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Convex Lens, Definition, Details, Uses of Convex Lens, Convex Lenses in Camera (For CBSE, ICSE, IAS, NET, NRA 2022)

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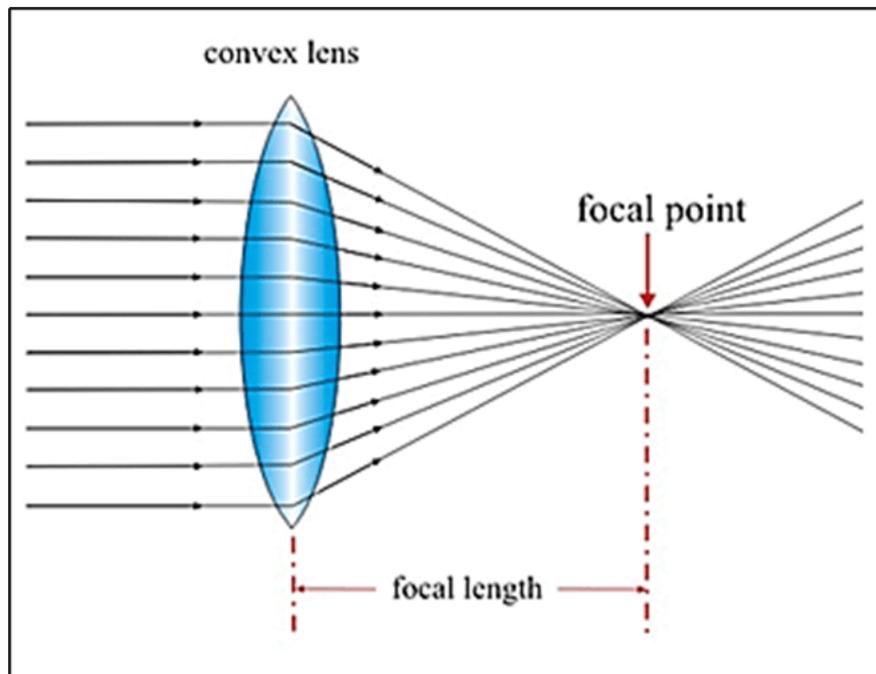
Convex Lens

Definition

- Convex lens is thicker at the centre and thinner at the edges.
- An optical lens is generally made up of two spherical surfaces.
- If those surfaces are bent outwards, the lens is called a **biconvex lens** or simply convex lens.

Details

- This type of lenses can converge a beam of light coming from outside and focus it to a point on the other side.
- This point is known as the focus and the distance between the centres of the lens to the focus is called the **focal length of convex lens**.
- If one of the surfaces is flat and the other convex, then it is called a **plano-convex lens**.
- Convex lenses are thicker at the middle. Rays of light that pass through the lens are brought closer together (they converge) .
- A convex lens is a converging lens.
- When parallel rays of light pass through a convex lens the refracted rays converge at one point called the principal focus.
- The distance between the principal focus and the centre of the lens is called the focal length.



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Uses of Convex Lens

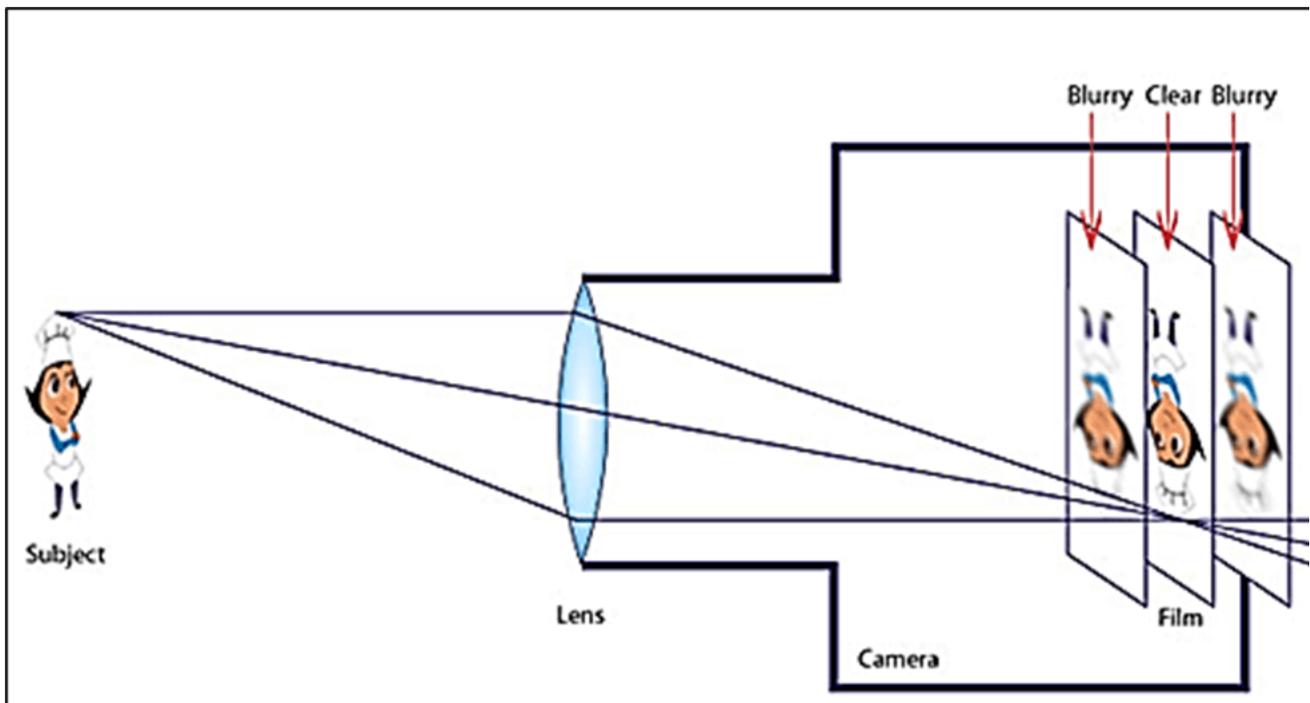
- The lens in the human eyes is the prime example. So, the most common use of the lens is that it helps us to see.
- Another common example of the use of this type of lens is a magnifying glass. When an object is placed in front of it at a distance shorter than the focal length of the lens, it produces a magnified and erect image of the object on the same side as the object itself. A magnifying glass produces an upright, magnified virtual image.
- The virtual image produced is on the same side of the lens as the object. For a magnified image to be observed the distance between the object and the lens must be shorter than the focal length of the lens.



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- It is used to correct Hypermetropia or long-sightedness.
- It is used in cameras because it focuses light and produces a clear and crisp image. A camera consists of three main parts.
 - The body which is light tight and contains all the mechanical parts.
 - The lens which is a convex (converging) lens.
 - The film or a charged couple device in the case of a digital camera.

Convex Lenses in Camera



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- More generally these are often used in compound lenses used in various instruments such as magnifying devices like microscopes, telescopes, and camera lenses.
- A simple kind of these lenses can focus light into an image, but that image won't be of a high quality.

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