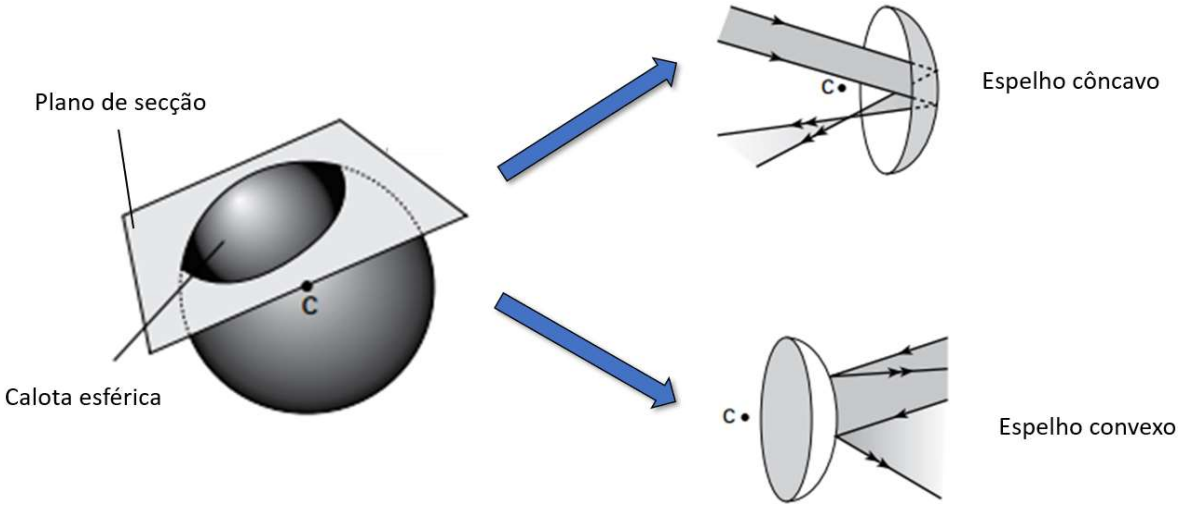
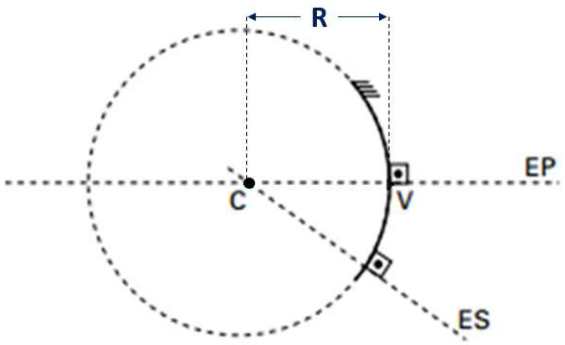
Aulas 27 e 28 - Espelhos esféricos: estudo gráfico

