# Ray Diagrams for Curved Mirrors

Goal:

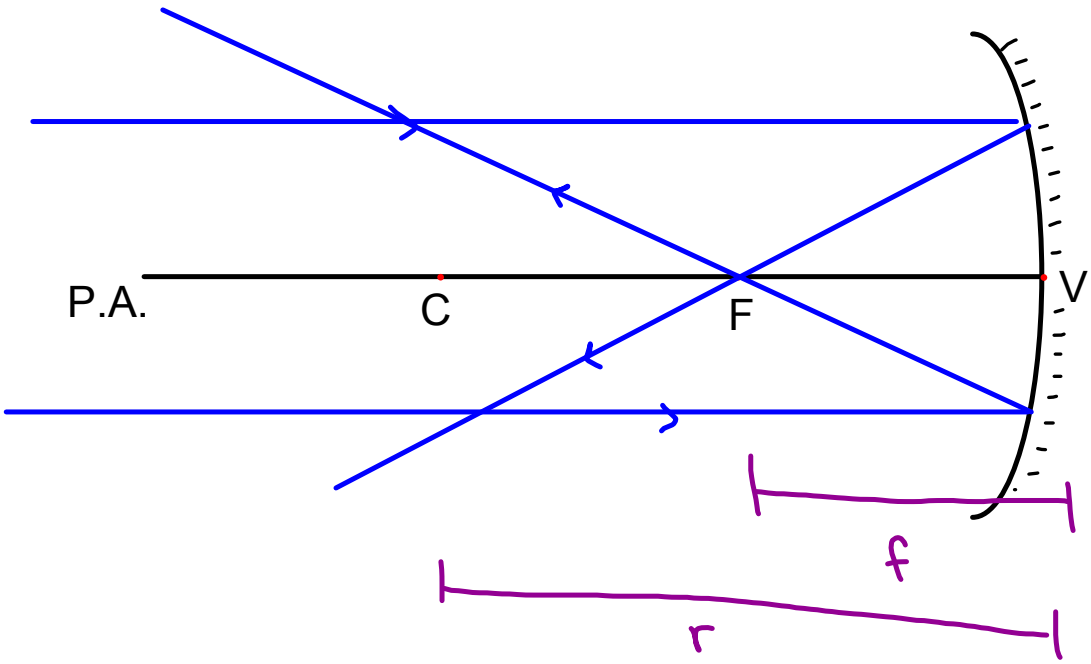
- to be able to draw 3 principal rays for curved mirrors

# Ray Diagrams

## Concave Mirrors

(Converging)

Parallel light rays converge




V: Vertex (centre pt. on mirror)

