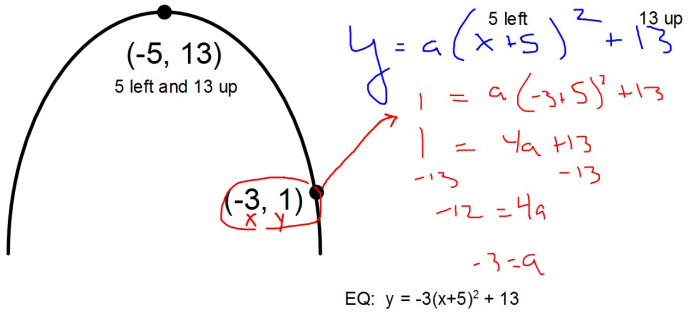
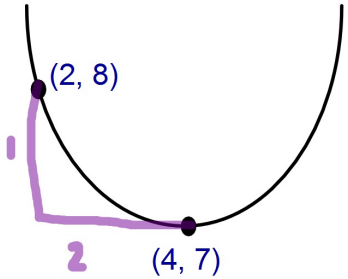
Write the equation of this parabola in Vertex Form.



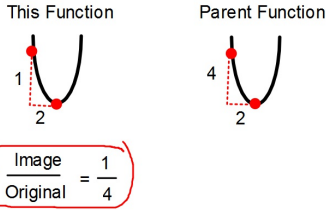
EQ: $y = -3(x+5)^2 + 13$

Write the equation of this parabola in Vertex Form.

Another method to find the coefficient a



$y = \frac{1}{4}(x-4)^2 + 7$ (4 right, 7 up)



$a = \frac{\text{Image}}{\text{Original}} = \frac{1}{4}$

Determine the values of a and k so that both points are on the graph of the quadratic function:

given $y = a(x - 6)^2 + k$
and the points (3,33) & (1, 65)

$33 = a(3-6)^2 + k$ → $33 = 9a + k$

$65 = a(1-6)^2 + k$ → $65 = 25a + k$

Now solve this system of equations for a and k.

$$\begin{array}{r} 65 = 25a + k \\ -(33 = 9a + k) \\ \hline 32 = 16a \end{array}$$

$2 = a$

replace a with 2 in one of the two equations and find k.

$k = 15$

Sec 5-1: Quadratic Function

A function is a quadratic if the largest exponent is 2.

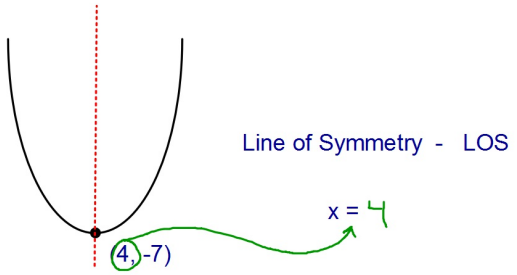
Standard Form of a Quadratic Function

$$y = ax^2 + bx + c$$

- ax^2: Quadratic Term
- bx: Linear Term
- c: Constant

If the the vertex of a parabola is (4, -7) what is the equation of the Line of Symmetry?

The Line of Symmetry is a Vertical line passing through the Vertex



Use this equation of a quadratic.

$$y = x^2 - 4x + 7$$

The Line of Symmetry is $x = 2$

What are the coordinates of the vertex?

(2 , 3) To find the y-coordinate just replace x in the equation with 2 and find the value of y.

Below is a table of values for the graph of a parabola. Plot these points and find 2 other points to complete the picture of this parabola.

x	y
−2	6
−1	8
0	6
1	0
2	−10