1. Calota esférica e elementos

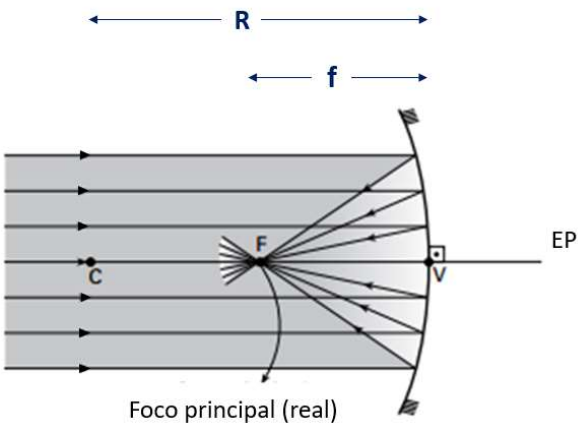




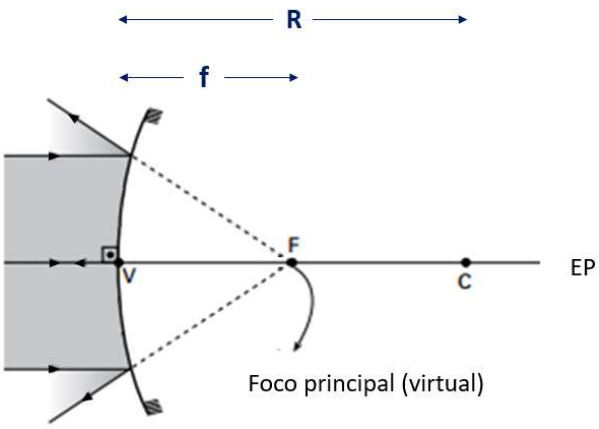
- **EP**: eixo principal
- **ES**: eixo secundário
- **C**: centro de curvatura
- **V**: vértice do espelho
- **CV**: raio de curvatura

2. Focos principais

Espelho esférico côncavo



Espelho esférico convexo

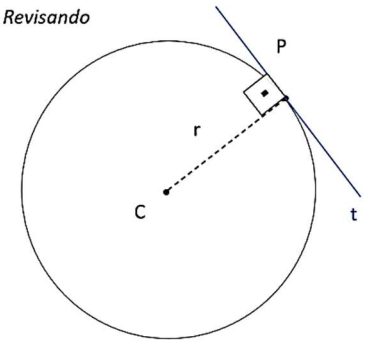


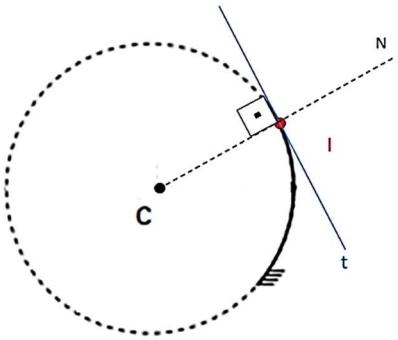
$$FV = \frac{CV}{2} \rightarrow \text{distância focal} = \frac{raio\ de\ curvatura}{2} \rightarrow f = \frac{R}{2}$$

3. Reflexão em uma superfície esférica

Reta normal

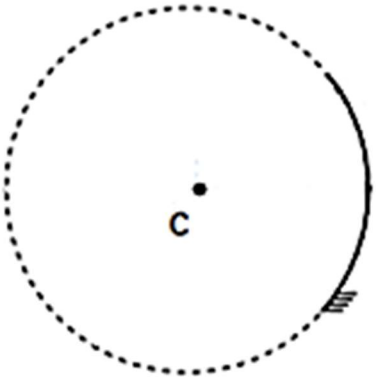
Revisando

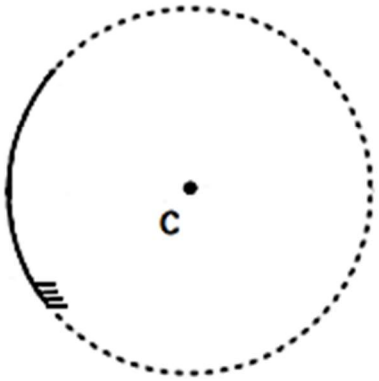




Em um superfície esférica, a reta normal sempre passa pelo centro da circunferência.

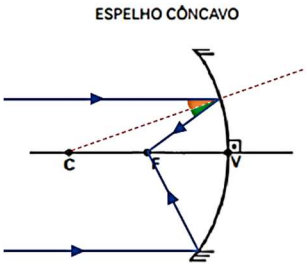
Exemplos de reflexão (raios quaiquer)

