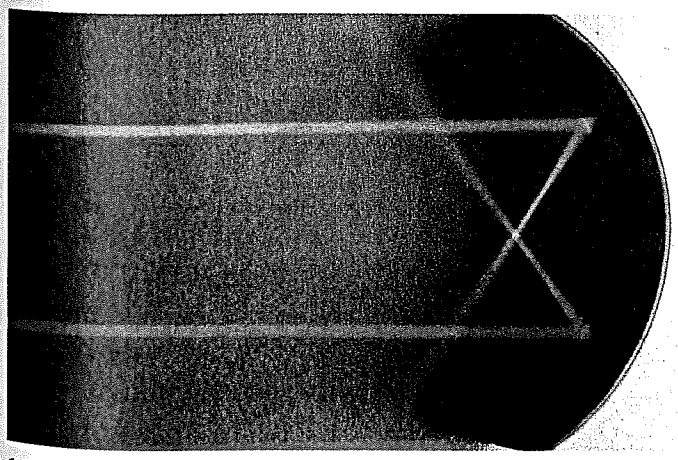
## MIRROR EQUATION

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

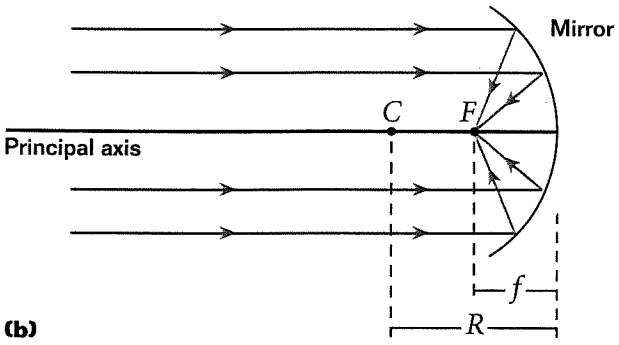
$$\frac{1}{\text{object distance}}+\frac{1}{\text{image distance}}=\frac{1}{\text{focal length}}$$

$$\frac{1}{f}=\frac{1}{s_o}+\frac{1}{s_i}$$

$$\frac{1}{f}=\frac{1}{d_o}+\frac{1}{d_i}$$



(a)




(b)

**Figure 12**
Light rays that are parallel converge at a single point **(a)**, which can be represented in a diagram **(b)**, when the rays are assumed to be from a distant object ($p \approx \infty$).

## EQUATION FOR MAGNIFICATION

$$m=\frac{h_i}{h_o}=-\frac{s_i}{s_o}=-\frac{d_i}{d_o}$$

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

$$\text{magnification}=\frac{\text{image height}}{\text{object height}}=-\frac{\text{image distance}}{\text{object distance}}$$

**Table 2 Sign Conventions for Magnification**

| Orientation of image with respect to object | Sign of *M* | Type of image this applies to |
|---|---|---|
| upright | + | virtual |
| inverted | – | real |

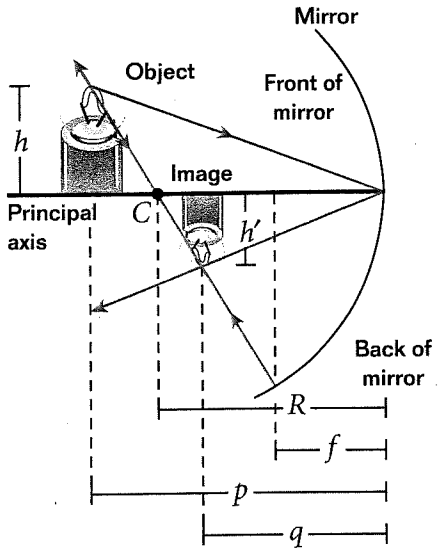



**Table 3 Rules for Drawing Reference Rays**

| Ray | Line drawn from object to mirror | Line drawn from mirror to image after reflection |
|---|---|---|
| 1 | parallel to principal axis | through focal point *F* |
| 2 | through focal point *F* | parallel to principal axis |
| 3 | through center of curvature *C* | back along itself through *C* |