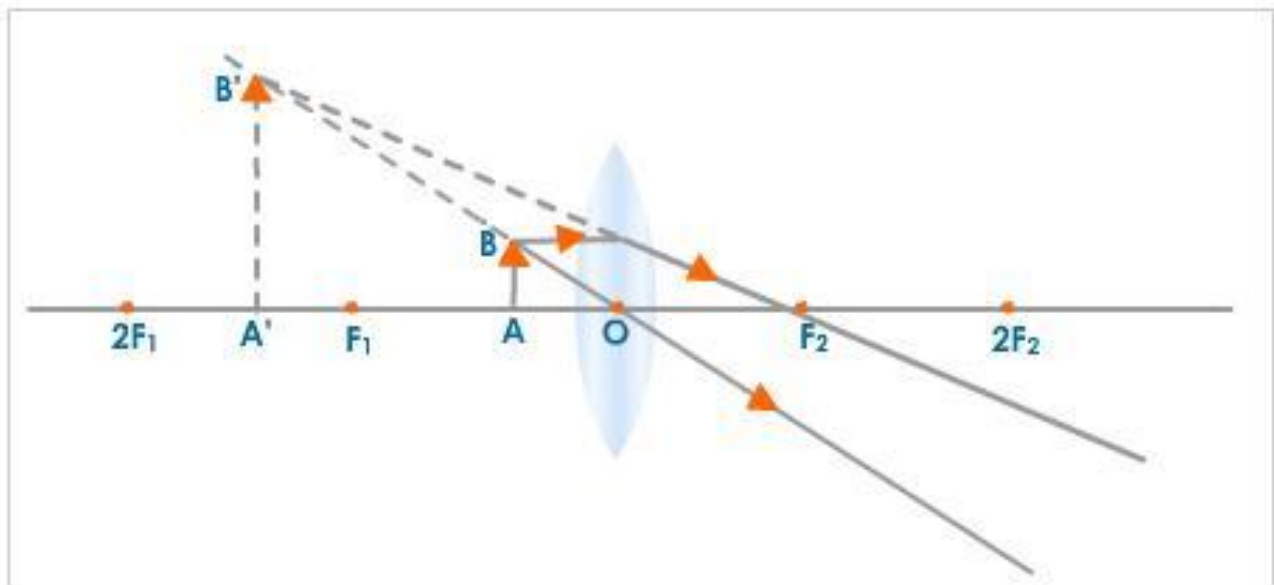


## Formation of Images by Convex Lens:

In each ray diagram position of the object is important as in each case the location of image, nature and the size of the image is depending on it.

### Ray diagram # 1:

When the object is placed between Principal 'F' principal focus and the Optical center OR with in the focal length of the convex lens:



### Image Formation:

The image is formed behind the object or the same side of the object.

### Nature of Image:

The nature of the image is virtual as It is erect.

Magnification:

The image is magnified

Ray diagram # 2:

When the Object is placed at  $2F$  in front of convex lens:

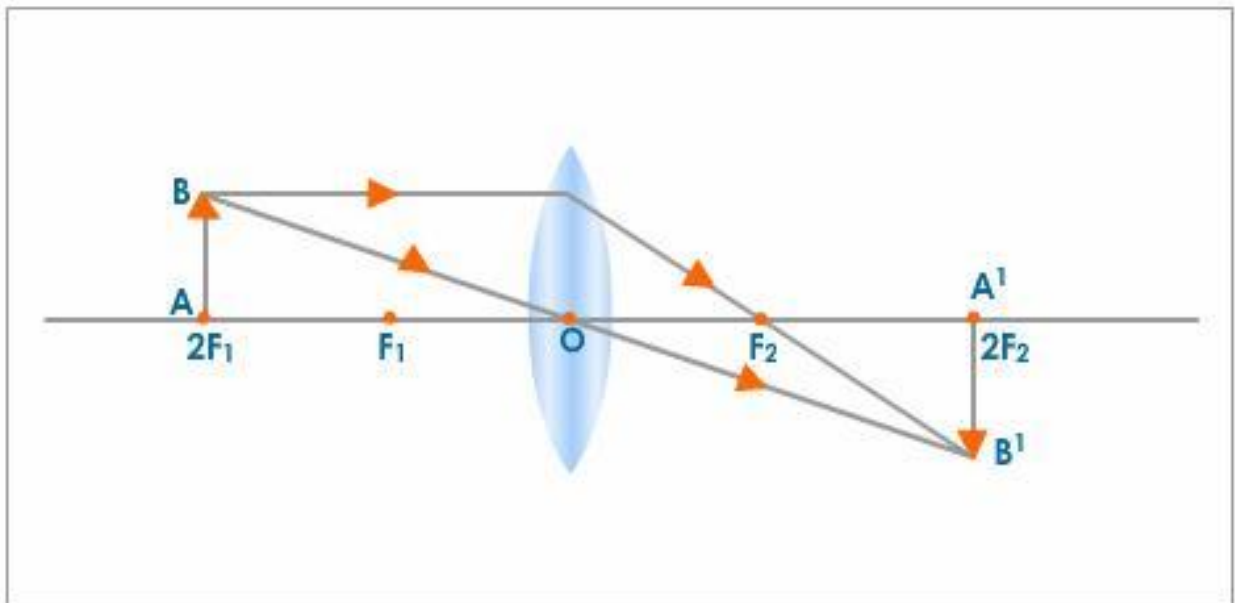


Image Formation:

The image is formed at  $2F$

Nature of Image

The nature of the image is real and inverted

Magnification:

The image is same size or equal to the size of object.