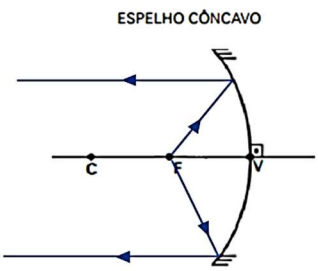


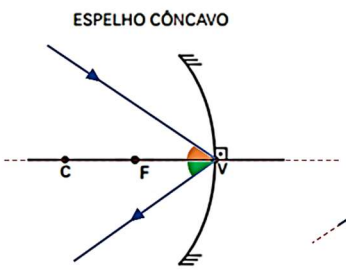


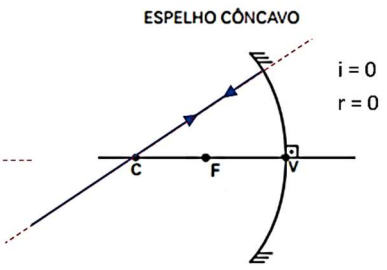
4. Raios notáveis

Espelho côncavo: raios notáveis

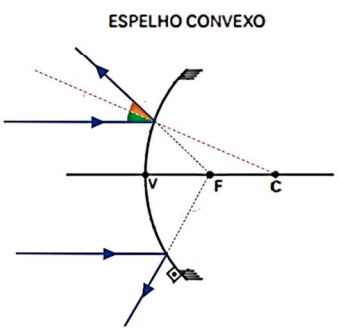


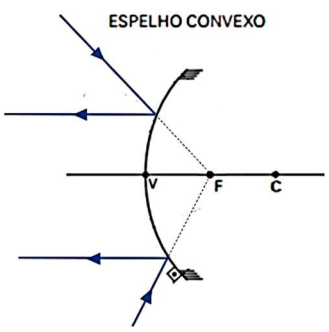


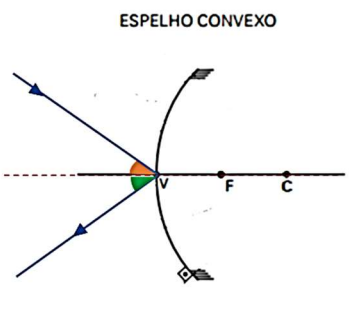


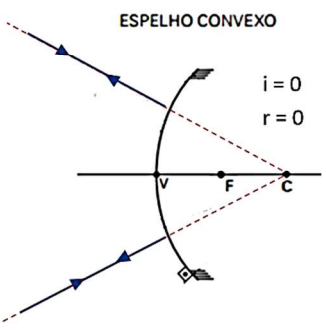


Espelho convexo: raios notáveis





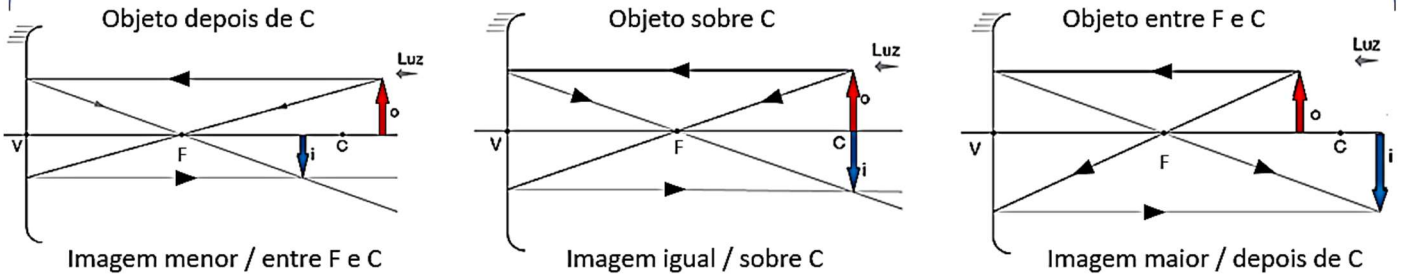




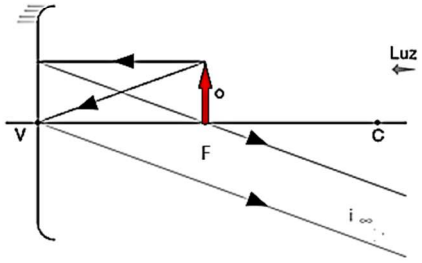
4. Conjugação de imagens

Espelho côncavo

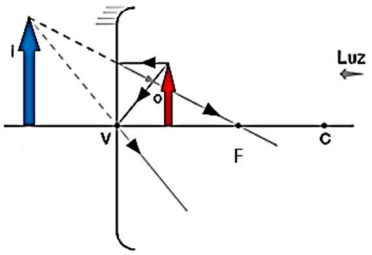
Objeto real depois de F: Imagem real, invertida e (menor, igual ou maior)