PA: Principal axis

F: focal point

C: Centre of curvature

f: focal length

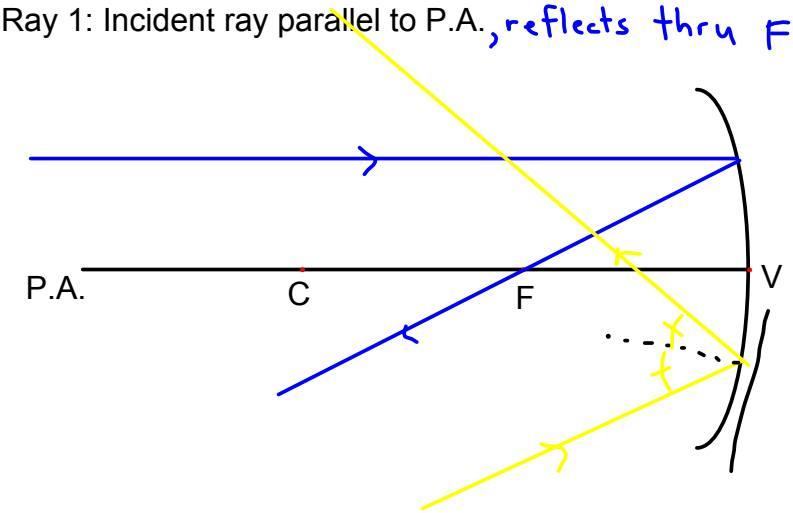
r: radius of curvature

$r = 2f$

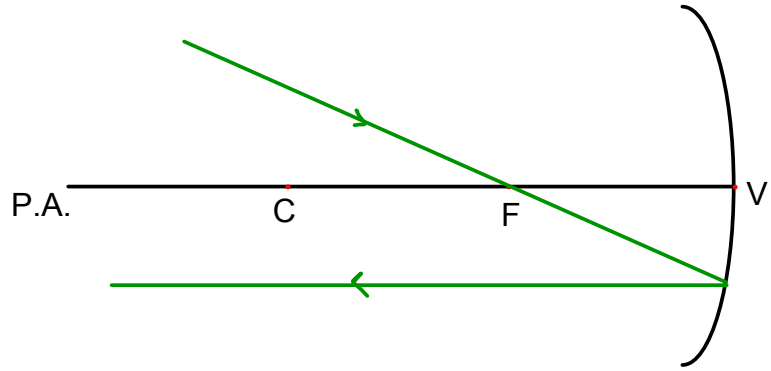
There are 3 principal rays that can be used to draw ray diagrams for any curved mirror (concave or convex).

## CONCAVE MIRRORS

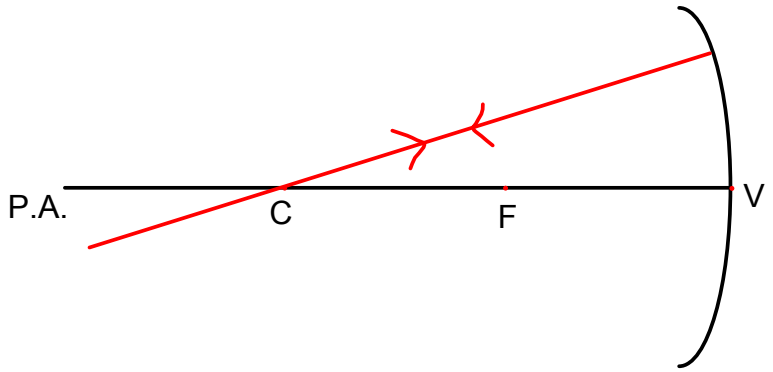
Ray 1: Incident ray parallel to P.A., reflects thru F.




Ray 2: Incident through F, reflects parallel to PA




Ray 3: Incident through C, reflects thru C.



We can use these rays to predict the location and characteristics of an image.

Size: smaller

Attitude (orientation): Inverted

Location: Between C+F

Type: Real (intersection of actual light rays)

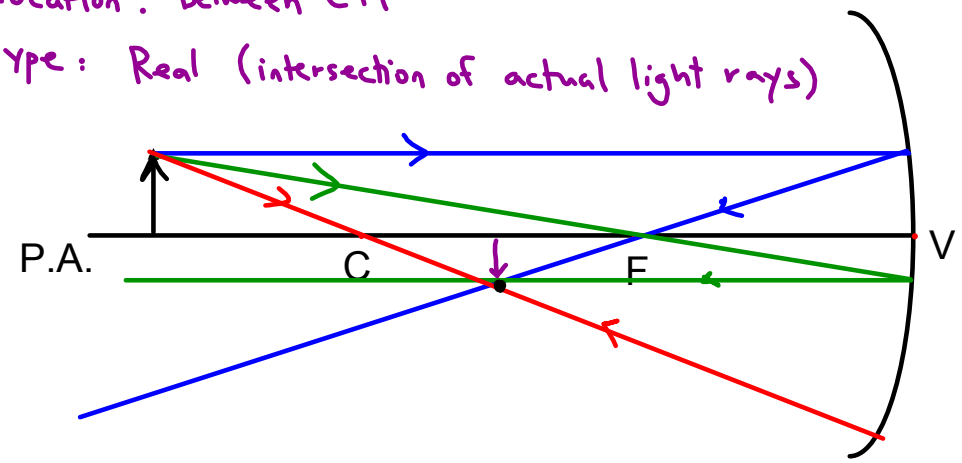



IMAGE CHARACTERISTICS (S.A.L.T.)