Ray diagram # 3:

When the Object is placed between F and 2F:

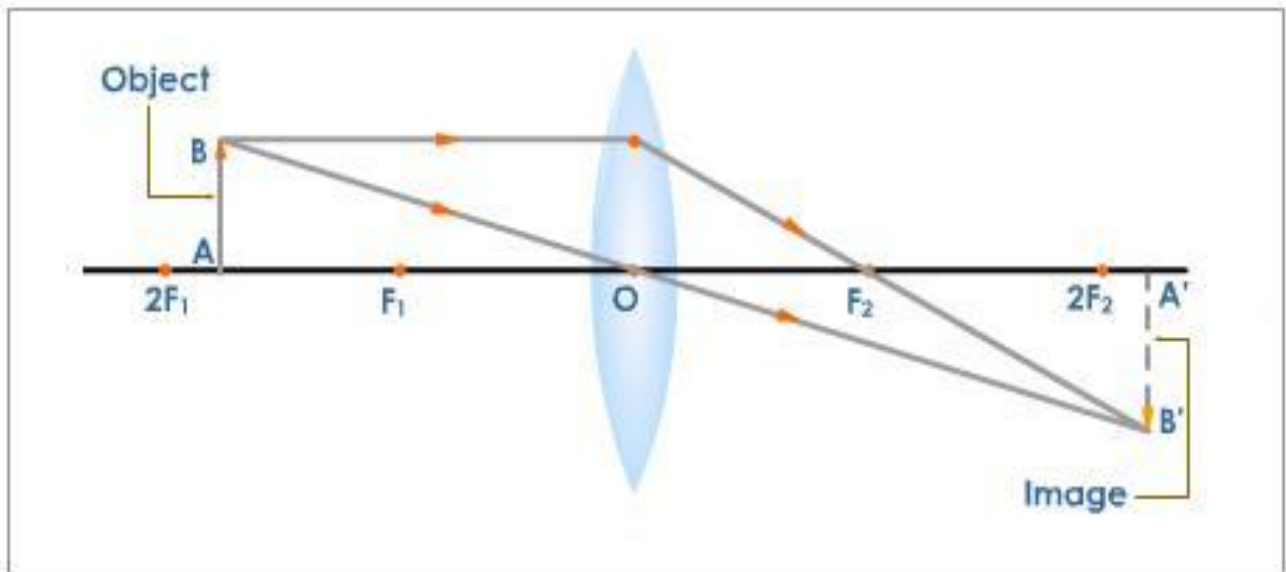


Image Formation:

The image is formed beyond 2F

Nature of Image

The image formed is Real and inverted

Magnification:

The size of the image is greater than the size of object or it is magnified

Ray diagram # 4:

When the object is placed at F or principal focus or at focal length of the convex lens

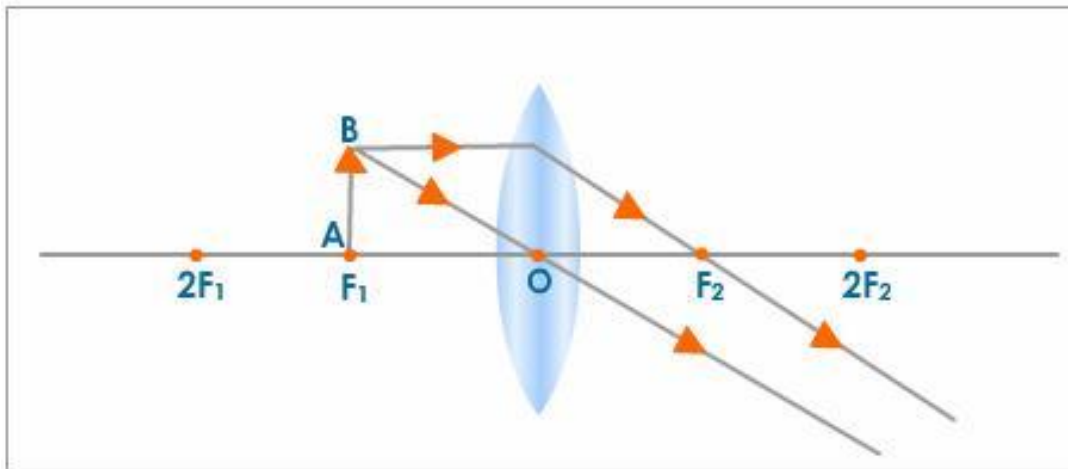


Image Formation:

