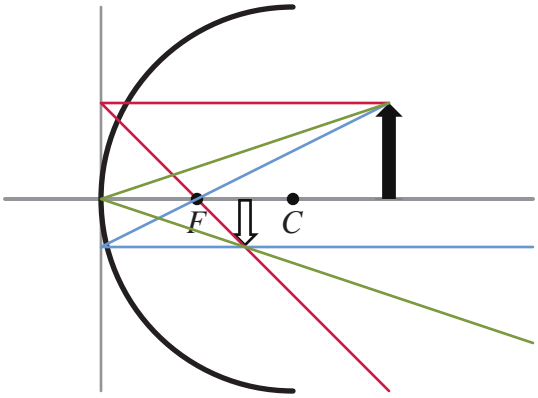
Ray Tracing Diagrams

prepared by
Arya Daroui

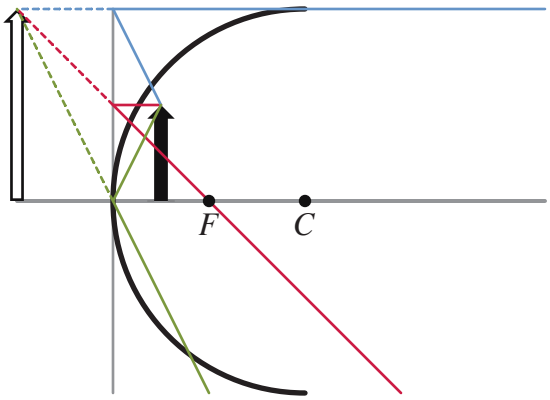
Concave (Caved-in) Mirrors

Rays extend beyond mirror for illustration; light rays reflect off of mirror in reality*.

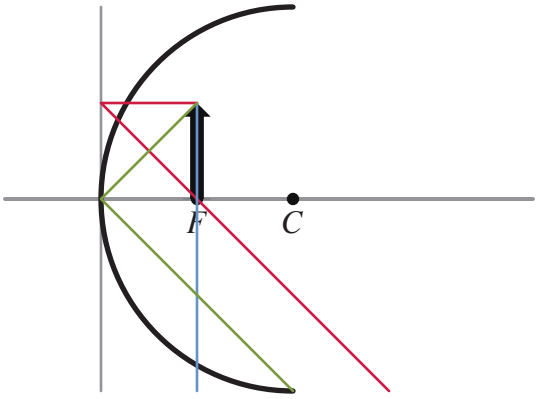
Object **outside** of focal point, $s > f$



Object **inside** of focal point, $s < f$



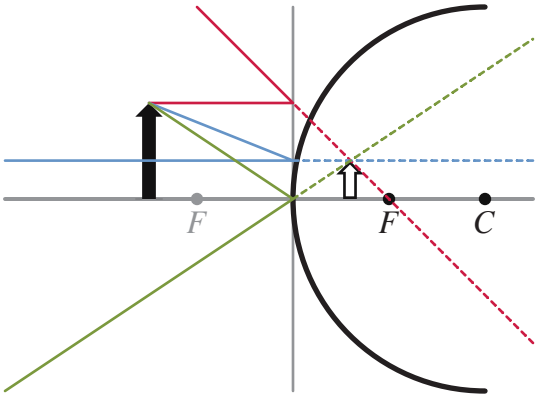
Object **at** focal point, $s = f$



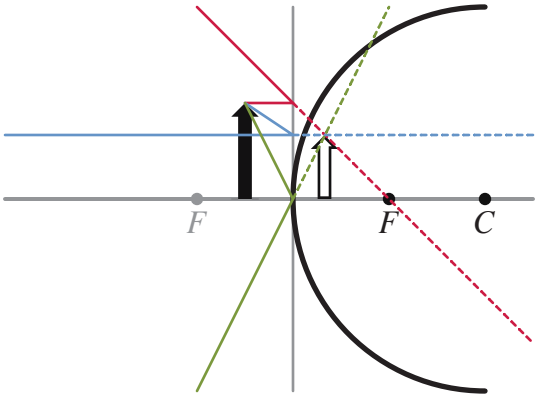
* This is because spherical mirrors do not truly collimate light from their focus as do parabolic mirrors, but we still illustrate with spherical mirrors as it is a common approximation. However, by treating the axis as a fresnel mirror, we can achieve the same collimation effect without approximation.

Convex (Flexed-out) Mirrors

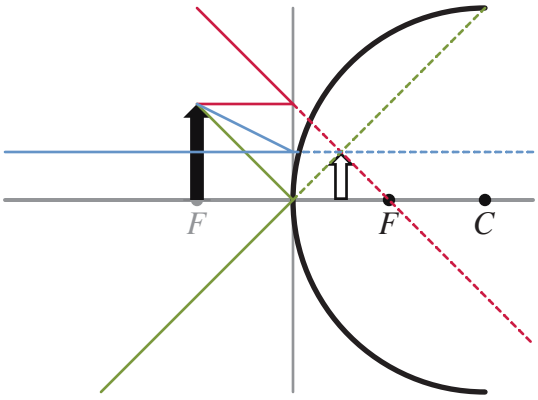
Object **outside** of focal point, $s > f$



