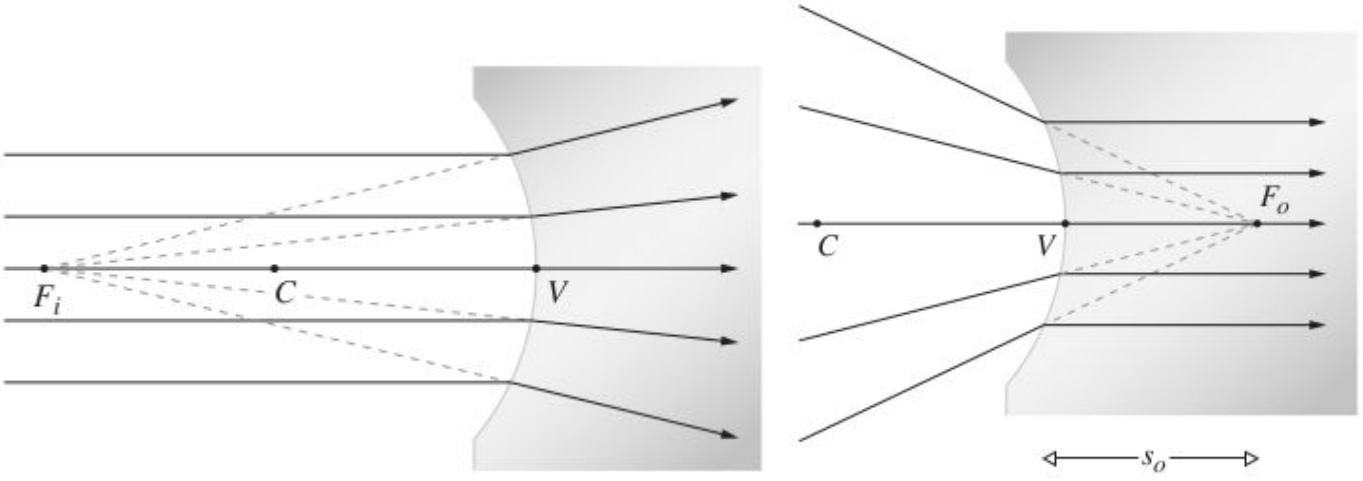
Dioptras:

TABLE 5.1 Sign Convention for Spherical Refracting Surfaces and Thin Lenses* (Light Entering from the Left)

s_o, f_o	+ left of V
x_o	+ left of F_o
s_i, f_i	+ right of V
x_i	+ right of F_i
R	+ if C is right of V
y_o, y_i	+ above optical axis

$$\frac{n_1}{s_o} + \frac{n_2}{s_i} = \frac{n_2 - n_1}{R} \qquad f_o = \frac{n_1}{n_2 - n_1} R \qquad f_i = \frac{n_2}{n_2 - n_1} R$$

