8.2/8.3 Vertex Form and Standard Form – NOTES
Algebra I

Name _____
Block _____ Date _____

Finding the Vertex from Standard Form	**Vertex Form**
$y = ax^2 + bx + c$ x-coordinate of the vertex: $h = -\frac{b}{2a}$ y-coordinate of the vertex: k = substitute h in for x and solve for y! Vertex: (h, k) Opens Up with $+a$; Opens Down with $-a$	$\boldsymbol{y = a(x - h)^2 + k}$ Vertex @ $\boldsymbol{(h, k)}$ ⇨ h is a shift left/right ⇨ k is a shift up/down ⇨ a is a stretch/shrink ⇨ $+a$ opens up ⇨ $-a$ opens down

Example 1 Identify the vertex. Describe the quadratic function.

a) $y = -(x + 2)^2 - 1$

b) $y = 2(x + 4)^2 + 7$

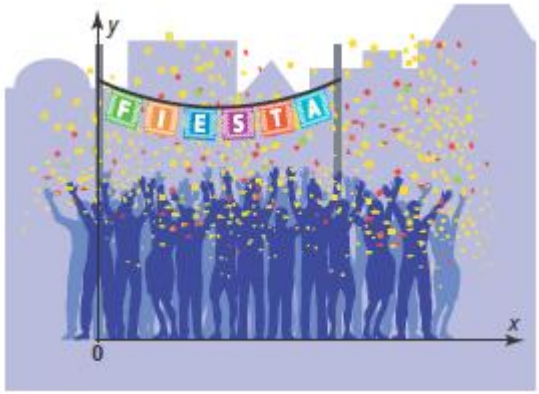
Example 2 Mia tosses a ball to her dog. The function $f(x) = -0.5(x - 2)^2 + 8$ represents the ball's path. At what time does the ball reach its maximum height? What is the maximum height?

Example 3 Find the vertex. Rewrite the quadratic function in vertex form. Describe the quadratic function.

a) $y = x^2 - 6x + 12$

b) $y = 2x^2 + 4x + 6$

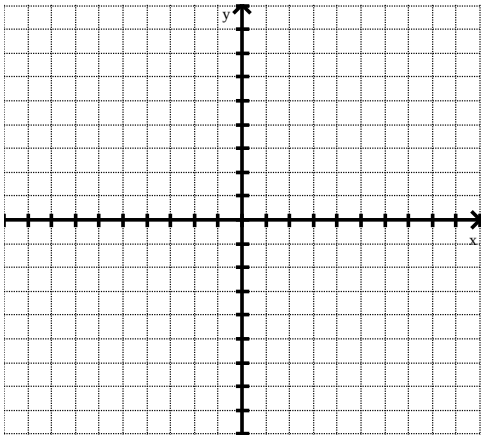
Example 4 A banner is hung for a party. The distance from the point on the edge of the banner to the floor can be determined by using the function $f(x) = 0.25x^2 - x + 9.5$, where x is the distance from the left end of the banner. How high above the floor is the lowest point on the bottom edge of the banner?



Example 5 Find the vertex. Write the quadratic function in vertex form. Fill in the table of values and graph.

a. $y = x^2 - 4x + 3$

x	Show your work	y



b. $y = -x^2 + 2x + 3$

x	Show your work	y

Vertex Form:_____

Domain:_____

Range:_____

Vertex:_____ Min / Max ?

Axis of Symmetry:_____

Interval of Increase:_____

Interval of Decrease:_____

Zeros:_____