Object **inside** of focal point, $s < f$

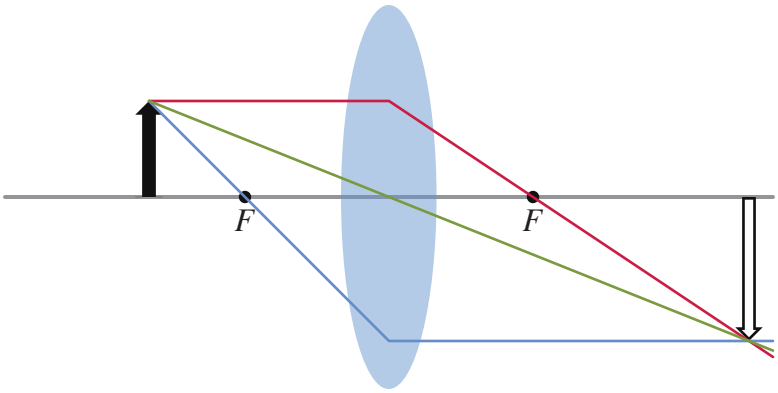


Object **at** focal point, $s = f$

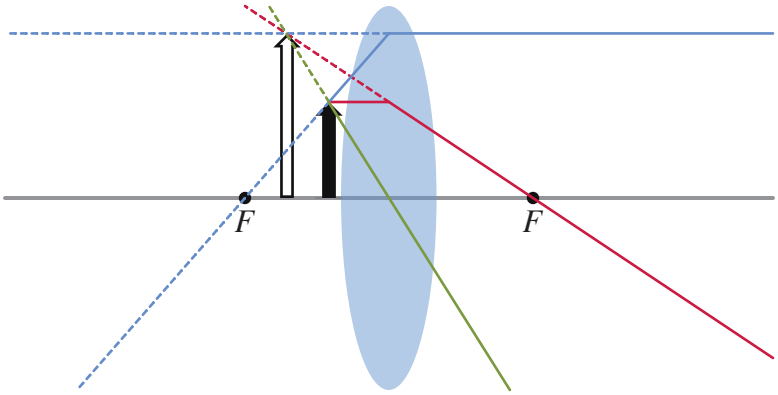


Converging (Convex) Lenses

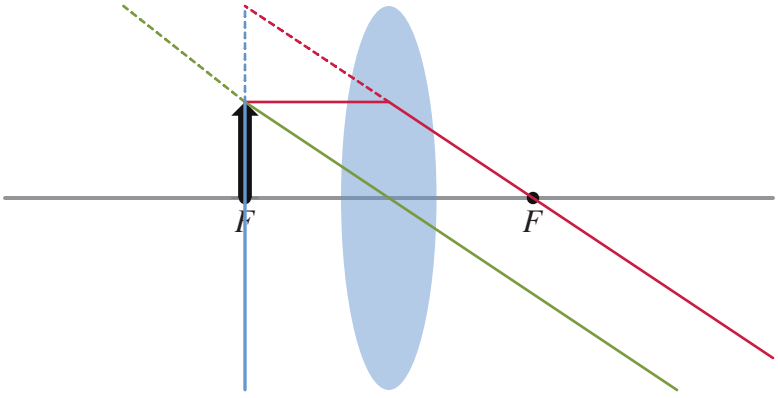
Object **outside** of focal point, $s > f$



Object **inside** of focal point, $s < f$

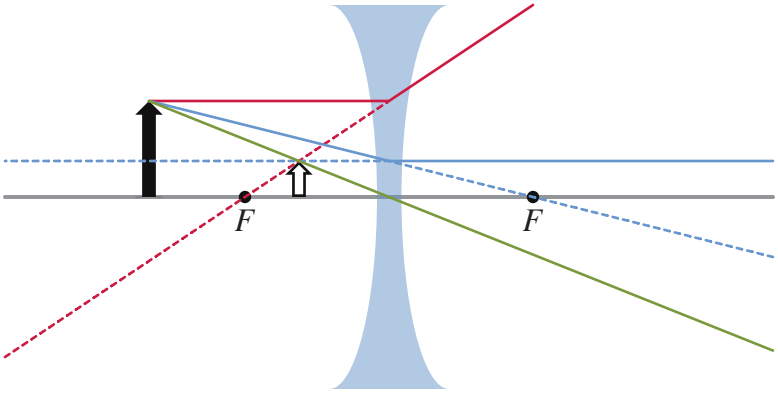


Object **at** focal point, $s = f$

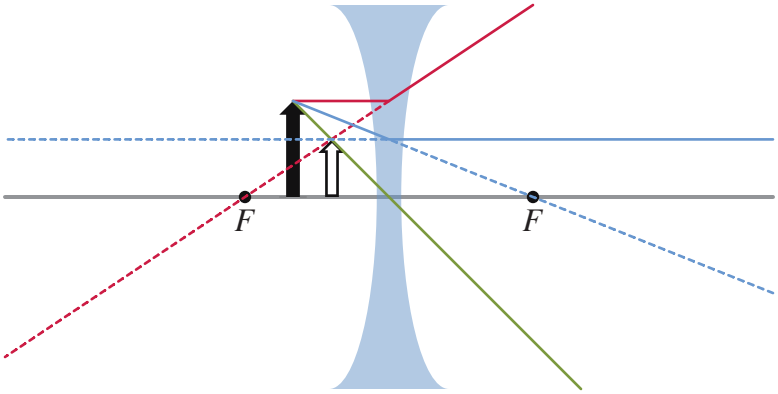


Diverging (Concave) Lenses

Object **outside** of focal point, $s > f$



Object **inside** of focal point, $s < f$



Object **at** focal point, $s = f$