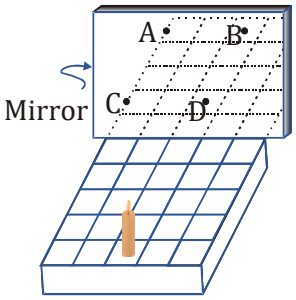
8. A plane mirror is also used in multiple reflection.

9. The distance of object from mirror is always less than the distance of the image from the mirror.

Short answer type questions

10. Draw yourself the image of the man and mark the distance at which the image will be formed.

11. Mark the position where the image of the candle would appeared.



12. What will be the mirror image (formed by a plane mirror) of 'WHAT'?

13. The distance between the object and the image formed by a plane mirror is 30 cm. What is the distance between the image and plane mirror?

14. What is inversion in plane mirrors?

15. Write the properties of image formed by a plane mirror.

Solutions DPP-05

1. **Option (4)**

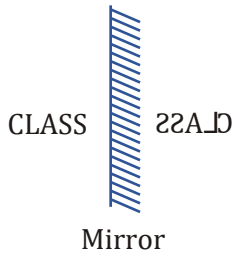
The image formed by a plane mirror is formed as much behind the mirror as the object is in front of the mirror.

2. **Option (1)**

Image formed by plane mirror is always Virtual and erect

3. **Option (1)**

4. **Option (1)**



5. Mirror those are curved out are called **convex** mirror.

6. The position of the image depends on the position of the **object** from the mirror.

7. **False**

Mirrors always don't have flat surfaces. Example : Curved mirror.

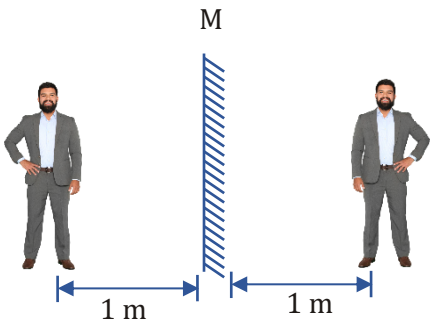
8. **True**

A plane mirror is also used in multiple reflection. Example : Periscope, Kaleidoscope.

9. **False**

The distance of object from mirror is always equal to distance of image from the mirror.

10.



11. Reflection of candle will be equidistant from the distance between object and the mirror. So the image will be formed at point B.

12.

WHAT  TAHW

13 Distance between the object from mirror is equal to the distance of image from the mirror. So distance of image from the mirror is

$2x = 30$ m

$x = 15$ m

14 The images you see in a plane mirror look almost as if they exist on the other side of a window, with one important exception. The image that appears in the mirror is 'reversed'. When an object is placed in front of a plane mirror, the right side of the object appears to be the left side of the image and the left side of the object appears to be the right side of its image. This change of sides of an object seen in the image is called 'left-right inversion' or 'lateral inversion'.

15. The properties of the image formed by a plane mirror are,

(1) The image is virtual and erect.

(2) The distance of image from mirror is equal to distance of object from mirror.

(3) The size of image is exactly equal to the size of object.

(4) The image is laterally inverted

DAILY PRACTICE PROBLEM

Light, Shadows and Reflection DPP-06

Multiple choice questions.

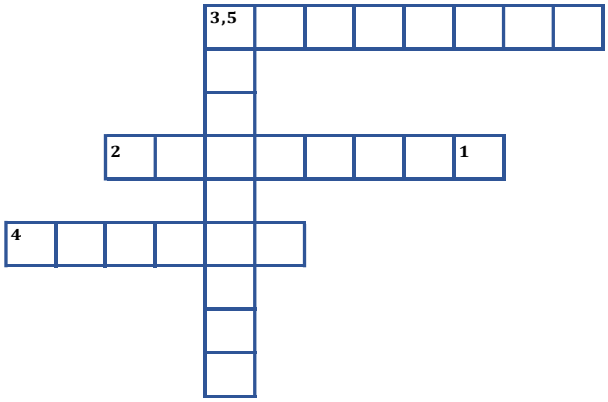
1. The angle between the two mirrors in a periscope is always _____ degrees.
(1) 45 (2) 60 (3) 0 (4) 30

2. Periscope is used in
(1) Submarine (2) Spacecraft (3) Ship (4) none of these

3. In the manufacturing of kaleidoscope two or three mirrors positioned at an angle
(1) 90° (2) 60° (3) 120° (4) 30°

4. A periscope is an instrument of observation from a hidden position consists of a tube with mirrors at each end parallel to each other at an angle 45° of now find odd one out from options given below.
(1) It is used by military personnel
(2) It is used by dentists
(3) It is used by submarine
(4) It is used for observation in trenches and bunkers.

5. **Crossword**



Across

2. Kaleidoscope works on the principle of ___ reflection.

3. The image which appears in the mirror is ____.

4. Reflection occurs when the light rays ___ back of a surface.

Down

1. The size of the image is exactly ___ to the size of the object.

5. The ray of light which is sent back by the mirror is called ___ ray.

True or False

6. Periscope works on the principle of multiple reflection.

7. kaleidoscope have a translucent screen at the back.

8. In a periscope, two mirrors are perpendicular to each other

Subjective questions

9. Describe the working of a periscope. Draw a labelled diagram of it.

10. Write down four uses of mirror a mirror.

SOLUTIONS DPP-06

1. **Option (3)**

The angle between the two mirrors in a periscope is always 0 degree as they are parallel to each other.

2. **Option (1)**

Submarine

3. **Option (2)**

Mirrors are positioned at 60° to each other and five images of the object are produced for this orientation.

4. **Option (2)**

Periscope is not used by the dentists.

5. 1. Equal

2. Multiple

3. Reversed

4. Bounce

5. Reflected

6. **True**

Periscope works on the principle of multiple reflection.

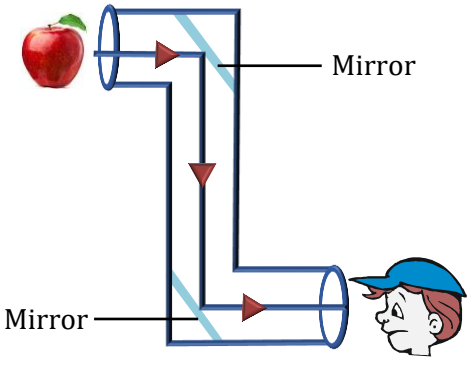
7. **True**

Kaleidoscope have a translucent screen at The back.

8. **False**

In a periscope, two mirrors are parallel to each other.

9. A periscope is an optical instrument that uses a system of prisms, lenses or mirrors to reflect images through a tube. Light from a distant object strikes the top mirror and is then reflected at an angle of 90 degrees down the periscope tube. At the bottom of the periscope, the light strikes another mirror and is then reflected into the viewer's eye. This simple periscope uses only flat mirrors as compared to the periscopes used on submarines, which are usually a complex optical system using both lenses and mirrors.



10. Uses of mirror

(1) As a dressing mirror.

(2) In the optician's room to double the effective length of the room by keeping the mirror in opposite wall of the room.

(3) In barber's shop for seeing the rear view at the back, two mirrors are fixed on the opposite wall facing each other.

(4) In periscope, kaleidoscope, used as reflector.