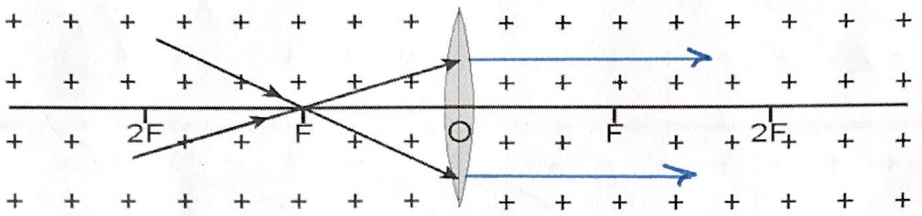
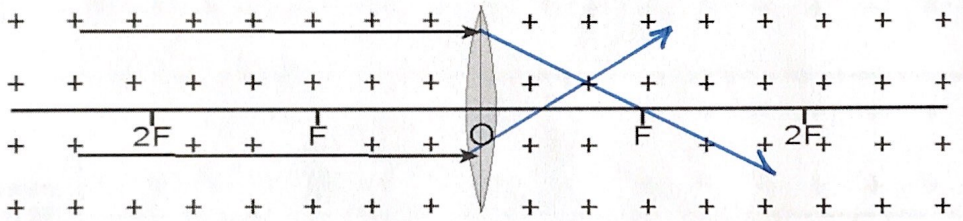
L14 Finding the Images of a Convex/Converging Lens

Complete the following:

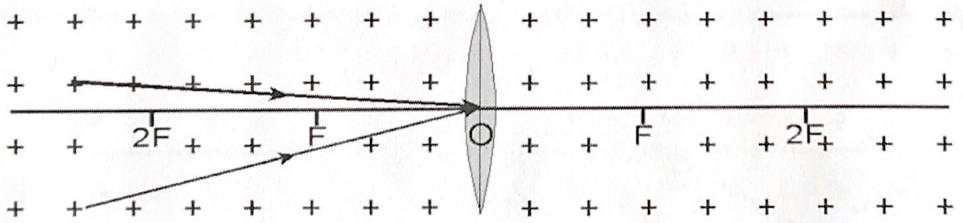
1) Any incident ray passing through the Focus will exit parallel to principle axis



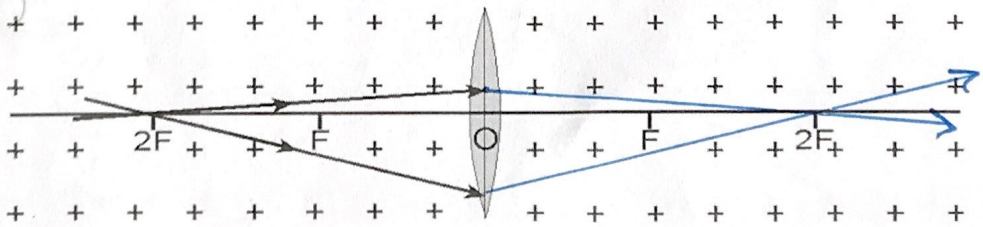
2) Any incident ray parallel to the principal axis will pass through the focus.