Objeto real sobre F: imagem imprópria



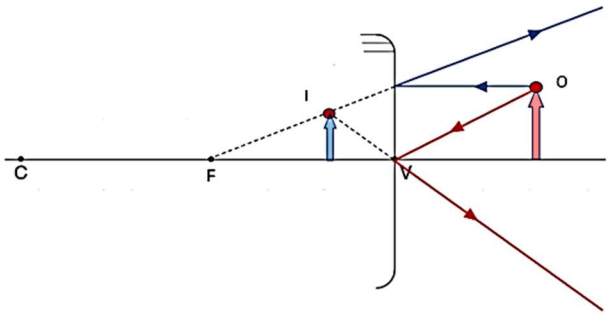
Objeto real entre V e F: Imagem virtual, direita e maior

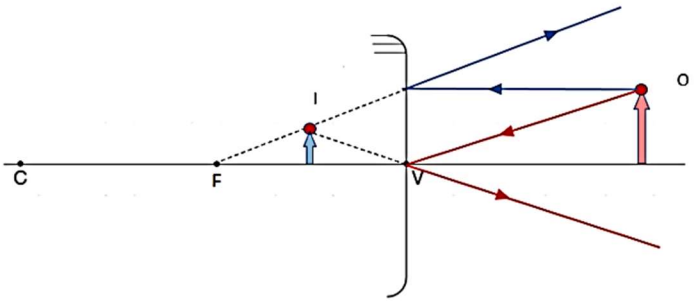


Espelho convexo

Objeto real em qualquer posição
Imagem virtual, direita, menor e entre V e F.

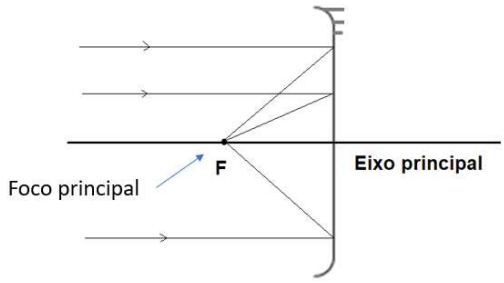
Caso único
(Não importa a posição do objeto real)

