Geometry **Graphing Quadratic Equations**

Finding Table of Values for **TI-36X** Pro Calculator:
1. Go to "table"
2. Edit Function
3. Enter the function equation
4. Press "Enter" 5 times to reach the table of values

Finding Table of Values for **TI-82** Calculator:
1. Go to " Y= " which is located at the top left corner of the calculator
2. Enter the function equation
3. Press 2^{nd} → Graph to reach the table of values

Standard Form: $y = ax^2 + bx + c$
a. Find vertex: $x = \frac{-b}{2a}$

Intercept Form: $y = a(x - p)(x - q)$
a. If "a" is positive (> 0) the parabola opens up
If "a" is negative (< 0) the parabola opens down.
b. The x-intercepts are the points x = p and x = q. Set factors equal to 0 and solve to get p and q.
c. The **x-coordinate of the vertex** is half way between the x-intercepts
d. Make a T-table, put the vertex in the middle of the t-table.
e. Fill in the rest of the values (use calculator

Vertex Form $y = a(x - h)^2 + k$
a. If "a" is positive (> 0) the parabola opens up If "a" is negative (< 0) the parabola opens down.
b. The **vertex** is the point (h, k)
c. Make a T-table, put the vertex in the middle of the t-table.
d. Fill in the rest of the values (use calculator

1. Graph Opens **up** if a > 0. Graph opens **down** if a < 0
2. AOS is the Axis of Symmetry. This is always a vertical line with the equation " x = __ "

   The axis of symmetry will match the x-value from the vertex

3. To create your table of values, make a t-table and find 5 ordered pair. Be sure to put the vertex at the center of your table.

4. x-intercept: This is where the graph is on the x-axis. Find ordered pairs where the **y-value is zero,** so (__ , 0) (either 0, 1, or 2 x-intercepts on graph)

5. y-intercept: This is where the graph is on the y-axis. Find ordered pair where the **x-value is zero,** so (0, __)

6. Domain: Always All Real Numbers: $(-\infty, +\infty)$
7. Range: These are the y-values on the graph, from lowest y-value to the highest, y-value.

   *Remember, there will be a bracket in your range interval. The bracket will be with your vertex y-value.

8. Average Rate of Change: This is finding the slope between the x-values provided.
   Find ordered pairs first, then plug into slope formula: $\frac{y_2 - y_1}{x_2 - x_1}$
9. End behavior: Graph is increasing when rising (use x-value intervals from left to right)
   Graph is decreasing when falling
   Positive: Graph is positive when above the x-axis
   Negative: Graph is negative when below the x-axis