Property of image that forms by a mirror (by reflection)			
Mirror type	f	s_o	**Image Properties**
Plane mirror	no	$s_o > 0$	Erect, virtual, same size, same far, reverse right and left.
Concave mirror	**+**	$s_o > f$	Real, inverted. $(Negative\ M)$.. $(h_i = negative)$.
		$s_o < f$	Virtual, erect, larger. $(s_i = negative)$.
		$s_o = f$	No image will be formed.
Convex mirror	**-**	$s_o > 0$	Virtual, erect, smaller. $(Positive\ M)$.

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

f = focal length of mirror
s_o = distance of object from mirror
s_i = distance of image from mirror

$$M = \frac{h_i}{h_o} = \frac{-s_i}{s_o}$$

M = magnification
h_i = image height
h_o = object height
s_i = image distance
s_o = object distance

- The distance to a **virtual** image (s_i) is always **negative**.
- The **focal length** (f) of a **convex mirror** is always **negative**.
- An **inverted image (real)** has a **negative** magnification.
- An **erect image (virtual)** has a **positive** magnification.

Property of image that forms by a Lens (by refraction)			
Lens type	f	s_o	**Image Properties**
Converging lens **Convex lens**	**+**	$s_o > f$	Real, inverted. $(Negative\ M)$.. $(h_i = negative)$.
		$s_o < f$	Virtual, erect, larger. $(s_i = negative)$
Diverging lens **Concave lens**	**-**	$s_o > 0$	Virtual, erect, smaller. $(Positive\ M)$.

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

f = focal length
s_o = distance of object from lens center
s_i = distance of image from lens center

$$M = \frac{h_i}{h_o} = \frac{-s_i}{s_o}$$

M = magnification
h_i = image height
h_o = object height
s_i = image distance from lens center
s_o = object distance from lens center

- The distance to a **virtual** image (s_i) is always **negative**.
- The **focal length** (f) of a **diverging lens** is always **negative**.
- **Diverging (Concave) lens** are *thicker on the edges* than at the center.
- **Converging (Convex) lens** are *thicker in the center* than on the edges.