

Example 2 without looking at Example 1.

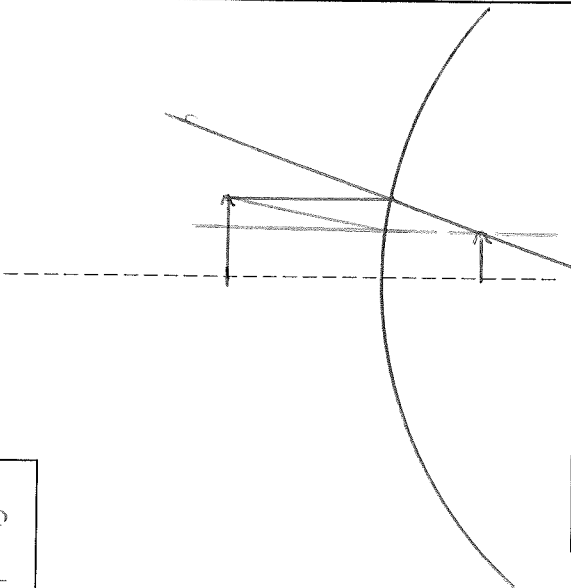
$$\frac{1}{f} = \frac{1}{p} + \frac{1}{q}$$

$$m = \frac{h_i}{h_o} = -\frac{q}{p}$$

Example 2 A 1-cm tall miniature light bulb is placed a distance of 2.0 cm from a **CONVEX** mirror having a focal length of 3.0 cm. Find q and h_i using a scaled ray diagram AND equations.

Scaled ray diagram:

Equations:



$$\frac{1}{-3} = \frac{1}{2} + \frac{1}{q}$$

$$-1.83 = \frac{1}{q} \quad q = -1.2$$

$$\frac{h_i}{1} = \frac{+1.2}{2}$$

$$h_i = 0.6$$

$$q = -1.3 \text{ cm}$$

$$h_i = 0.6$$

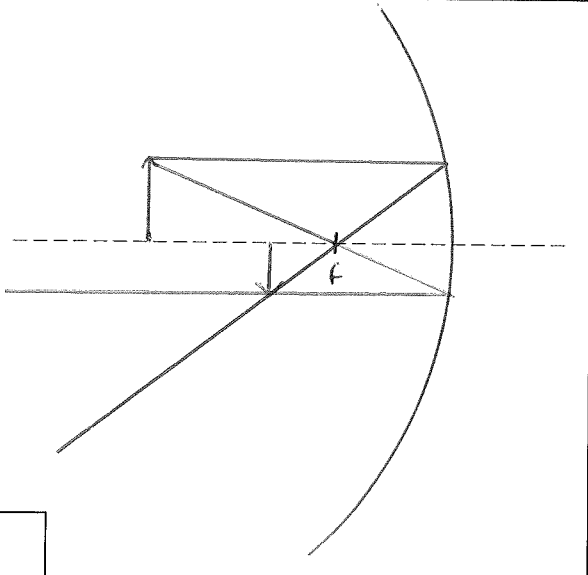
$$q = -1.2 \text{ cm}$$

$$h_i = 0.6 \text{ cm}$$

Example 3 a) A 1-cm tall plastic pig is placed a distance of 4.0 cm from a **CONCAVE** mirror with a focal length of 1.5 cm. Find q and h_i using a scaled ray diagram AND equations.

Scaled ray diagram:

Equations:



$$\frac{1}{1.5} = \frac{1}{4} + \frac{1}{q} \quad q = 2.4$$

$$\frac{h_i}{1} = \frac{-2.4}{4}$$

$$h_i = -0.6$$

$$q = 2.4$$

$$h_i = -0.6$$

$$q = 2.4 \text{ cm}$$

$$h_i = -0.6 \text{ cm}$$

b) Calculate the magnification of this mirror using an equation:

$$m = \frac{h_i}{h_o} = \frac{-0.6}{1} = -0.6$$

What % of the original size will the image be? 60% What does the negative sign mean? inverted (upside down)