

Quadratic Functions

	<u>Standard</u> $y = ax^2 + bx + c$	<u>Vertex</u> $y = a(x - h)^2 + k$	<u>Intercept (Factored)</u> $y = a(x - c)(x - d)$
1. Up or Down	$a > 0 \uparrow$ (min) $a < 0 \downarrow$ (max)	$a > 0 \uparrow$ (min) $a < 0 \downarrow$ (max)	$a > 0 \uparrow$ (min) $a < 0 \downarrow$ (max)
2. Vertex (point)	$x = \left(\frac{-b}{2a}, ? \right)$	(h,k)	(midpoints of x-intercepts, ?)
3. y-intercept (let $x = 0$, solve for y)	"C Value"	"Order of Operations"	"Order of Operations"
4. Axis of Symmetry (vertical line $x = ?$)	$x = \frac{-b}{2a}$	$x = h$	$x =$ midpoint of x-intercepts
5. x-intercept(s) (let $y = 0$, solve for x)	<p>5 ways to find intercepts, zeros, roots, and solutions</p> <ol style="list-style-type: none"> 1. Square Root – Vertex form or Standard form and no "b value" 2. Graphing – Approximations 3. Quadratic Formula – Standard form and $b^2 - 4ac \neq$ perfect square $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ <ol style="list-style-type: none"> 4. Completing the Square – Standard form "a value is 1" and "b value is even" 5. Factoring – Standard form and $b^2 - 4ac =$ perfect square 		

9 Types of Factoring

1. GCF
2. GCF complete factoring
3. Quadratic Trinomial (Trial and Error)
4. Perfect Square Trinomial ($\sqrt{b^2 - 4ac} = 0$)
5. Difference of 2 Squares (___+___)
6. Sum of 2 Cubes (___+___)(___-___+___)
7. Difference of 2 Cubes (___-___)(___+___+___)
8. Graphing (4 terms)
9. Unfactorable