

Finding the Vertex of a Quadratic

To find the **vertex** of a quadratic when it is in the **factored form** $y=a(x - r)(x - t)$ you must:

To find the **vertex** of a quadratic when it is in the **standard form** $y=ax^2 + bx + c$ you must:

To find the **vertex** of a quadratic when it is in the **vertex form** $y=a(x - h)^2 + k$ you must:

Factored Form	Zeros or x-int	x (axis of symm)	y (optimal val or max/min value)	Vertex and vertex Form	Convert to standard form	y-int
$y = -3(x - 2)(x - 8)$						

Standard Form	y-int	Zeros or x-int	x (axis of symm)	y (optimal val or max/min value)	Vertex and vertex form
$y = x^2 - 3x - 18$					

Vertex Form	Vertex	Is the vertex a max or a min?	Convert to standard form
$y = -3(x - 2)^2 + 5$			

The flight of a baseball is modelled by $y = -4.9x^2 + 9.8x + 14.7$ where x is the time, in sec, and y is the height, in m, above the ground.

- What is the height of the ball 0.5 seconds after it was hit?
- What is the height of the ball when it was hit?
- How long does it take for the ball to reach the ground?
- Find the maximum height.