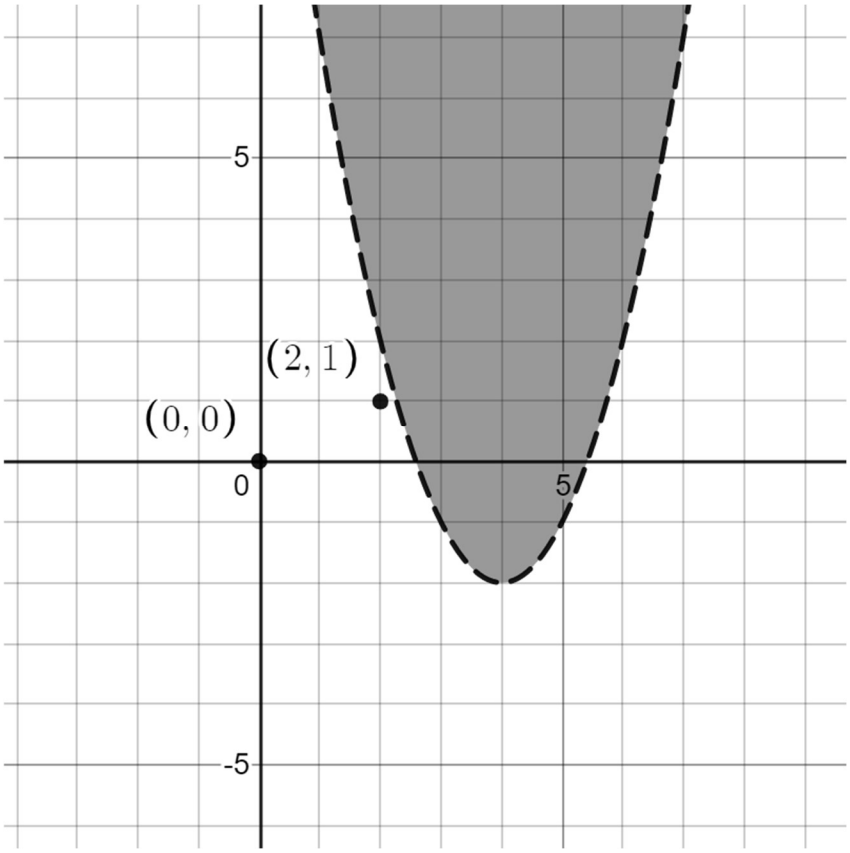
Name: _____ Date: _____

Learning Goal 9.2	Solving quadratic inequalities.

1. Graph $y > (x-4)^2 - 2$ and determine whether the point $(2, 1)$ is a solution to the inequality.



The vertex of this parabola is at $(4, -2)$ and is smiling 😊

Because there is no expansion/contraction of the parabola, we can move from the vertex in our normal way:

Right/Left	Up
1	1
2	4
3	9

Or create a table of values, placing the vertex in the middle of the table:

x	y
2	2
3	-1
4	-2
5	-1
6	2

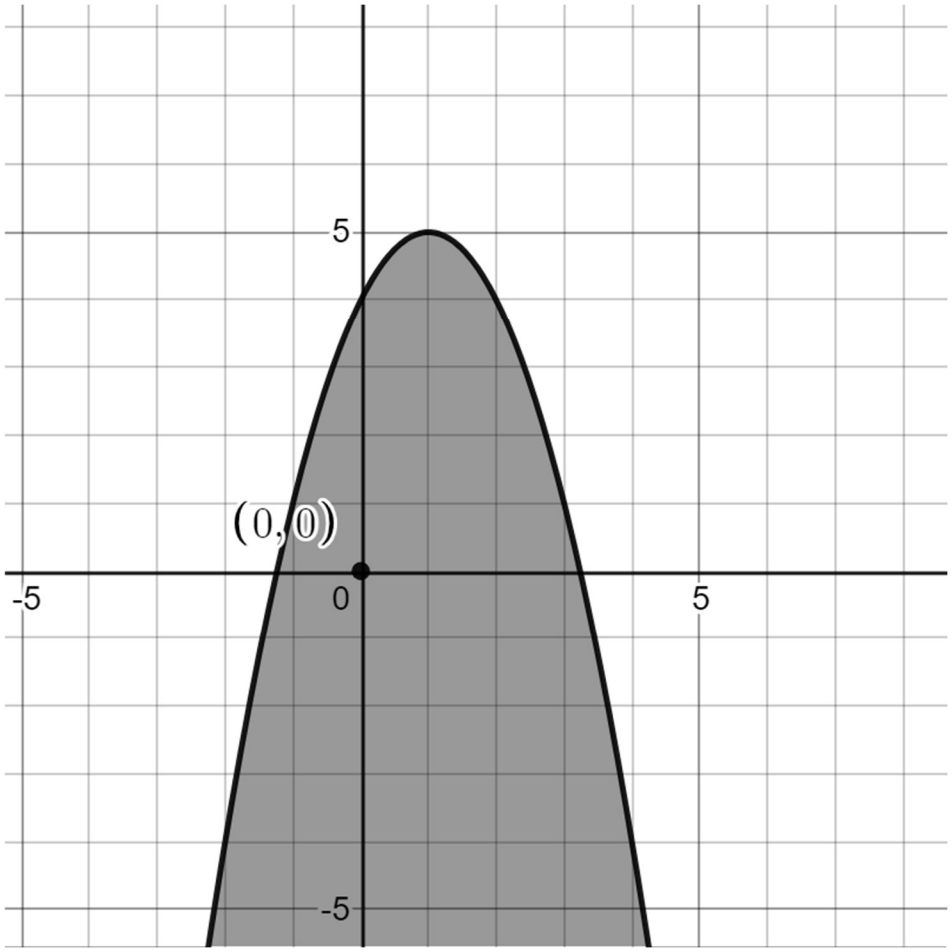
We use a dashed line because we are graphing a **strict** inequality.
You have a choice of test point. Either use the one that is in the question, or use $(0, 0)$.

$(2, 1)$	$(0, 0)$
$y > (x-4)^2 - 2$ $1 > (2-4)^2 - 2$ $1 > (-2)^2 - 2$ $1 > 4 - 2$ $1 > 2$	$y > (x-4)^2 - 2$ $0 > (0-4)^2 - 2$ $0 > (-4)^2 - 2$ $0 > 16 - 2$ $0 > 14$

Both are false and lie outside the parabola, so the inside region is shaded.

Assignment p. 496 # 1 – 8 Quiz Next Day!

2. Graph $y \leq -x^2 + 2x + 4$.



Complete the square!

$$y \leq -x^2 + 2x + 4$$
$$y \leq -(x^2 - 2x) + 4$$
$$y \leq -(x^2 - 2x + 1 - 1) + 4$$
$$y \leq -(x^2 - 2x + 1) + 1 + 4$$
$$y \leq -(x - 1)^2 + 1 + 4$$
$$y \leq -(x - 1)^2 + 5$$

The vertex of this parabola is at $(1, 5)$ and is frowning ☹

Because there is no expansion/contraction of the parabola, we can move from the vertex in our normal way:

Right/Left	Down
1	1
2	4
3	9

Or create a table of values, placing the vertex in the middle of the table:

x	y
-1	1
0	4
1	5
2	4
3	1

We use a solid line because we are graphing an inequality, and the simplest test point to use is $(0, 0)$

$(0, 0)$
$y \leq -x^2 + 2x + 4$ $0 \leq -(0)^2 + 2(0) + 4$ $0 \leq 0 + 0 + 4$ $0 > 4$

It is true and inside the parabola, so the inside region is shaded.