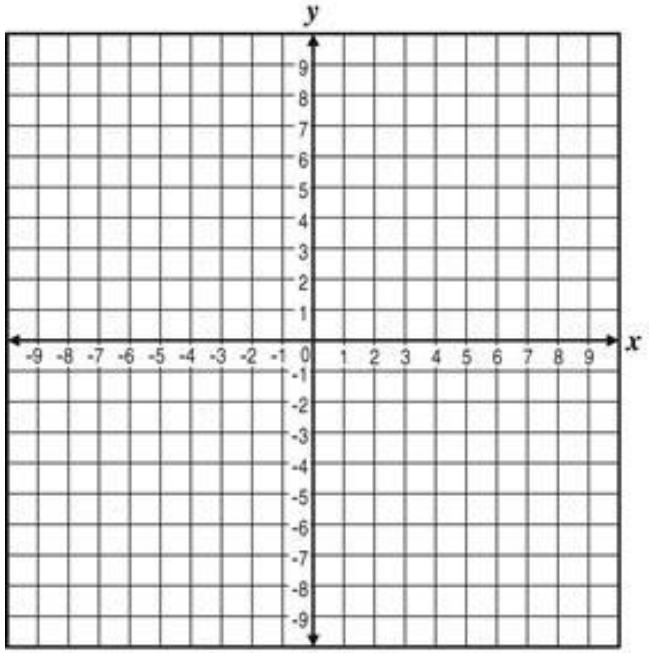
TUESDAY, FEBRUARY 26, 2019

- Warm-up
  - Graph the following: $f(x) = 2x^2 - 4x - 6$
    - Mark and state the y-intercept, x-intercept, axis of symmetry and vertex



- Question of the Day:
  - What can I get from a standard form quadratic equation?
  - And how do I do it?

Objectives

Content: I will be able to determine **y-intercept**, **x-intercept**, **vertex**, **focus** and **directrix** from the standard form of the quadratic equation.

Social: I will do my best today to stay focused and take good notes.

Language: I will clearly define determine **y-intercept**, **x-intercept**, **vertex**, **focus** and **directrix** in writing for my own reference.

WARM-UP

$f(x) = 2x^2 - 4x - 6$

$2(x^2 - 2x - 3)$

$2(x-3)(x+1)$

- y – intercept: $(0, -6)$
- x – intercept: $(3, 0)$ $(-1, 0)$
- axis of symmetry: $x = 1$
- vertex: $(1, -8)$
- focus: $(1, -7\frac{7}{8})$
- directrix: $y = -8\frac{1}{8}$

$x - 3 = 0 \quad x + 1 = 0$

$x = 3 \quad x = -1$

$x = \frac{3 + -1}{2}$

$\left(-\frac{b}{2a}\right) = \frac{2}{2}$

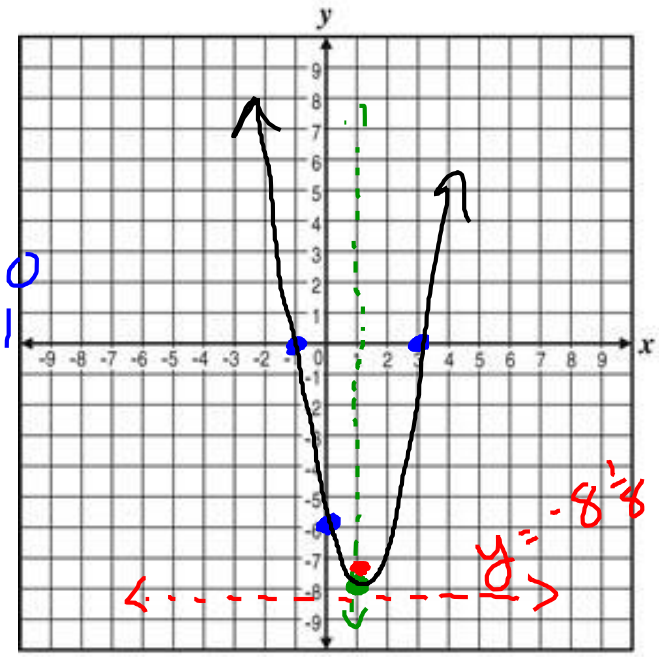
$x = 1$

$2(1)^2 - 4(1) - 6$

$2 - 4 - 6$

$-2 - 6$

-8



vertex form:

