Circle
center at (h,k)
radius = r

$$(x-h)^2+(y-k)^2=r^2$$

Vert. Ellipse
center at (h,k)

$$\frac{(x-h)^2}{b^2}+\frac{(y-k)^2}{a^2}=1$$

foci (h, k $\pm c$)

Vertices (h, k ± a)

Horiz. Ellipse
center is (h,k)

$$\frac{(x-h)^2}{a^2}+\frac{(y-k)^2}{b^2}=1$$

foci (h $\pm c$, k)

Vertices (h ± a, k)

$$c^2=a^2-b^2$$

length of major axis = 2a

eccentricity = $\frac{c}{a}$

length of minor axis = 2b

Vertical Hyperbola

$$\frac{(y-k)^2}{a^2}-\frac{(x-h)^2}{b^2}=1$$

Asymptote equations:

$$y-k=\pm\frac{a}{b}(x-h)$$

vertices (h, k $\pm a$)

foci (h, k $\pm c$)

center is at (h , k)

Length of transverse axis = 2a

$$c^2=a^2+b^2$$

eccentricity = $\frac{c}{a}$

Horizontal Hyperbola

$$\frac{(x-h)^2}{a^2}-\frac{(y-k)^2}{b^2}=1$$

$$y-k=\pm\frac{b}{a}(x-h)$$

vertices (h$\pm a$, k)

foci (h$\pm c$, k)

Parabola vertex is at (h,k) (vertical or horizontal)

Vertical $(x-h)^2=4p(y-k)$

$y=a(x-h)^2+k$

Focus: (h, k+p)
Directrix y = k – p
Axis of sym: x = h

horiz $(y-k)^2=4p(x-h)$

$x=a(y-k)^2+h$

Focus: (h+p,k)
Directrix x = h - p
Axis of sym: y = k

Length of Latus rectum = 4p

(p = c) $a=\frac{1}{4p}$ $p=\frac{1}{4a}$