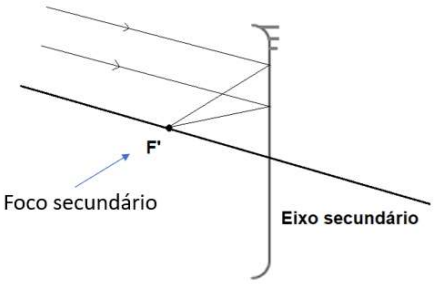


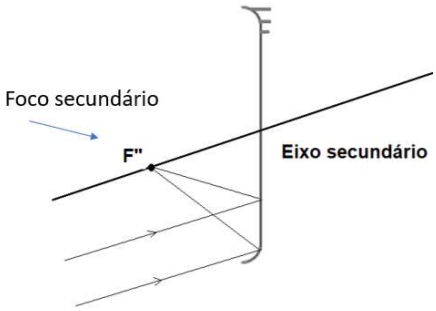


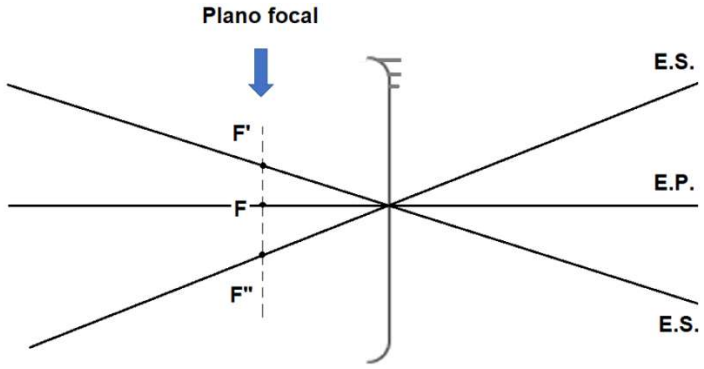
5. Plano focal

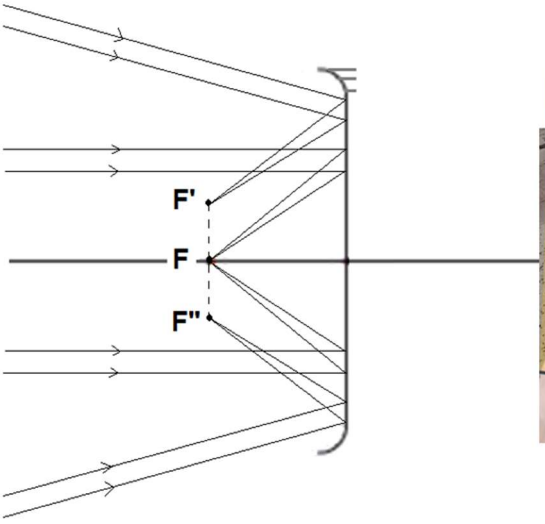
Eixos secundários



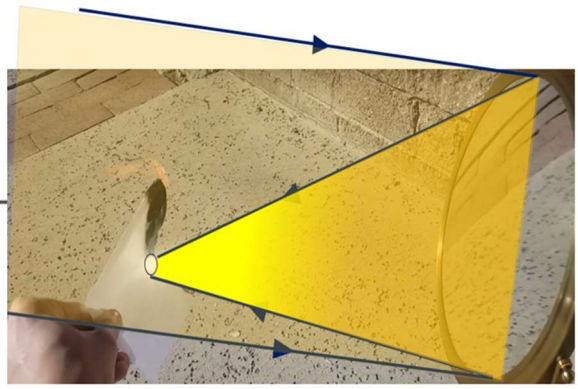








Para objetos extensos e distantes, a imagem se forma no plano focal.



