

Series N° 3 : Geometric optics

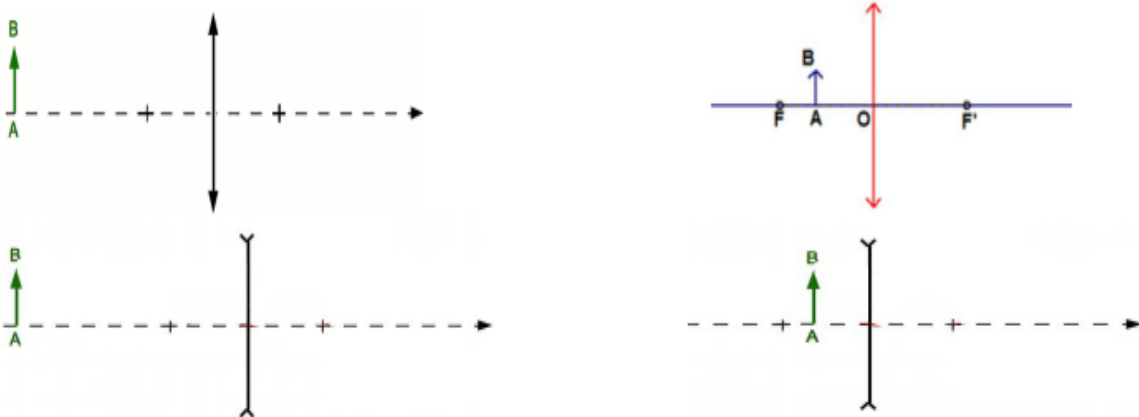
Exercise 1 : Thin lenses

Suppose a real and upright object AB with a height of 1 cm is placed 6 cm in front of a converging thin lens with a focal length of 4 cm.

- 1) What is the vergence of this lens.
- 2) Find the position, size, and nature of the image.
- 3) Verify the results with a geometric construction.

Exercise 2 : Thin lenses

Perform the following geometric constructions and provide the characteristics of the image :

**Exercise 3** : Spherical Mirror

Consider a concave spherical mirror with a radius of curvature $R=2\text{m}$.

Find the position, nature, and magnification of the image of an object graphically and by calculation.

The object is located in the following positions :

- 1) Three meters (3m) from the vertex, in front of the mirror.
- 2) One meter (1m) from the vertex, in front of the mirror.
- 3) One meter (1m) behind the mirror.