The image is formed at infinity

Nature of Image

The image formed is Real and inverted

Magnification:

This image is highly magnified

Ray diagram # 5:

When the object is placed beyond 2F OR twice the focal length of convex lens:

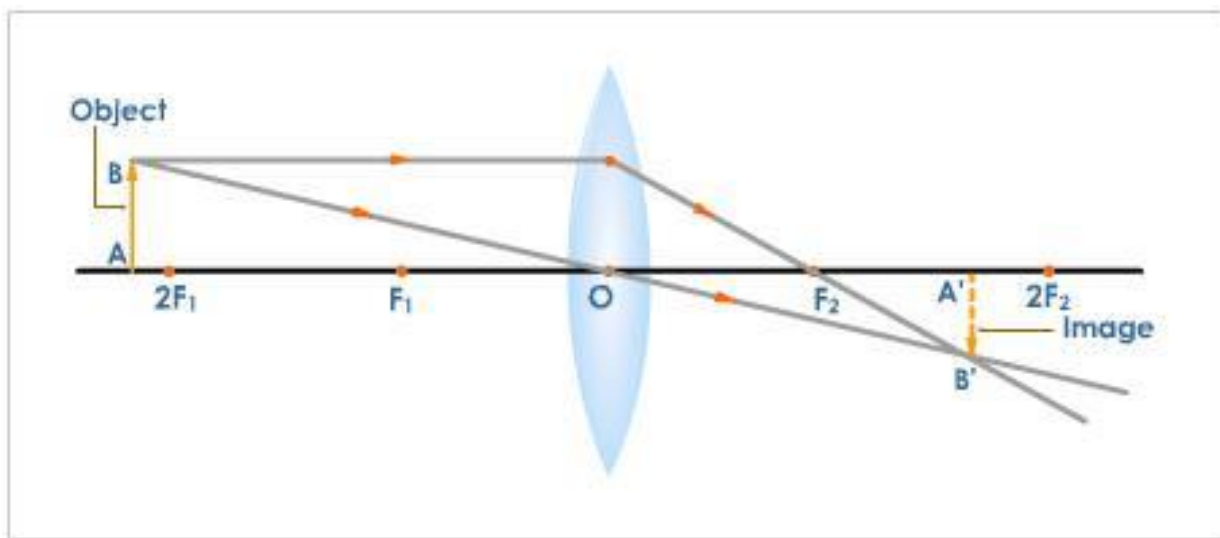


Image Formation:

The image is formed between F and 2F

Nature of Image:

This image is Real and inverted

Magnification:

The size of the image is diminished

Ray diagram # 6:

When the Object is placed at Infinity:

When the object is at infinity, the rays coming from the object after refraction from a convex lens converge to principal focus of the lens. The image is formed at the focal length of the lens.

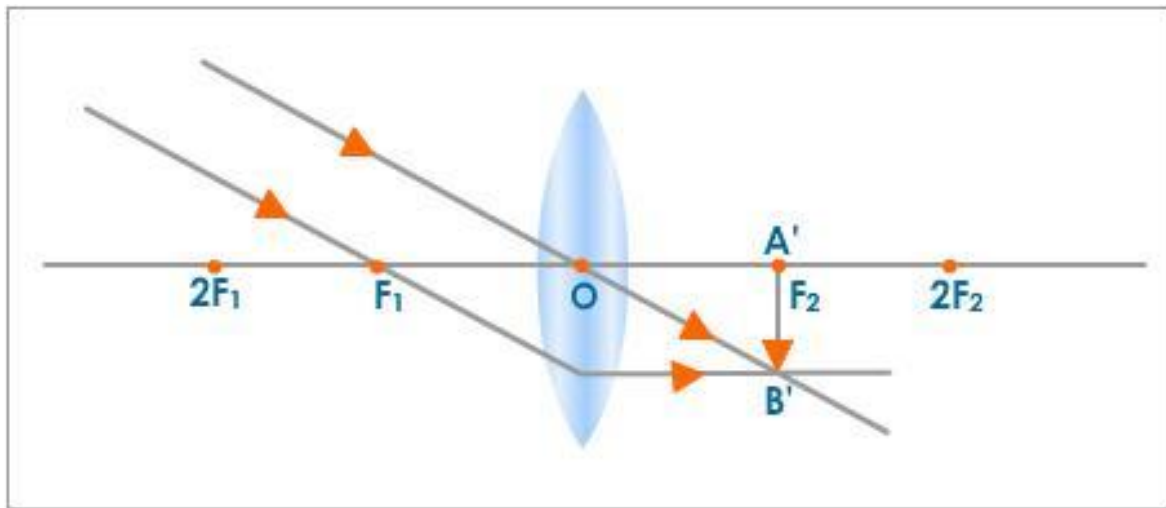


Image Formation:

The image is formed at F

Nature of Image:

This image is inverted & real

Magnification:

This image is highly diminished or smaller than the size of the object.