6. Exercícios do Caio

1. Represente a imagem conjugada: espelho côncavo e objeto real depois de C

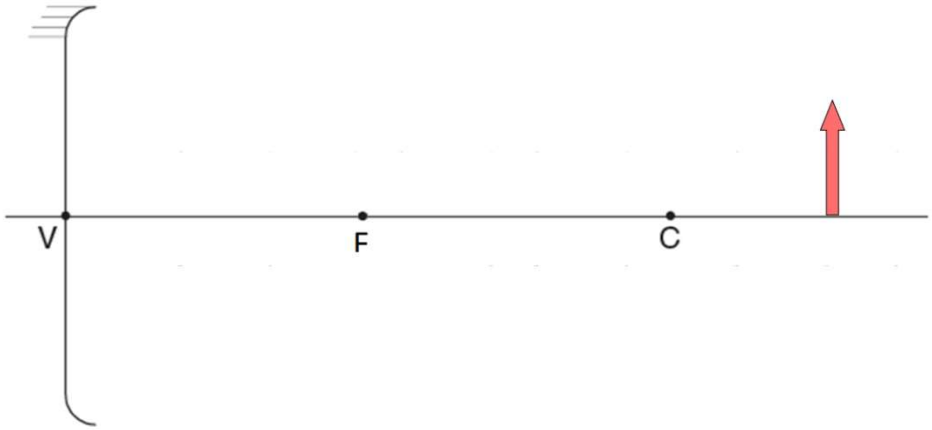


Imagem
- Real (na frente do espelho)
- Invertida
- Menor
- Entre F e C

2. Represente a imagem conjugada: espelho côncavo e objeto real sobre C

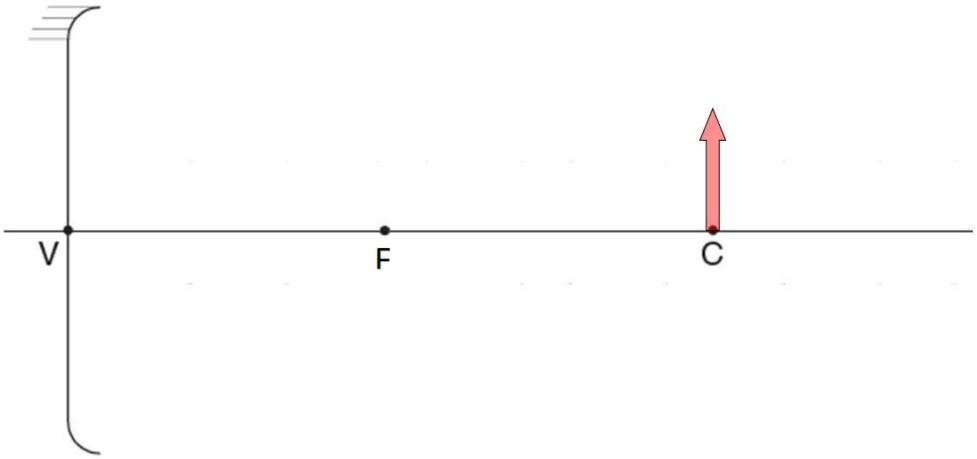


Imagem
- Real (na frente do espelho)
- Invertida
- Do mesmo tamanho
- Sobre C

3. Represente a imagem conjugada: espelho côncavo e objeto real entre F e C

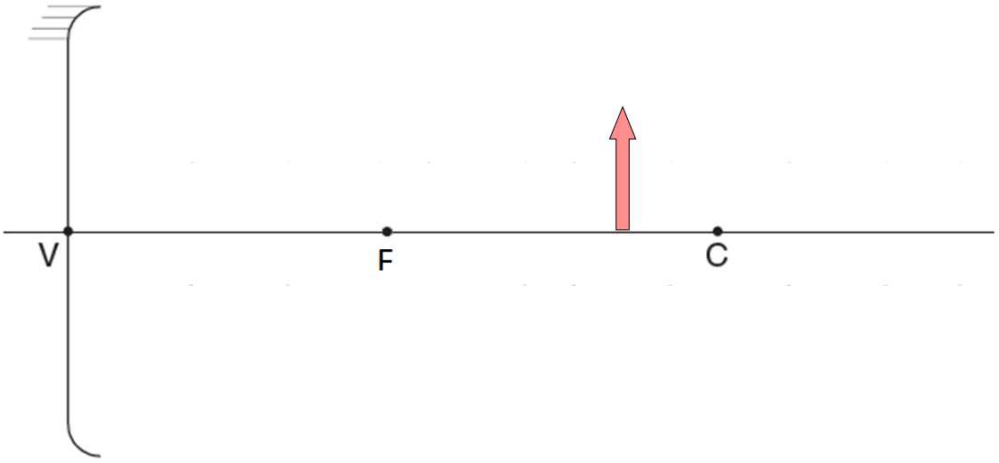
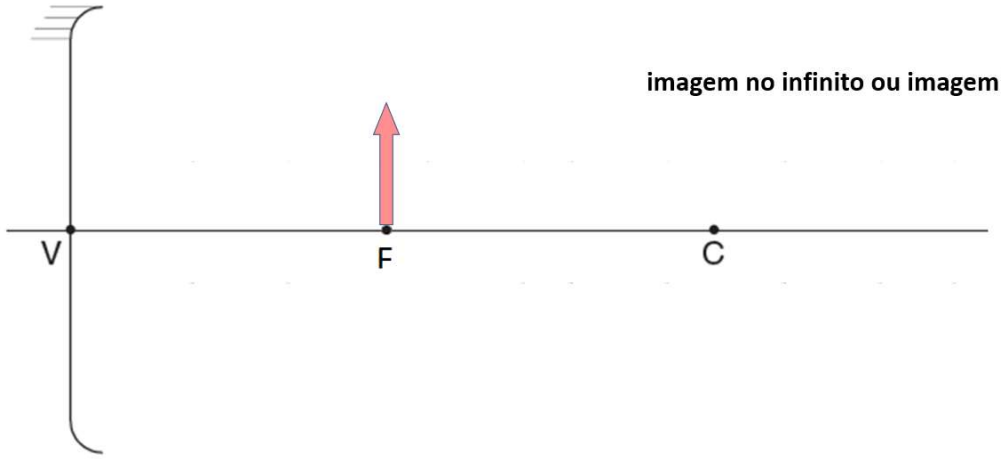


