

We have been working with quadratics in Vertex Form,  $y = a(x - h)^2 + k$ . However, it is more common for quadratic equations to be given to us in Standard Form,  $y = ax^2 + bx + c$ . To help your assignment, in the pre-to-go action using FOIL and Distributive Property to change quadratics from **VERTEX FORM** to **STANDARD FORM** and identify the **VERTEX** Use the example below to guide your work.

Example:

$$\begin{aligned}y &= -2(x + 3)^2 - 5 \\y &= -2(x^2 + 6x + 9) - 5 \\y &= -2x^2 - 12x - 18 - 5 \\y &= -2x^2 - 12x - 23 \\FORMULA: a = -2, b = -12\end{aligned}$$

Given Quadratic in Vertex Form  
FOIL the Binomial that is squared  
Distribute your a(LO)  
Combine Like Terms  
Identify Vertex of Quadratic

$$\begin{aligned}\text{FOIL work of } (x + 3)^2 \\(x + 3)^2 \\(x + 3)(x + 3) \\x^2 + 3x + 3x + 9 \\x^2 + 6x + 9\end{aligned}$$

|                                                                       |                                                                         |                                                                          |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 1. $y = 6(x - 4)^2 - 1$<br><br><br><br><br>Vertex:                    | 2. $y = \frac{1}{2}(x + 4)^2 + 6$<br><br><br><br><br>Vertex:            | 3. $y = -5(x - 2)^2 + 4$<br><br><br><br><br>Vertex:                      |
| 4. $y = -\frac{1}{4}(x + 4)^2 - 1$<br><br><br><br><br>Vertex:         | 5. $y = 4(x + 2)^2 - 8$<br><br><br><br><br>Vertex:                      | 6. $y = -\frac{3}{4}(x - 1)^2 - 2$<br><br><br><br><br>Vertex:            |
| 7. $y = (x - 2)^2 + 7$<br><br><br><br><br>Vertex:                     | 8. $y = -\left(x + \frac{1}{2}\right)^2 - 2$<br><br><br><br><br>Vertex: | 9. $y = 10\left(x - \frac{1}{2}\right)^2 + 5$<br><br><br><br><br>Vertex: |
| 10. $y = -2\left(x + \frac{3}{2}\right)^2$<br><br><br><br><br>Vertex: | 11. $y = 18(x - 2)^2 + 15$<br><br><br><br><br>Vertex:                   | 12. $y = 2(x + 4)^2 + 10$<br><br><br><br><br>Vertex:                     |