

St. Andrews Scots Sr. Sec. School

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Session: 2024 – 2025

(Answer Key)

Class: VII

Subject: Science

Chapter: Light

CHECKPOINT 1

1. Straight 2. Path 3. Incident 4. Real 5. Equal

CHECKPOINT 2

1. Reflects 2. Virtual 3. Concave 4. Convex

CHECKPOINT 3

1. (F) 2. (T) 3. (T) 4. (F) 5. (F) 6. (F)

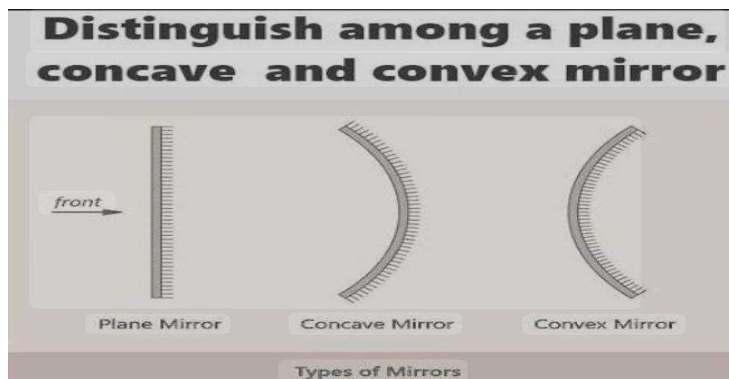
PRACTICE TIME

- A. 1. (a) 2. (c) 3. (b) 4. (c) 5. (d)

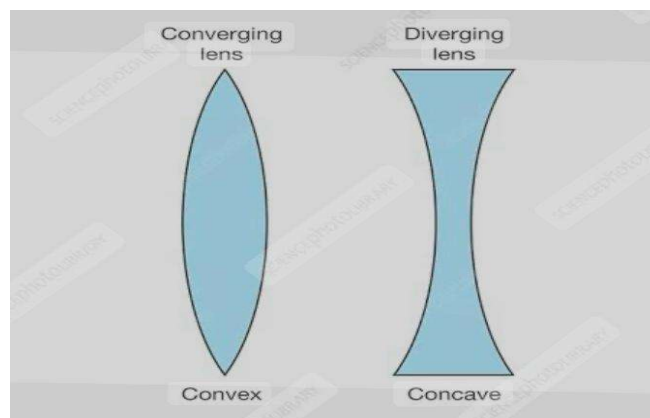
- B. 1. (c) 2. (a) 3. (b) 4. (e) 5. (d)

- C. 1. Concave mirror
2. Luminous objects such as a burning candle, a glowing bulb, sun, stars, etc.
3. Convex lens.
4. Red
5. Concave lens
6. The seven colours of white light are Violet, Indigo, Blue, Green, Yellow, Orange and Red.

- D. 1. Mirrors are smooth and polished reflective surfaces commonly made of glass. These are of two types – plane mirrors and curved or spherical mirror. Further, spherical mirrors are of two types, namely, concave mirror and convex mirror.



2. The interchanging of left and right sides of an object with its image formed by a plane mirror is called lateral inversion.
For example, When you lift your left hand in front of a plane mirror and touch your left earlobe, you see that right hand of your image lifts up and touches the right earlobe. This is an example of lateral inversion.
3. The principal focus is a point at principal axis where light rays parallel to principal axis, after reflection or refraction either pass through it (in concave mirror, convex lens) or appear to come from this point (in convex mirror, concave lens).
The distance between the pole and principal focus of a mirror is called its focal length.
4. A lens which has a bulge at the centre and is narrow towards the edges, is called a convex or converging lens. It is because it gathers the rays of light falling on it at a point.
A lens which is thin at the centre and thick towards the edges, is called a concave or diverging lens. It is because it spreads the rays of light falling on it.



5. Differences between a real image and a virtual image:

Real image	Virtual image
1. It is formed when the rays of light actually meet at a point after reflection or refraction.	1. It is formed when the rays of light appear to meet at a point but actually they do not meet after reflection or refraction.
2. It can be obtained on a screen.	2. It cannot be obtained on a screen.
3. It is always inverted. For example, image obtained on the screen in a cinema hall.	3. It is always erect. For example, image of our face viewed in a looking glass.
4. Examples: Image formed by concave mirror and convex lens.	4. Examples: Image formed by plane mirror, convex mirror and concave lens.

