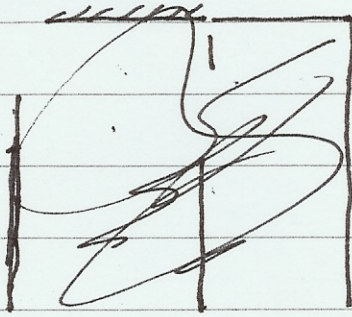
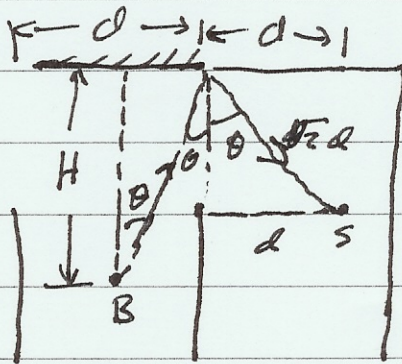


CH # 34,  
H.W. Solution

#4



#4



$$\sin \theta = \frac{d}{\sqrt{2}d} = \frac{1}{\sqrt{2}}$$

$$\therefore \theta = 45^\circ$$

Also  ~~$\sin \theta = \frac{d}{\sqrt{2}d}$~~

$$\text{Also } \tan \theta = \tan 45 = \frac{d/\sqrt{2}}{H} = 1$$

$$H = \frac{d}{2} = \frac{3}{2} = 1.5 \text{ m.}$$

#7 The image is upright  
 $\therefore$  The image is virtual.

$$\therefore \frac{1}{p} - \frac{1}{f} = \frac{1}{f}$$

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

$$\therefore p = \frac{f^2}{2f} = \frac{f}{2}$$





#7 continue

The image size is 2.5 times the object size.

$$m = 2.5 = \frac{I}{P}$$

$$P = \frac{I}{2.5} \quad I = 2.5P$$

$$\therefore \frac{1}{P} - \frac{1}{2.5P} = \frac{1}{f}$$

$$m \quad f = \frac{2.5P^2}{1.5P} \quad f = 35/2 \text{ cm.}$$

$$m \quad P = \frac{1.5f}{2.5} = \frac{1.5 \times 35/2}{2.5}$$

$$P = 10.5 \text{ cm. } P = 10.5 \text{ cm.}$$

The face is 10.5 cm from the mirror.

#13:

$$P = 8.0 \text{ cm, } f = -10 \text{ cm (convex)}$$

a.  $r = 2f = -20 \text{ cm.}$

b.  $\frac{1}{P} + \frac{1}{i} = \frac{1}{f}$

$$m \quad \frac{1}{i} = \left( \frac{1}{P} + \frac{1}{f} \right), \quad i = \frac{-f \times P}{f + P} = \frac{-10 \times 8}{18}$$

$$i = -4.44 \text{ cm.}$$

c.  $m = -\frac{I}{P} = \frac{4.4}{8} = 0.56$

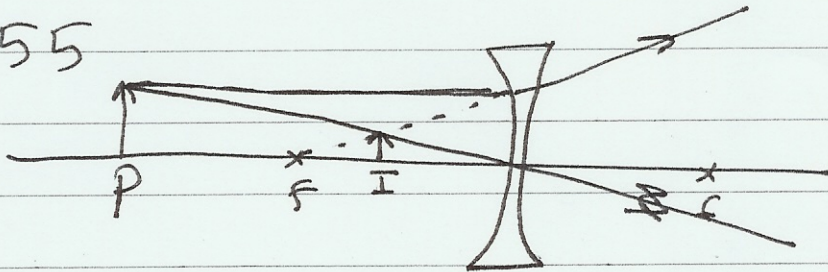
d. Image is virtual (convex mirror)

e. non-inverted if - opposite



# 27 Similar to # 13

# 55



$$f = -14 \text{ cm}$$

$$p = 22 \text{ cm.}$$

$$\frac{1}{p} + \frac{1}{i} = -\frac{1}{f}$$

$$i = \frac{1}{\frac{1}{p} + \frac{1}{i}} = -\left(\frac{fp}{f+p}\right) = -\frac{14 \times 22}{14 + 22}$$

a.  $i = -8.56 \text{ cm.}$

b.  $m = -\frac{i}{p} = \frac{+8.56}{22} = 0.39$

c. Image virtual

d. upright

e. same side as object.