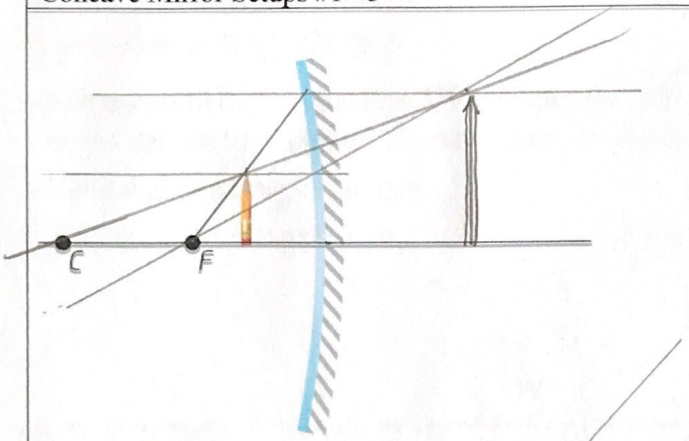
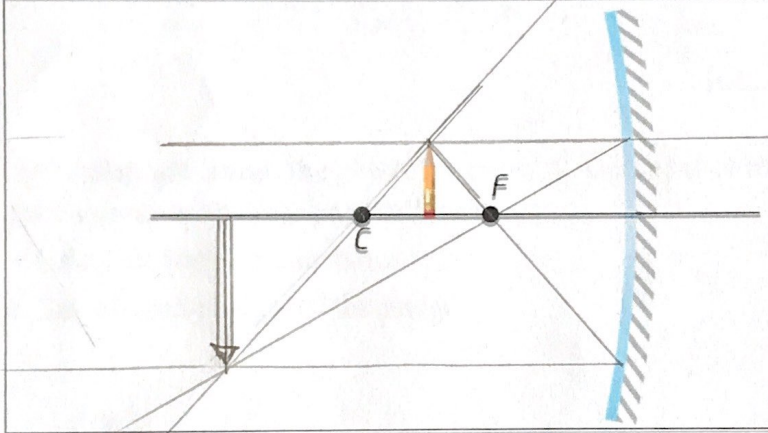
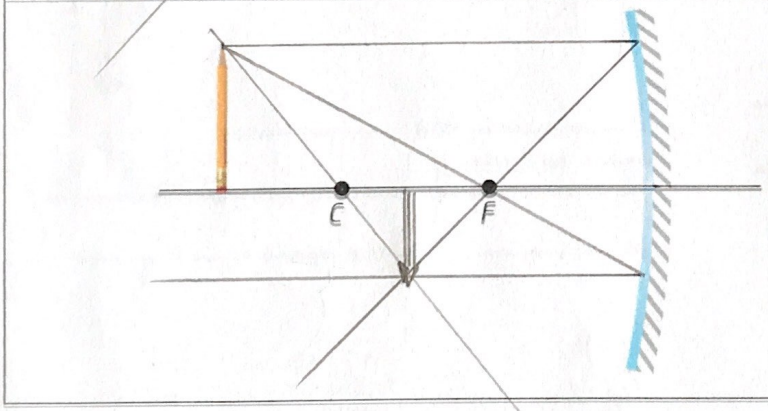
SNC2D Task – Concave Mirrors Name: Soln

1. Draw the images for the following concave mirror setups. Fill in the L.O.S.T. information in the right column. Use a ruler for drawing all rays.

| Concave Mirror Setups #1 - 3 | Location, Orientation, Size, Type |
|---|---|
|  | L – behind mirror<br>O – upright<br>S – larger size<br>T – virtual |
|  | L – IN FRONT OF MIRROR<br>O – upside down<br>S – large size<br>T – Real image |
|  | L – in front of mirror<br>O – upside down<br>S – smaller size<br>T – Real image |

2. What happens when the object is located at the Focal point?

When the object is at the focal point NO image is formed.

$m = \frac{h_i}{h_o} = \frac{(-d_i)}{d_o}$ $\quad \frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_o}$

ctice Problems — Solutions

**1.** A concave mirror has a focal length of 6.0 cm. An object with a height of 0.60 cm is placed 10.0 cm in front of the mirror.

**a.** Calculate the image distance.

**b.** Calculate the image height.

$f = 6\text{cm}$
$h_o = 0.6\text{cm}$
$d_o = 10\text{cm}$

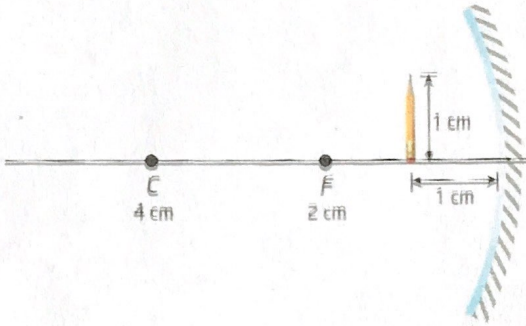
$\frac{1}{6} = \frac{1}{d_i} + \frac{1}{10}$
$\frac{10}{60} - \frac{6}{60} = \frac{1}{d_i}$
$\frac{4}{60} = \frac{1}{d_i}$
$d_i = 15\text{cm}$

$\frac{h_i}{0.6} = \frac{(-15)}{10}$
$h_i = -0.9\text{cm}$ (upside down)

**2.** In the diagram below, the object is between the mirror and *F*. Use the data in the diagram to answer the questions below.

**a.** Calculate the image distance.

**b.** Calculate the image height.



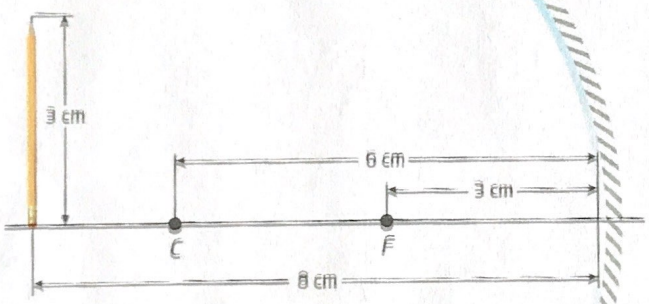

$\frac{1}{2} = \frac{1}{d_i} + \frac{1}{1}$
$\frac{1}{2} - 1 = \frac{1}{d_i}$
$-\frac{1}{2} = \frac{1}{d_i}$
$d_i = -2\text{cm}$
behind mirror

$\frac{h_i}{1} = \frac{(-(-2))}{(1)}$
$h_i = 2\text{cm}$
(upright)

**3.** In the diagram below, the object is beyond C. Use the data in the diagram to answer the questions below.

**a.** Calculate the image distance.

**b.** Calculate the height of the image.




$\frac{1}{3} = \frac{1}{d_i} + \frac{1}{8}$
$\frac{8}{24} - \frac{3}{24} = \frac{1}{d_i}$
$\frac{5}{24} = \frac{1}{d_i}$
$d_i = \frac{24}{5}$
$d_i = 4.8\text{cm}$
(in front)

$\frac{h_i}{3} = \frac{(-4.8)}{8}$
$h_i = \frac{-14.4}{8}$
$h_i = -1.8\text{cm}$
(upside down)