WORKSHEET 1

CHAPTER 4 – REFLECTION OF LIGHT

A. Tick (✓) the correct option.

1. Light is a form of energy produced by a
   a. luminous object b. transparent object c. non-luminous d. opaque object.
2. An example of non-luminous object is
   a. a candle b. the sun c. a bulb d. the moon.
3. When light is incident on a polished surface.
   a. Regular reflection b. Irregular reflection c. Diffused reflection d. Normal reflection
4. According to the laws of reflection
   a. $\angle i = \angle r$ b. $\angle i > \angle r$ c. $\angle i < \angle r$ d. $\angle i \neq \angle r$
5. The image formed by a plane mirror is always
   a. real and erect b. virtual and erect c. real and inverted d. virtual and inverted.

B. Fill in the blanks.

1. _____ has wider field of view.
2. If the focal length of a mirror is 15 cm, its radius of curvature will be _____
3. A ray of light passing through the _____ retraces its path.
4. When the object is placed at the focus of a concave mirror, the image will be formed at _____
5. The image formed by a convex mirror is always _____, _____ and _____

C. State whether the given statements are true or false.

1. The angle of incidence is equal to the angle of reflection.
2. Speed of light in vacuum is 9×10^8 m/s.
3. The image which can be obtained on a screen is called a virtual image.
4. Convex mirror has a virtual focus.
5. The image is formed at the focus when the object is at infinity from a concave mirror.

D. Match the following.

1. Mirror formula	concave mirror
2. Positive focus	plane mirror
3. Negative focus	$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$
4. Lens formula	convex mirror
5. Image of the same size as object always	$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$

Name: ..... Teacher's signature: .....

Class: ..... X ..... Date: .....

E. Answer the following questions.

Very Short Answer Questions

1. What is light?
2. Define angle of incidence.

Short Answer Questions

1. Define principal axis of a spherical mirror.
2. The radius of curvature of a spherical mirror is 40 cm, find its focal length.

Long Answer Questions

1. Find the nature of image formed when object is placed at a distance of 12 cm from concave mirror of focal length 6 cm.
2. State some uses of a concave mirror.

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

1. a 2. d 3. a 4. a 5. b

B. Fill in the blanks.

1. Convex mirror 2. 30 cm 3. centre of curvature 4. infinity 5. virtual, erect and diminished

C. State whether the given statements are true or false.

1. T 2. F 3. F 4. T 5. T

D. Match the following.

1. Mirror formula	$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$
2. Positive focus	convex mirror
3. Negative focus	concave mirror
4. Lens formula	$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$
5. Image of the same size as object always	plane mirror

E. Answer the following questions.

Very Short Answer Questions

1. Light is a form of energy that produces the sensation of sight.
2. The angle which the incident ray makes with the normal.

Short Answer Questions

1. The straight line passing through the centre of curvature and the pole of a spherical mirror is called its principal axis.
2. $f = \frac{R}{2}$

   $= \frac{40}{2}$

   = 20 cm

Long Answer Questions

1. $u = -12$ cm

   $f = -6$ cm $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$

   $\frac{1}{-6} = \frac{1}{v} + \frac{1}{-12}$

   $\frac{1}{v} = \frac{-1}{6} + \frac{1}{12}$

   $= \frac{-2+1}{12}$

   $= \frac{-1}{12}$

   $v = -12$ cm

   The image is real and inverted.

2. Concave mirrors are used in the following ways:
   - As reflectors in projectors, lighthouses, headlights and torches to obtain parallel beam of light.
   - As shaving mirrors to see enlarged, erect image of the face.
   - As doctor's head mirror.
   - In floodlights.
   - For heating purpose.