SIZE: Smaller, Larger, Same size

ATTITUDE (ORIENTATION): Upright or Inverted

LOCATION: relative to C, F and V

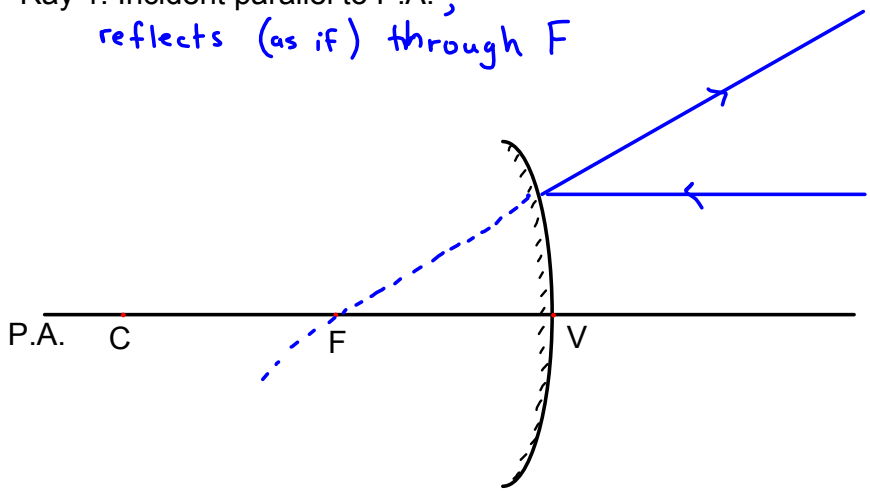
TYPE: real (projects on screen, intersection of actual reflected rays)

or

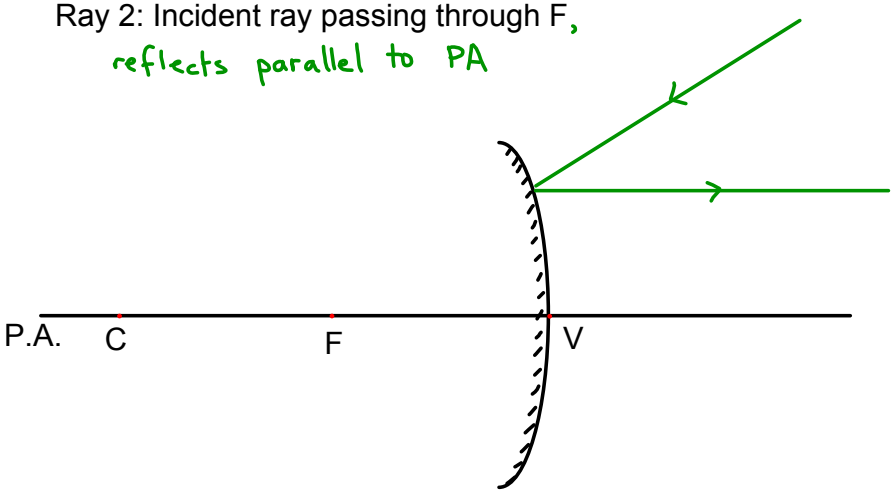
virtual (cannot project on screen, intersection of extension rays)

