Summary of the Standard Equation Forms of Conics (UNSHIFTED)

PARABOLAS:

$x^2 = 4py$, $p \neq 0$ OR $y^2 = 4px$, $p \neq 0$

THE FOCUS is $(0, p)$.	THE FOCUS is $(p, 0)$.
THE Directrix is "$y = -p$."	THE Directrix is "$x = -p$."

In BOTH CASES: THE VERTEX is the Origin $(0,0)$.

THE FOCUS is on the axis of the Degree 1 variable.

$|p|$ = The Distance: VERTEX TO FOCUS.

FOR ELLIPSES AND HYPERBOLAS (BOTH)

a = the DISTANCE: CENTER TO EACH VERTEX.

c = the DISTANCE: CENTER TO EACH FOCUS.

THE FOCI AND VERTICES ARE ON THE AXIS OF the Squared Variable that is over a^2.

ELLIPSES:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1 \quad \text{OR} \quad \frac{x^2}{b^2} + \frac{y^2}{a^2} = 1 \quad \text{where} \begin{cases} a > b > 0 \\ c^2 = a^2 - b^2 \\ c < a \end{cases}$$

a^2 is the LARGER DENOMINATOR.

The FOCI AND VERTICES LIE ON THE AXIS of the Variable OVER a^2.

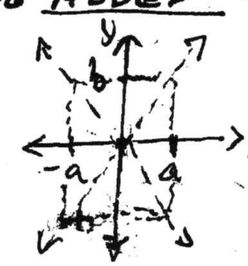
HYPERBOLAS:

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1 \quad \text{OR} \quad \frac{y^2}{a^2} - \frac{x^2}{b^2} = 1 \quad \text{where} \begin{cases} c^2 = a^2 + b^2 \\ c > a \end{cases}$$

a^2 is the denominator under the ADDED Squared Variable.

THE FOCI ARE ON THE AXIS OF THE ADDED Squared Variable.

The asymptotes are lines along the DIAGONALS of the "BOX"



OR