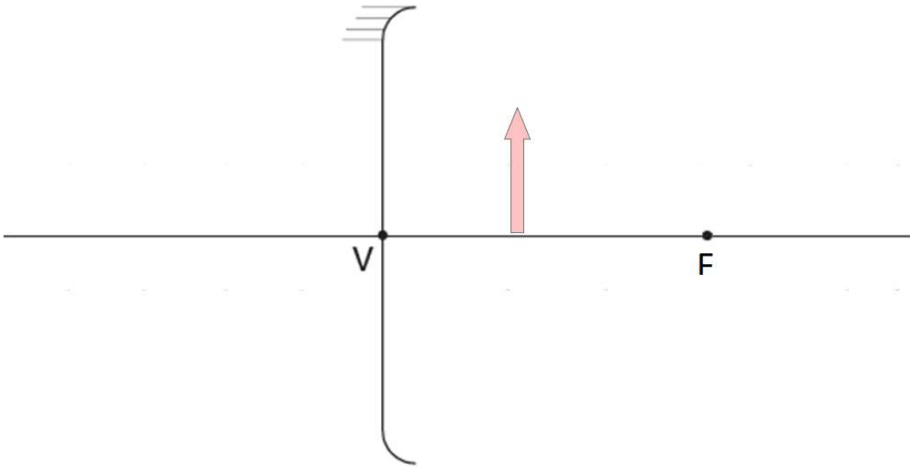
Imagem
- Real (na frente do espelho)
- Invertida
- Maior
- Depois C

4. Espelho côncavo e objeto real sobre F



5. Espelho côncavo e objeto real entre V e F

Imagem
- Virtual (atrás do espelho)
- Direita
- Maior



6. Espelho convexo e objeto real em qualquer posição

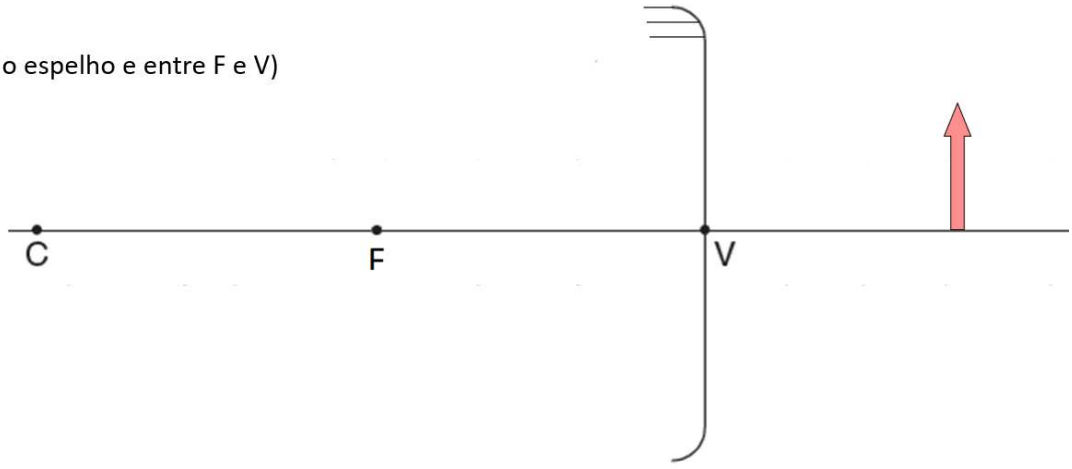



Imagem
- Virtual (atrás do espelho e entre F e V)
- Direita
- Menor