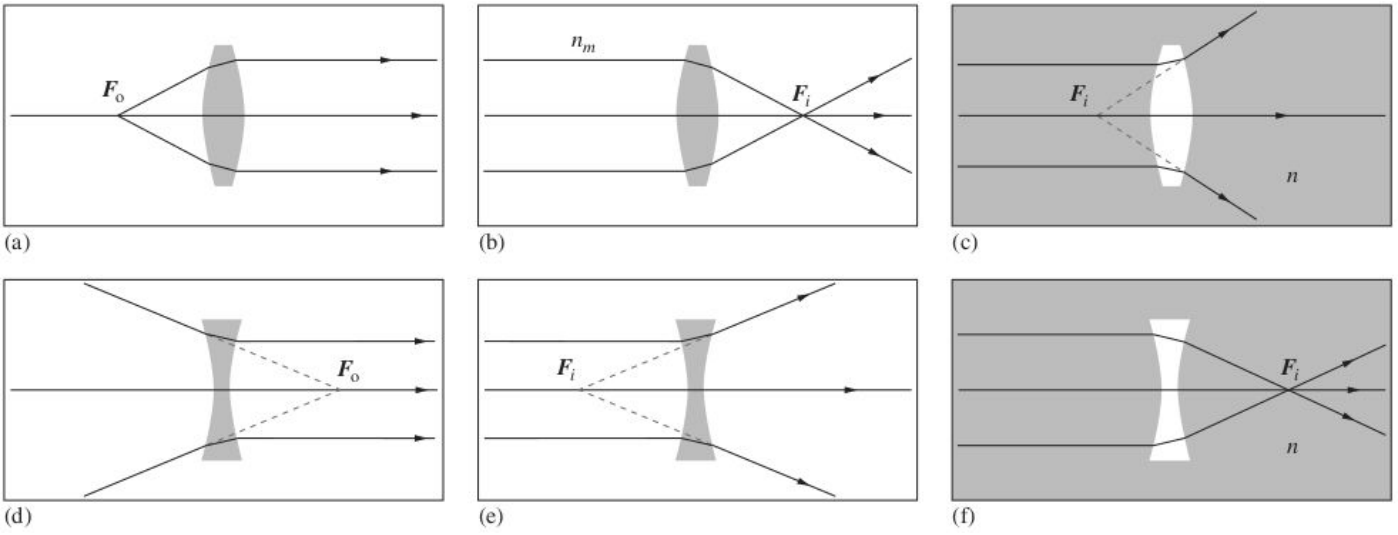


Formación de una imagen virtual (izquierda); objeto virtual (derecha)

Lentes:

TABLE 5.2 Meanings Associated with the Signs of Various Thin Lens and Spherical Interface Parameters

Quantity	Sign	
	+	−
s_o	Real object	Virtual object
s_i	Real image	Virtual image
f	Converging lens	Diverging lens
y_o	Erect object	Inverted object
y_i	Erect image	Inverted image
M_T	Erect image	Inverted image



.(a) y (b): lentes biconvexas convergente. (c) lente biconvexa divergente
(d) y (e): lentes bicóncavas divergentes. (f) lente bicóncava convergente

CONVEX	CONCAVE
 $R_1 > 0$ $R_2 < 0$ Biconvex	 $R_1 < 0$ $R_2 > 0$ Biconcave
 $R_1 = \infty$ $R_2 < 0$ Planar convex	 $R_1 = \infty$ $R_2 > 0$ Planar concave
 $R_1 > 0$ $R_2 > 0$ Meniscus convex	 $R_1 > 0$ $R_2 > 0$ Meniscus concave

$$\frac{1}{s_o} + \frac{1}{s_i} = (n_l - 1)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$$

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

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

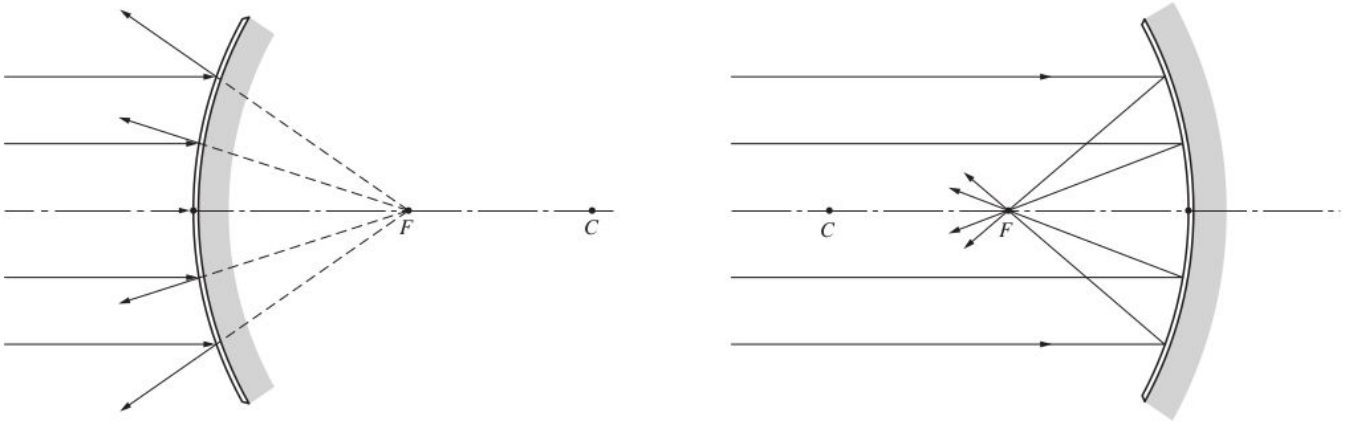
$$M_T \equiv \frac{y_i}{y_o} \qquad M_T = -\frac{s_i}{s_o}$$

Espejos:

TABLE 5.4 Sign Convention for Spherical Mirrors

Quantity	Sign	
	+	−
s_o	Left of V, real object	Right of V, virtual object
s_i	Left of V, real image	Right of V, virtual image
f	Concave mirror	Convex mirror
R	C right of V, convex	C left of V, concave
y_o	Above axis, erect object	Below axis, inverted object
y_i	Above axis, erect image	Below axis, inverted image

$$\frac{1}{s_o}+\frac{1}{s_i}=-\frac{2}{R} \qquad f_o=f_i=-\frac{R}{2} \qquad \frac{1}{s_o}+\frac{1}{s_i}=\frac{1}{f}$$



Espejo convexo→ divergente (izquierda); Espejo cóncavo→ convergente (derecha)