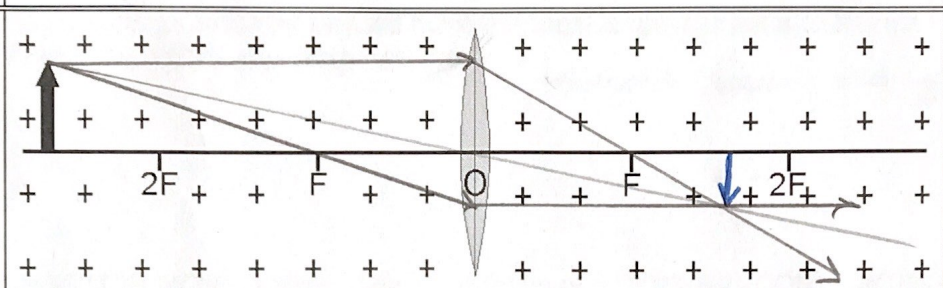
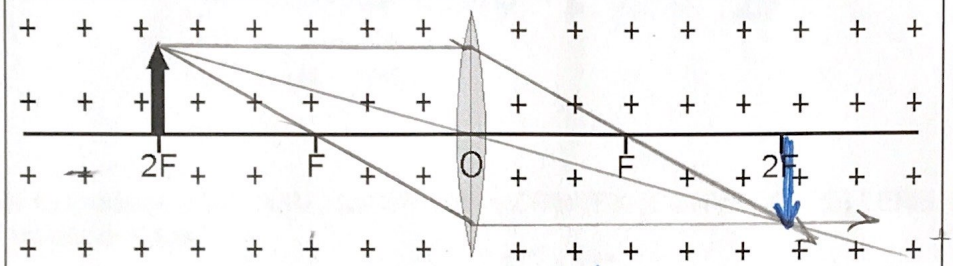
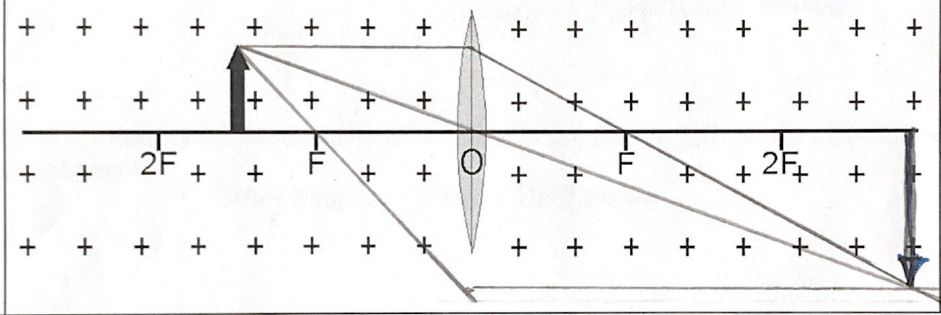
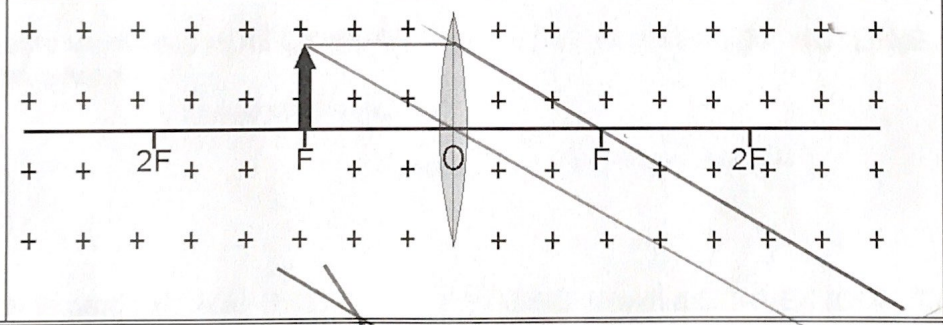
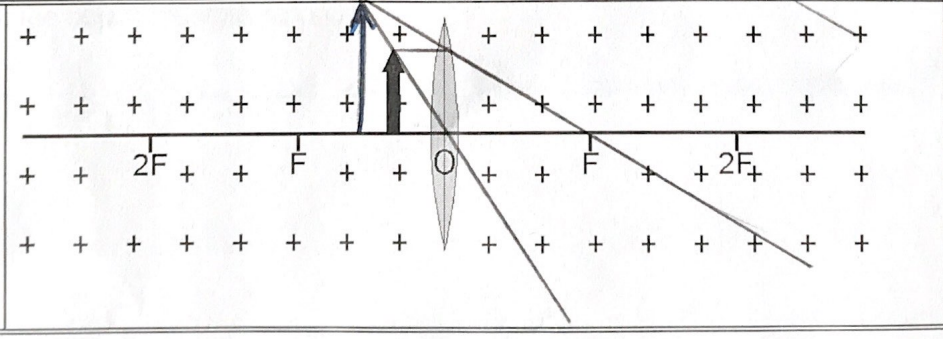


3) Any incident ray passing through the Optical Centre will travel on the same path



Any incident ray passing through 2F will pass 2F on the other side



Object Location	Images Formed by Converging Lenses Ray Diagrams	LOST
Beyond 2F		Location between F & 2F (Right) Orientation inverted Size smaller Type Real
At 2F		Location at 2F Orientation inverted Size same Type Real
Between F and 2F		Location past 2F Orientation inverted Size larger Type Real
At F		Location None Orientation None Size None Type None
Between F and O		Location between O-F (left) Orientation upright Size larger Type Virtual

4) If the OBJECT IS MOVED far beyond twice the focal length (2F) of a CONVEX (CONVERGING) LENS, the image will move

