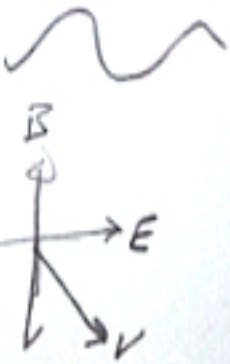
(250) mirrors

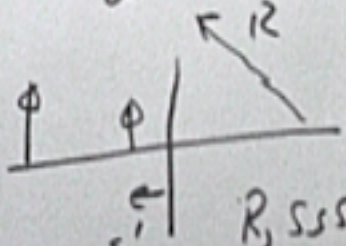
$$M = \frac{h'}{h} = -\frac{s'}{s}$$

$$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$$

$\theta_i = \theta_r$

$$f = \frac{R}{2}$$

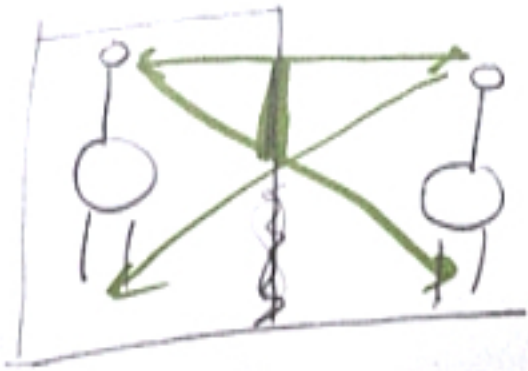


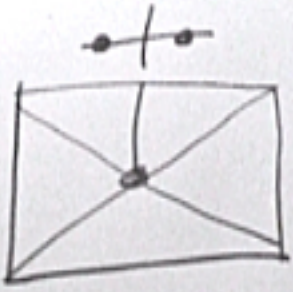


R, s, s', f > 0

R, s, s', f < 0

$\tan\theta_B = n$





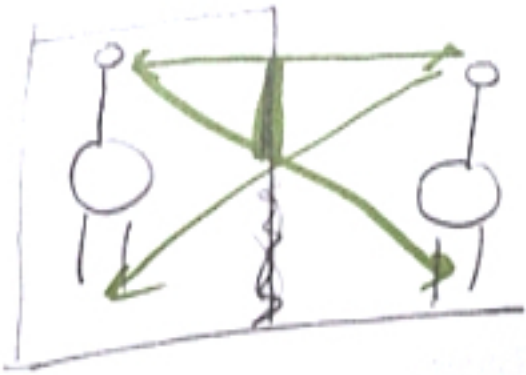
$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$ $\quad f = \frac{R}{2} \Rightarrow$

$f \to \infty \quad \frac{1}{f} = 0$

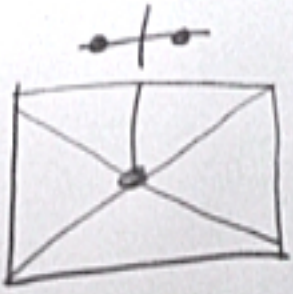
$s' = -s \quad M = -\frac{s'}{s} = +1$

upright ($M+$) $\vee$ ($s' < 0$)

unmag ($|M| = 1$)



( )



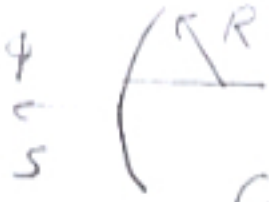
$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$ $\quad f = \frac{R}{2} \Rightarrow$

$f \to \infty \quad \frac{1}{f} = 0$

$s' = -s \quad M = -\frac{s'}{s} = +1$

Upright ($M+$) V ($s'<0$)

Unmag ($|M|=1$)



Convex: $R < 0$

$f < 0$

$f = \frac{R}{2}$

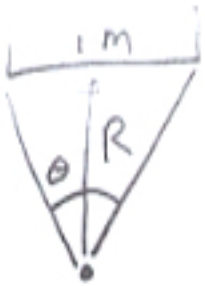
$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$ $\quad f = -\frac{10}{2} = -5\,cm$

$s = +20$

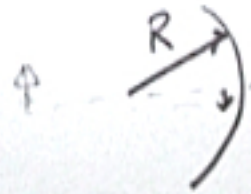
$\frac{1}{s'} = \frac{1}{-5} - \frac{1}{20} = \frac{-4}{20} - \frac{1}{20} = \frac{-5}{20} = -\frac{1}{4}$

$s' = -4$ $\quad M = -\frac{s'}{s} = -\frac{-4}{20} = +\frac{1}{5}$

* $s' < 0$ (virtual) upright
$|M| < 1$ (Reduced) $(M+)$



$S = R\theta$ ↑ $\quad R = \frac{S}{\theta}$



Concave ft

$R \leq 0$

$f = \frac{R}{2} \therefore -$

$R = 10\ cm$

$s = 20\ cm$

Real $(s' > 0)$

$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$ Inverted Mag

Red $(|M| < 1)$

$f = \frac{10}{2} = 5cm$

$\frac{1}{s'} = \frac{1}{f} - \frac{1}{s} = \frac{1}{5} - \frac{1}{20}$

$= \frac{4}{20} - \frac{1}{20} = \frac{3}{20}$

$s' = +.15$

$M = -\frac{s'}{s} = -.3$

) $R = 10\text{cm}$ $f = 5\text{cm}$ (fr)

$s = 5\text{cm}$

$$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f} \Rightarrow \frac{1}{s'} = \frac{1}{5} - \frac{1}{5} = 0$$

$s' = \infty$ No image forms

$s < f$ $s = 1\text{cm}$

$$\frac{1}{s'} = \frac{1}{f} - \frac{1}{1} = \frac{1}{5} - \frac{5}{5} = -\frac{4}{5}$$

$s' = -\frac{5}{4}$ virtual

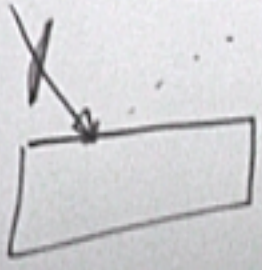
$(M = +\frac{5}{4})$

$$M = -\frac{s'}{s} = \frac{5/4}{o_1} = \frac{1}{4}$$

Magnified, upright

$$\tan \theta_B = n$$

$$n = 2.14$$



$$\tan \theta_B = n$$

$$n = 2.14$$