# CONVEX MIRRORS
(Diverging mirror)

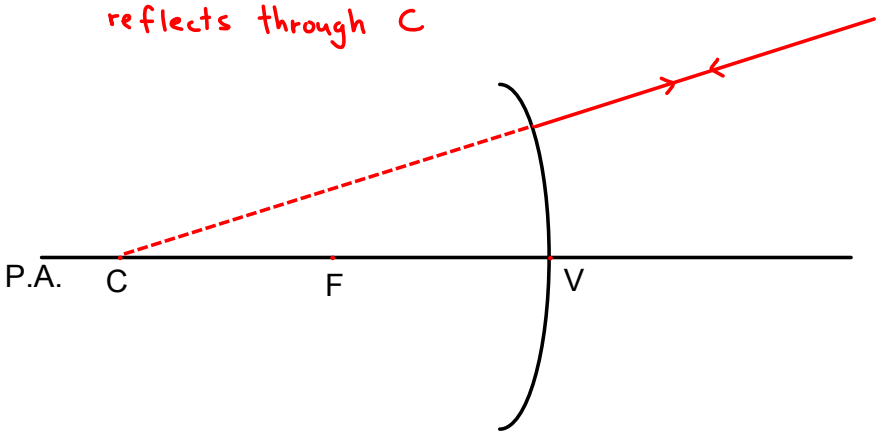
Ray 1: Incident parallel to P.A.,
reflects (as if) through F




Ray 2: Incident ray passing through F,
reflects parallel to PA




Ray 3: Incident ray passing through C,
reflects through C



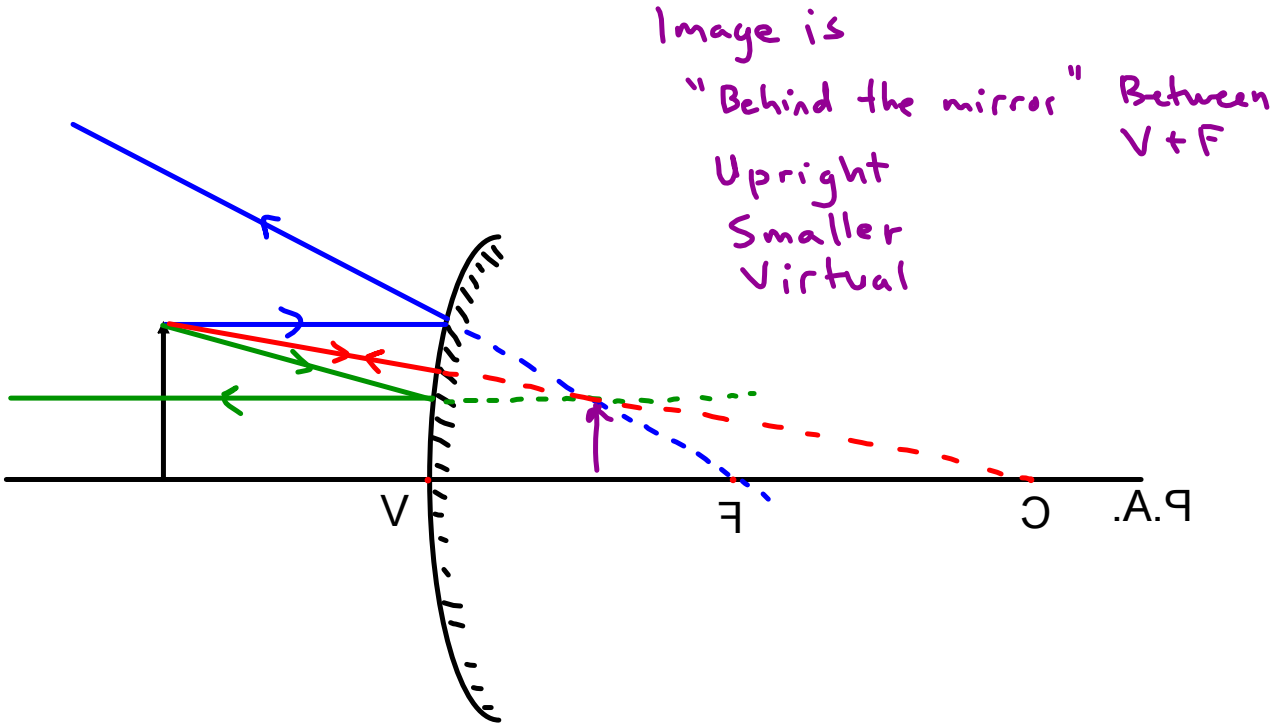


Image is
"Behind the mirror"
Between V + F
Upright
Smaller
Virtual
V
F
C
P.A.