- toward focus and get smaller

5) If the OBJECT IS MOVED close toward the focus of a CONVEX (CONVERGING) LENS, the image will move

- farther away beyond 2F
- larger

6) In order to produce a VIRTUAL IMAGE with a CONVEX (CONVERGING) LENS, the object must be placed

between F & O
(focus) (optical center)

7) In order to produce a REAL IMAGE with a CONVEX (CONVERGING) LENS, the object must be placed

- beyond the focus

8) In order to produce an ERECT IMAGE with a CONVEX (CONVERGING) LENS, the object must be placed

- between F & O
(focus) (optical center)

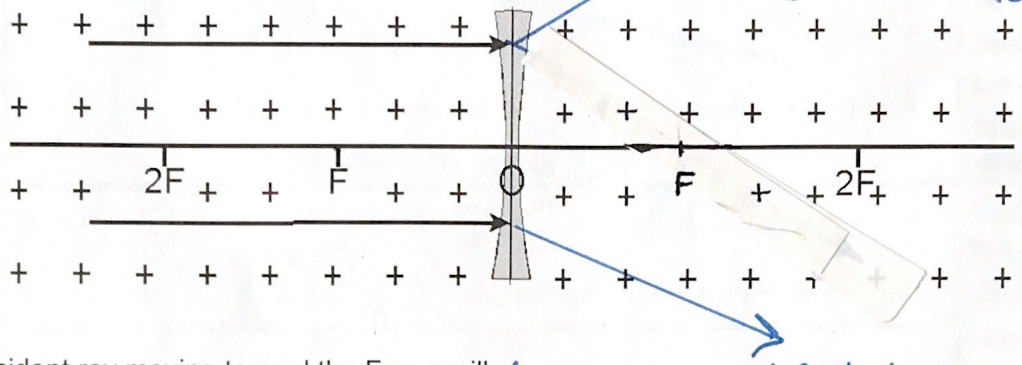
9) In order to produce the LARGEST IMAGE POSSIBLE with a CONVEX (CONVERGING) LENS, the object must be placed

- as close the focus as possible

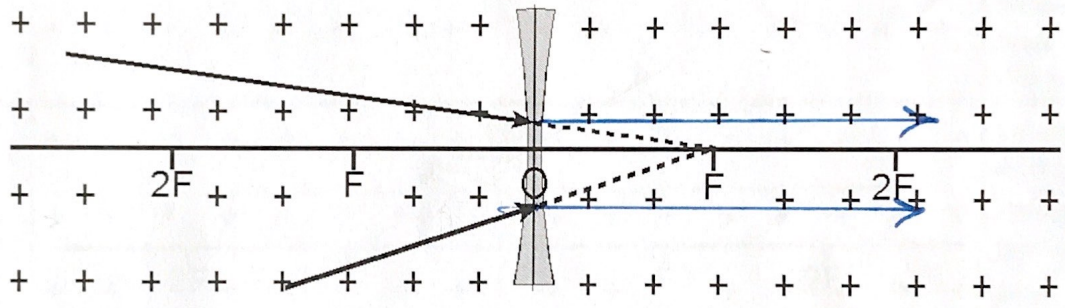
Finding the Images of a Concave/Diverging Lens
Characteristic Rays

Complete the following characteristic rays:

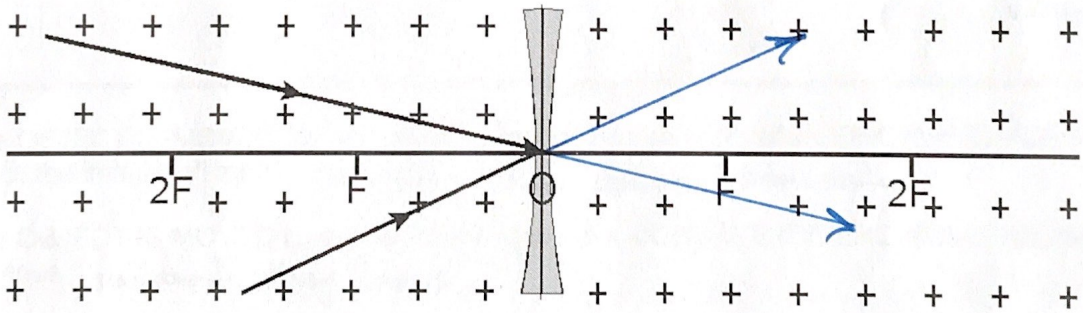
1) Any incident ray parallel to the principal axis will diverge on a path that aligns with the focus (F)

