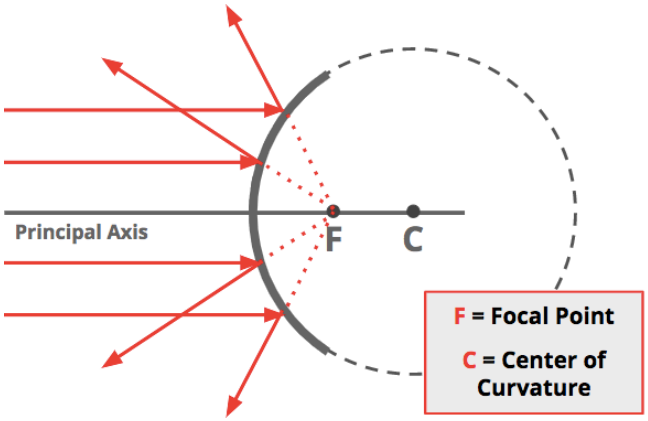
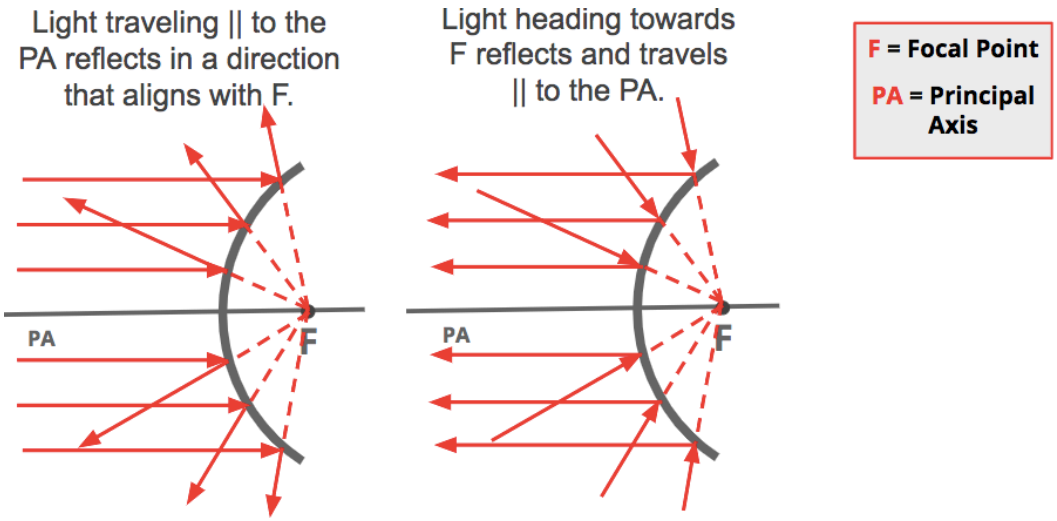
Convex Mirror Ray Diagrams
Lesson Notes

Learning Outcomes
- How do you draw a ray diagram for an object placed at varying locations in front of a convex mirror?
- How do you describe the image produced by a convex mirror?

Convex Mirror Anatomy
- The outside of a sphere is the convex side of the sphere.
- A spherical Christmas ornament serves as a convex reflecting surface.
- The center of curvature (C) and the focal point (F) are behind the convex mirror.
- Rays of incident light traveling parallel to the principal axis reflect in line with the focal point.



Two Rules of Reflection for Convex Mirrors



Constructing Ray Diagrams fir Convex Mirrors ... a Procedure
Pick a point on top of object.

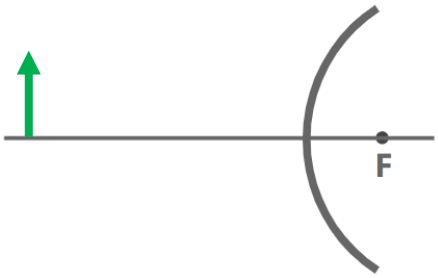
Draw two sets of incident-reflected rays:
- One ll to PA and reflecting in line with F.
- One heading towards F and reflecting ll to PA.

The image is the location where reflected rays intersect.

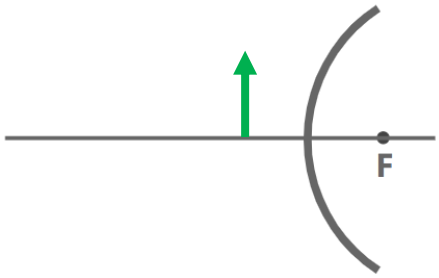
Practice

Use the procedure to draw ray diagrams for the two different object positions.

A Distant Location



A Nearby Location



LOST Art of Image Description

In both cases above, the image has the same characteristics:

Location: Behind the mirror; between mirror and F
Orientation: Upright
Size: Reduced in size (i.e., smaller than object)
Type: Virtual

Optics Bench Simulator

Find the simulator at:
https://www.physicsclassroom.com/Physics-Interactives/Reflection-and-Mirrors/Optics-Bench

Launch the interactive. Tap on the Lens button until it says Mirrors. Drag the candle (object) to the convex side of the mirror.

The general characteristics of a convex mirror image never change. As the object approaches the mirror, the image gets larger and approaches the mirror; but it remains upright, reduced, and virtual.