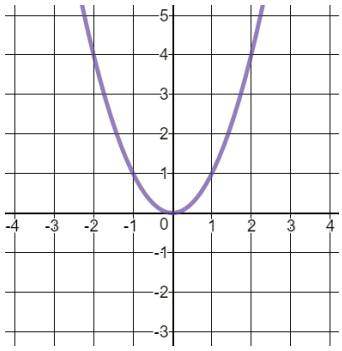
Standard Form Quadratics – Effects of Changing the Parameters

A quadratic function in standard form takes the form: $y = ax^2 + bx + c$ where $a \neq 0$

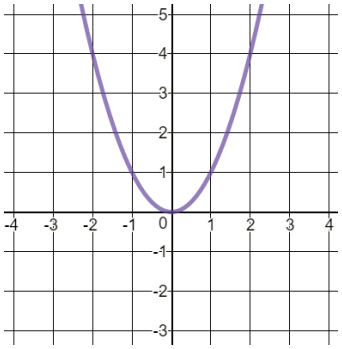
The "parent" or basic quadratic function is $y = x^2$. Describe the effects of changing each parameter on the shape and position of a standard form quadratic function by comparing it to the basic function.

<u>The Effect of Changing the "a" Parameter:</u>



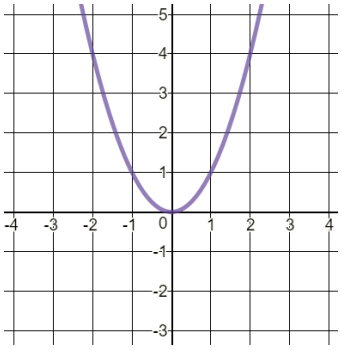
If _____, then the parabola is

_____ (_____).



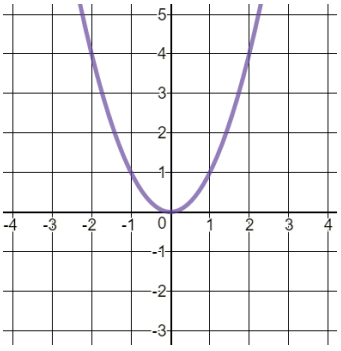
If _____, then the parabola is

_____ (_____).



If _____, then the parabola is

_____ than the basic parabola.

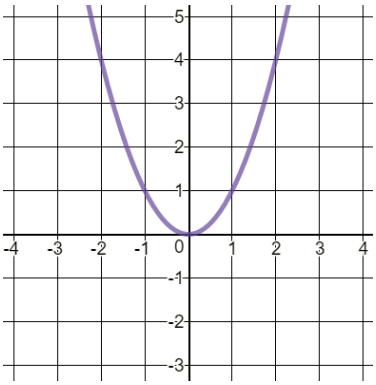


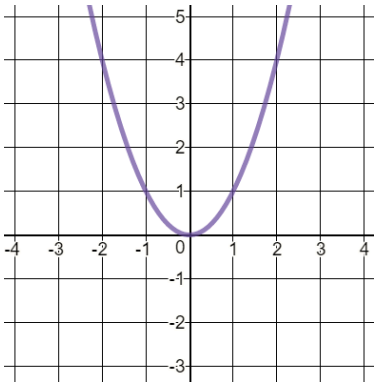
If_____, then the parabola is

_____than the basic parabola.

- If _____, then the x^2 term is eliminated thereby changing the parabola into a _____.

The Effect of Changing the "c" Parameter:





If _____, then the parabola vertically translates in the _____ direction.

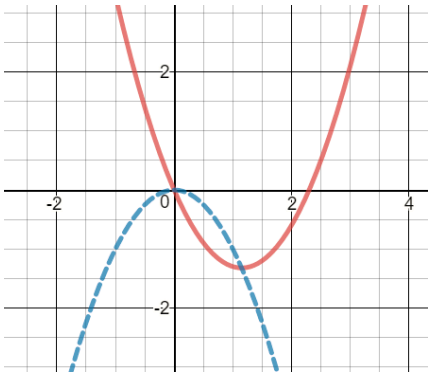
If _____, then the parabola vertically translates in the _____ direction.

* the c-value is the y-value of the _____ of the parabola.

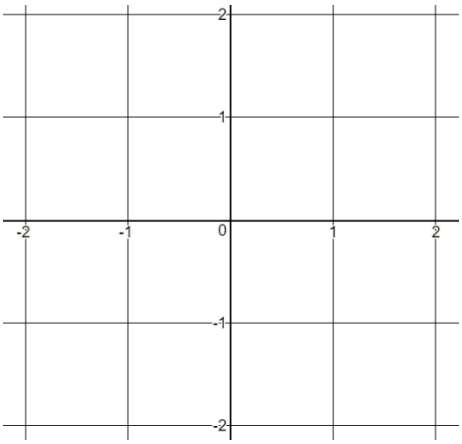
The Effect of Changing the "b" Parameter:

Changing the "b" parameter moves the vertex of the parabola along a vertically _____ image of the original parabola.

- If _____, then the parabola moves _____.
- If _____, then the parabola moves _____.



Use this property to sketch: $y = 2x^2 + 4x + 1$



The value of "b" determines the _____ between the _____ and the point on the parabola that is horizontally _____ the y-intercept, where the distance,

$d =$