$a(x-h)^2 + k$

$2(x-1)^2 + (-8)$

$d = \frac{1}{4a}$ $a = \frac{1}{4d}$

$d = \frac{1}{4 \cdot 2} = \frac{1}{8}$

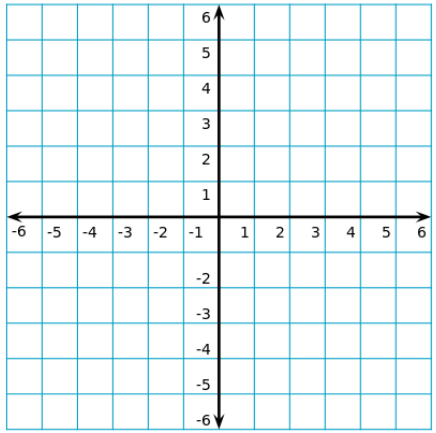
Objectives

Content: I will be able to determine **y-intercept**, **x-intercept**, **vertex**, **focus** and **directrix** from the standard form of the quadratic equation.

Social: I will do my best today to stay focused and take good notes.

Language: I will clearly define determine **y-intercept**, **x-intercept**, **vertex**, **focus** and **directrix** in writing for my own reference.

Start with a standard form of quadratic equation



$y = x^2 + x - 6$

- y – intercept:
- x – intercept:
- axis of symmetry:
- vertex:
- focus:
- directrix:

Objectives

Content: I will be able to determine **y-intercept**, **x-intercept**, **vertex**, **focus** and **directrix** from the standard form of the quadratic equation.

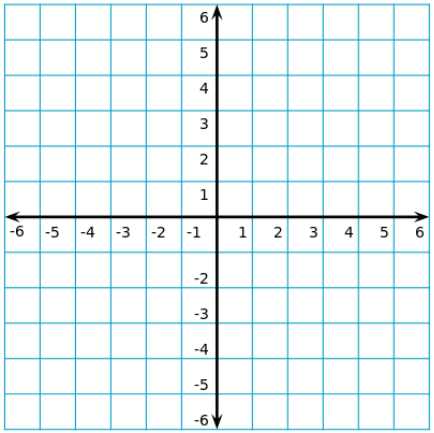
Social: I will do my best today to stay focused and take good notes.

Language: I will clearly define determine **y-intercept**, **x-intercept**, **vertex**, **focus** and **directrix** in writing for my own reference.

YOU PRACTICE

$y = x^2 - 4x - 5$

- y – intercept:
- x – intercept:
- axis of symmetry:
- vertex:
- focus:
- directrix:



Objectives

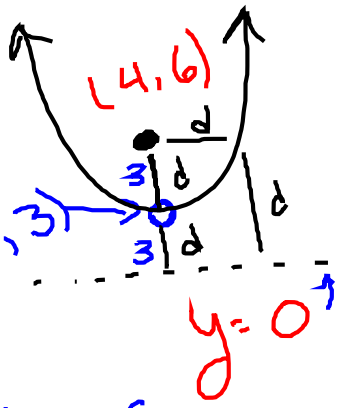
Content: I will be able to determine **y-intercept**, **x-intercept**, **vertex**, **focus** and **directrix** from the standard form of the quadratic equation.

Social: I will do my best today to stay focused and take good notes.

Language: I will clearly define determine **y-intercept**, **x-intercept**, **vertex**, **focus** and **directrix** in writing for my own reference.

Focus: (4, 6)
Directrix: y = 0

distance: $\sqrt{(y_2-y_1)^2+(x_2-x_1)^2}$



Focus to parabola = Directrix to parabola

$$\left(\sqrt{(6-y)^2+(4-x)^2}\right)^2 = \left(\sqrt{(0-y)^2+(x-x)^2}\right)^2$$

$$(6-y)^2+(4-x)^2 = (0-y)^2+(x-x)^2$$

$$(6-y)(6-y)+(4-x)(4-x) = (-y)^2+0^2$$

$$36-6y-6y+y^2+16-4y-4y+x^2 = y^2$$

middle: $\frac{6+0}{2} = 3$

Vertex form: $y = a(x-h)^2+k$

$y = \frac{1}{12}(x-4)^2+3$

$d = 3 = \frac{1}{4a}\cdot a$

$\frac{3a}{3} = \frac{1}{4}\cdot\frac{1}{3}$

$a = \frac{1}{12}$

Challenge: find the quadratic equations given the following

Focus: (4, 6) **Directrix: y = 0**	**x-intercepts: ~~(0, -3)~~ and ~~(0, 6)~~** **a = 1**
Vertex: (-2, 4) **a = -1**	**Focus: (3, -2)** **Directrix: y = 4**

Objectives

Content: I will find and identify critical values of a parabola including y-intercept, x-intercept, vertex, focus and directrix.

Social: I will help those around me to understand by explaining my reasoning clearly.

Language: I will use the vocabulary for the critical values of a parabola including y-intercept, x-intercept, vertex, focus and directrix correctly in speaking.