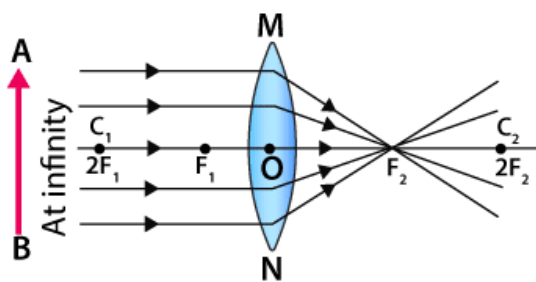


9.2 Lenses and mirrors

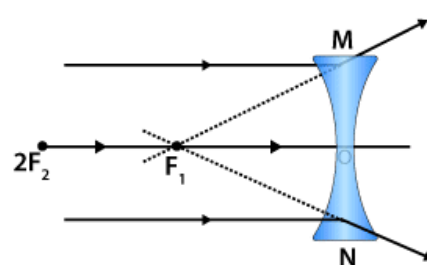
Converging and diverging lens

Converging lens/ convex lens: is the thickest in the center and bends lights inwards. Converging lenses can be used for magnifying glasses.

Diverging lens/ concave lens: is the thinnest in the center and spreads the light out. These lenses can be used for binoculars and telescopes.



Convex Lens



Concave Lens

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Principle axis: line through the optical center of a lens at right angles to the lens. The center of a lens is its optical center (c), the line through c at right angles to the lens is the principle axis.

Principle focus (focal point): point on the principle axis of a lens to which light rays parallel to the principle axis converge or appear to diverge.

Focal length: Distance between the optical center and the principal focus of a lens.

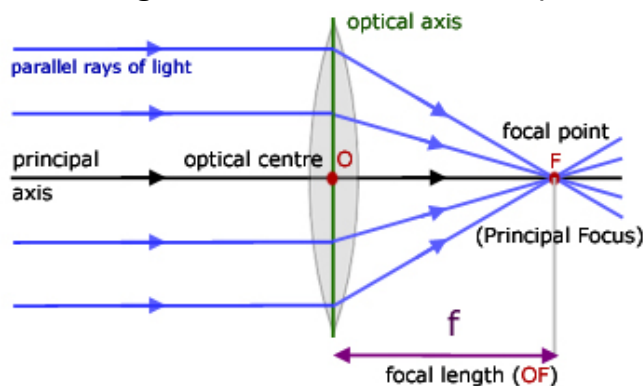


Image credit: <https://www.a-levelphysicstutor.com/>

The focal length is f .

The focal point is F .

Note: The shorter the focal length of the lens, the stronger it is. The more curved the lens faces are, the smaller its focal length and the more powerful the lens.

Power of lens

We define the power of a lens P to be:

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

Where the focal length (f) is measured in meters.