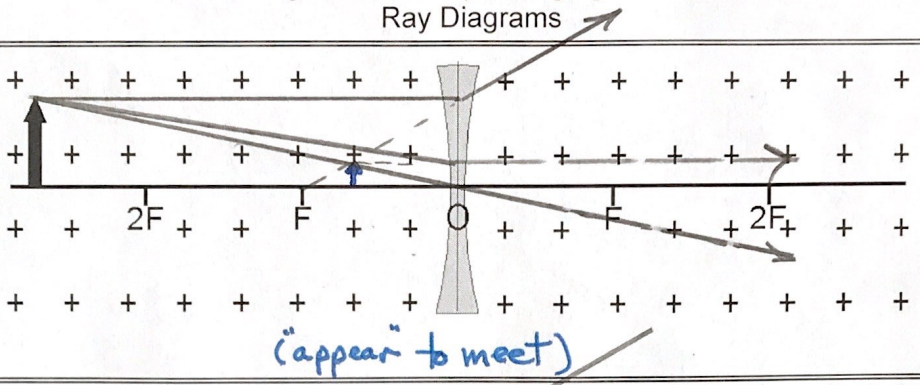
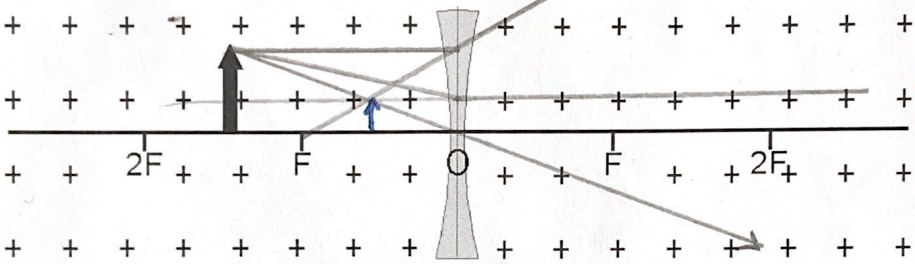
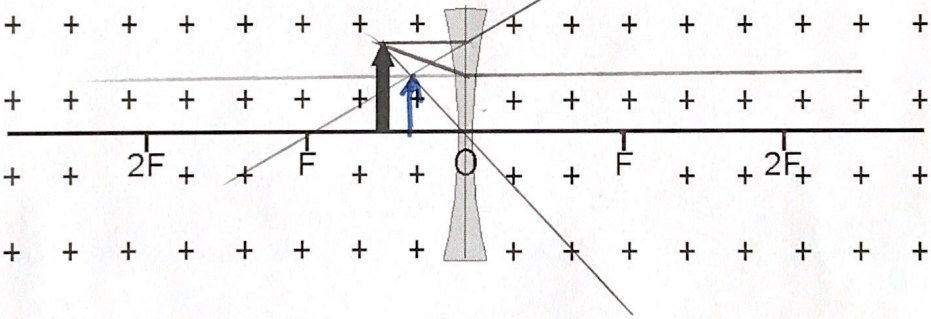


2) Any incident ray moving toward the Focus will become parallel to the principal axis.



3) Any incident ray passing through the Optical Centre will travel on the same path.



Object Location	Images Formed by Diverging Lenses Ray Diagrams	Image Location
Beyond 2F	 ("appear" to meet)	Location same side Orientation upright Size smaller Type Virtual
At 2F		Location same side Orientation upright Size smaller Type Virtual
Between F and 2F		Location same side Orientation upright Size smaller Type Virtual

4) If the OBJECT IS MOVED far beyond twice the focal length (2F) of a CONCAVE (DIVERGING) LENS, the image will move toward the focus (same side)

5) If the OBJECT IS MOVED close toward the focus of a CONCAVE (DIVERGING) LENS, the image will move toward the lens.

6) In order to produce a VIRTUAL IMAGE with a CONCAVE (DIVERGING) LENS, the object must be placed anywhere.

7) In order to produce a REAL IMAGE with a CONCAVE (DIVERGING) LENS, the object must be placed - it can't be done.

8) In order to produce the LARGEST IMAGE POSSIBLE with a CONCAVE (DIVERGING) LENS, the object must be placed close to the lens.