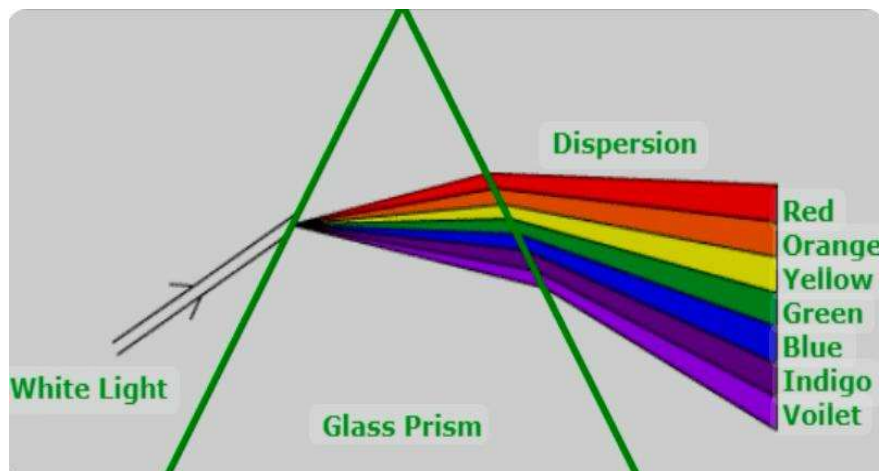
6. The splitting of light into its seven constituent colours is called dispersion of light.
7. Uses of lenses are:
 - Convex lenses are used in cameras of all types, except a pinhole camera.
 - Concave lenses are used in spectacles to help people see distant objects clearly.
 - Convex lenses are used in telescopes, microscopes, magnifying glasses and in spectacles to help people see nearby things clearly.

E. 1. To get a real image of the sun with a concave mirror, take a concave mirror, a sheet of white paper and a metallic plate. Paste the white sheet of paper on a metallic sheet using glue or a cellophane tape. This will act as a screen. Now, go in the sun and hold the concave mirror in your one hand and screen in other hand. Focus the sunlight reflected by the mirror to fall on the screen. Now, adjust the distance between mirror and screen so that you get a small bright and sharp white spot on the screen. This is the image of the sun.

2. 'White light is made of seven colours' can be shown by following activity:

Procedure: Take a prism. Place it on a table in front of a window in a room, so that sunlight falls on one of the faces of the prism. Look into the prism, adjust your eye by slightly changing its position, till you see a spread of colours in the form of a thick band of violet, indigo, blue, green, yellow, orange and red. Hold a sheet of white paper in front of the opposite face of the prism. You can see the band of these seven colours on it.

All the seven colour appear as a continuous band with no distinct separation between any two colours.



3. Concave and convex mirrors are made from glass spheres, therefore, they are called spherical mirrors. The image formed by concave mirror are real or virtual, larger, smaller or same size as that of the object, And erect or inverted. The images formed by convex mirror are always erect, diminished and virtual.

Applications of Spherical Mirrors

Concave mirrors are used as:

- Reflectors in solar furnaces to attain very high temperature.
- Reflectors in torches, headlights of vehicles, in telescopes, microscopes, etc.
- A dentist's mirror, to see an enlarged image of the tooth.
- Make-up mirrors at beauty parlours.
- Shaving mirrors by the barbers.
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Convex mirrors are used:

- For vigilance at big shops and warehouses.
- As side mirrors or rear view mirrors in vehicles.
- As distance view mirrors at the turning points of narrow staircases.

4. A concave mirror converges the light falling on it at a point, so it is called a converging mirror. To differentiate between a concave and a convex mirror without touching them, we place an object in front of them at different positions and observe the nature of image formed by them. If the image is smaller in size, the mirror is convex and if the image is larger in size then the mirror is concave.

F. 1. Convex mirror forms, virtual and erect image of smaller size than the object. It can form images of objects spread over a large area. This helps the driver to view traffic behind the vehicle. Hence, convex mirrors are used as side mirrors in vehicles.

2. A cylindrical glass container full of water acts as a magnifying glass (convex lens) and forms the images of lemons and decorative marbles kept inside it bigger in size, virtual and erect. Hence, they appear larger.

3. Concave lens of suitable power.