Class-X(Cancept Map)

SPHERICAL LENS

Position of the object	Position of the image	Size of the image	Nature of the image
At infinity	At the focus F	Highly diminished	Real and inverted
Beyond 2F	Between F and 2F	Diminished	Real and inverted
At 2F	At 2F	Same size	Real and inverted
Between F and 2F	Beyond 2F	Magnified	Real and inverted
At F	At infinity	Highly magnified	Real and inverted
Between O and F	On the side of the object	Magnified	Virtual and erect

Position of the object	Position of the image	Size of the image	Nature of the image
At infinity	At F	Highly diminished	Virtual and erect
Between O and #	Between O and F	Diminished	Virtual and erect

Power of lens

- Degree of convergence or divergence
- Measured in diopter(D)

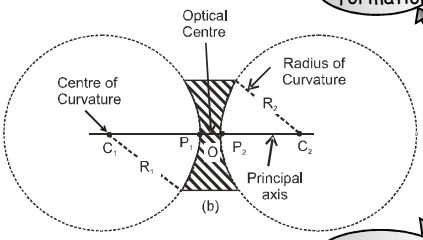
$P = \frac{1}{f}$

Sign convention

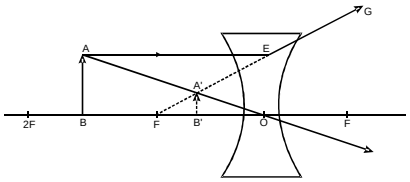
Same as mirrors

Concave lens

Image formation

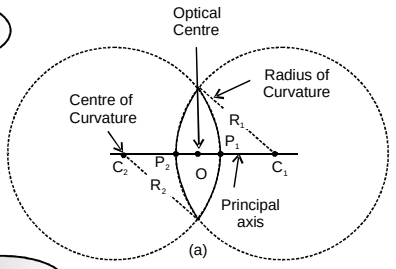


Ray diagram

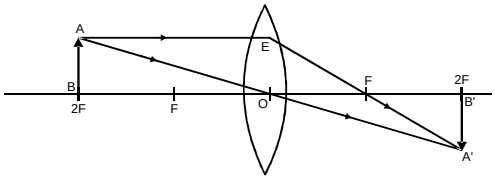


Convex lens

Image formation



Ray diagram



Lens formula

$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$

v = image distance
u = object distance
f = focal length

Magnification (m)

$m = \frac{\text{Height of image}}{\text{Height of object}} = \frac{\text{Image distance}}{\text{object distance}}$

m = positive= virtual & erect image
m = negative= real & inverted image