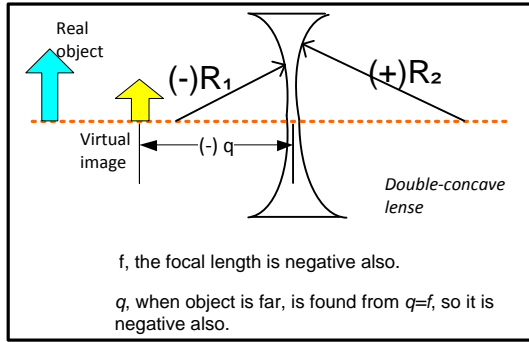


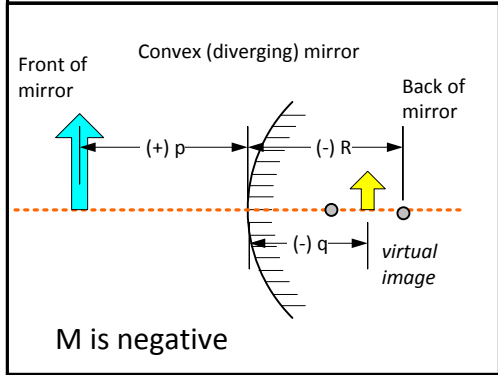
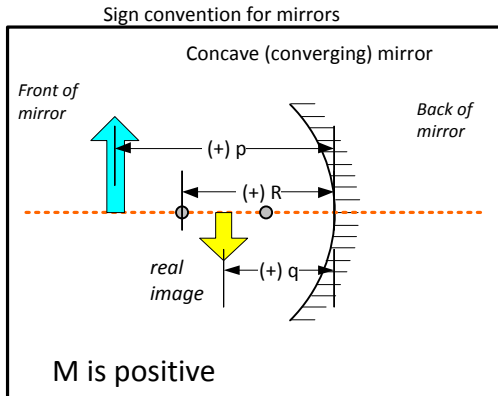
Equation to find focal length for a thin lens

$$\frac{1}{f} = (n - 1) \left(\frac{1}{R_1} - \frac{1}{R_2} \right)$$

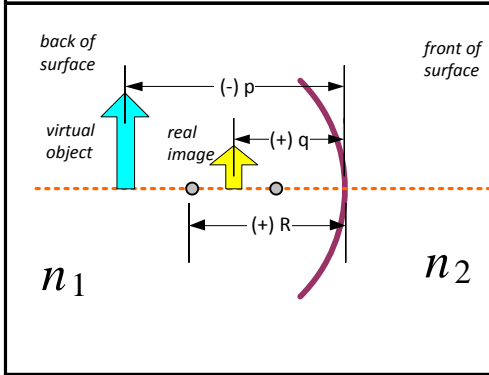
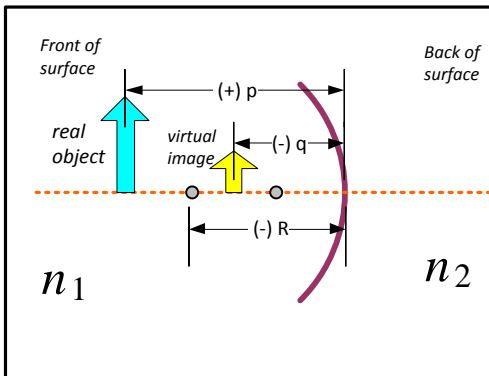
Use "real-is-positive" for signs



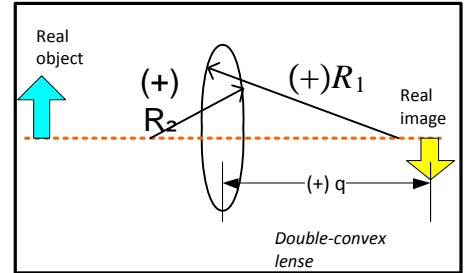
Sign convention for one refracting surface (example, fish glass bowl)



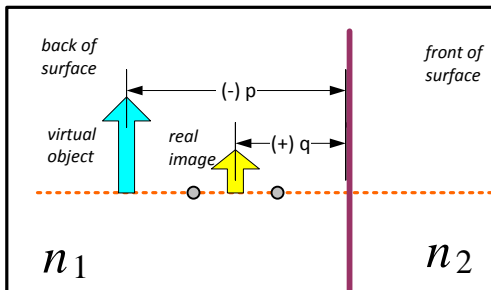
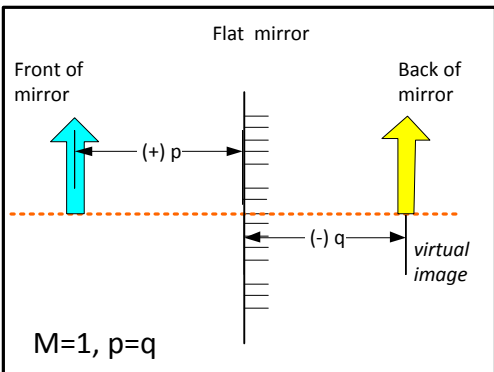
$$\frac{1}{p} + \frac{1}{q} = \frac{1}{f}$$



$$\frac{n_1}{p} + \frac{n_2}{q} = \frac{n_2 - n_1}{R}$$



By Nasser M. Abbasi



$$\frac{n_1}{p} = -\frac{n_2}{q}$$

Magnification formula

$$M = \frac{h'}{h} = -\frac{q}{p}$$