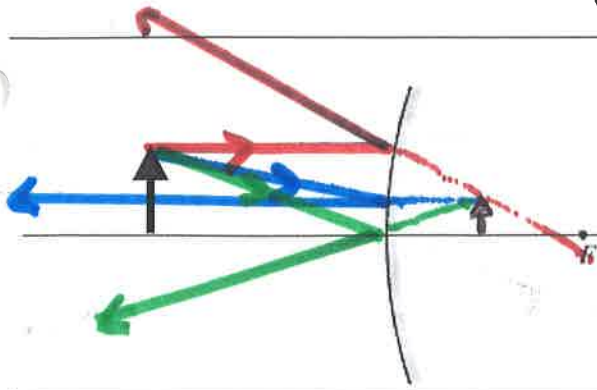


Convex Mirror



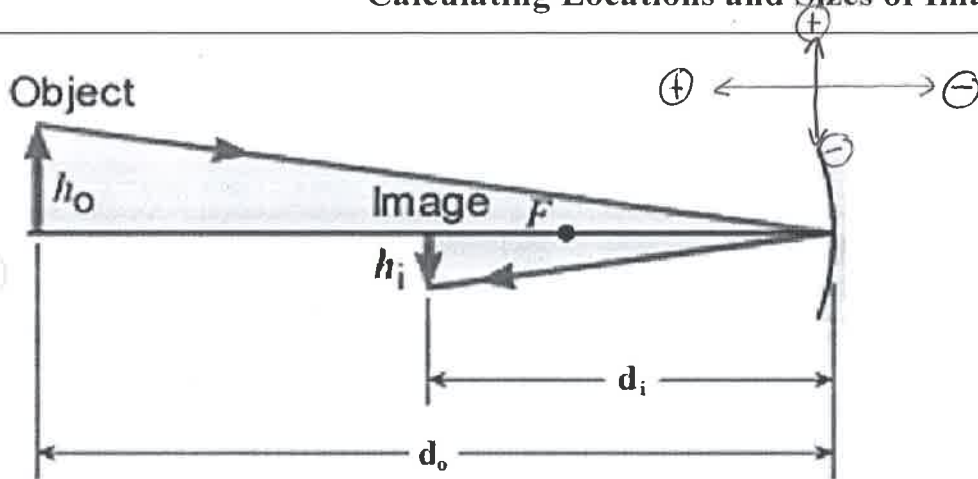
- virtual
- upright
- smaller

Application:



1. Under what circumstances will a mirror form a real image? *concave, object outside of F*
2. Under what circumstances will a mirror form a virtual image?
convex mirror, plane (flat) mirror, concave (and object inside F)

Calculating Locations and Sizes of Images



d_o (or u) = object distance

d_i (or v) = image distance

h_o = object height

h_i = image height

Sign Convention \oplus real

Mirror Equation $\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$

Linear Magnification $M = \frac{h_i}{h_o} = \ominus \frac{d_i}{d_o}$

1. A 2.0-cm -high object is placed 7.10 cm from a concave mirror whose radius of curvature is 10.20 cm . $f = 5.1\text{ cm}$

~~a~~ Locate the image by means of a ray diagram.

b) Calculate the location of the image.

$$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

$$d_i = \left(\frac{1}{f} - \frac{1}{d_o} \right)^{-1}$$

$$d_i = \boxed{18\text{ cm}}$$

c) Calculate the magnification of the mirror.

$$M = \frac{\ominus d_i}{d_o} = \boxed{-2.5}$$

d) Calculate the size of the image.

$$M \times h_o = h_i \quad (-2.5)(2.0\text{ cm}) =$$

$$\boxed{-5.0\text{ cm}}$$

e) Describe the image.

- inverted
- larger
- real