Finding the Zeroes

Date:

Standards

F.IF. 7a Graph quadratic functions

A.SSE.1.a - Interpret parts of an expression, such as terms, factors, and coefficients.

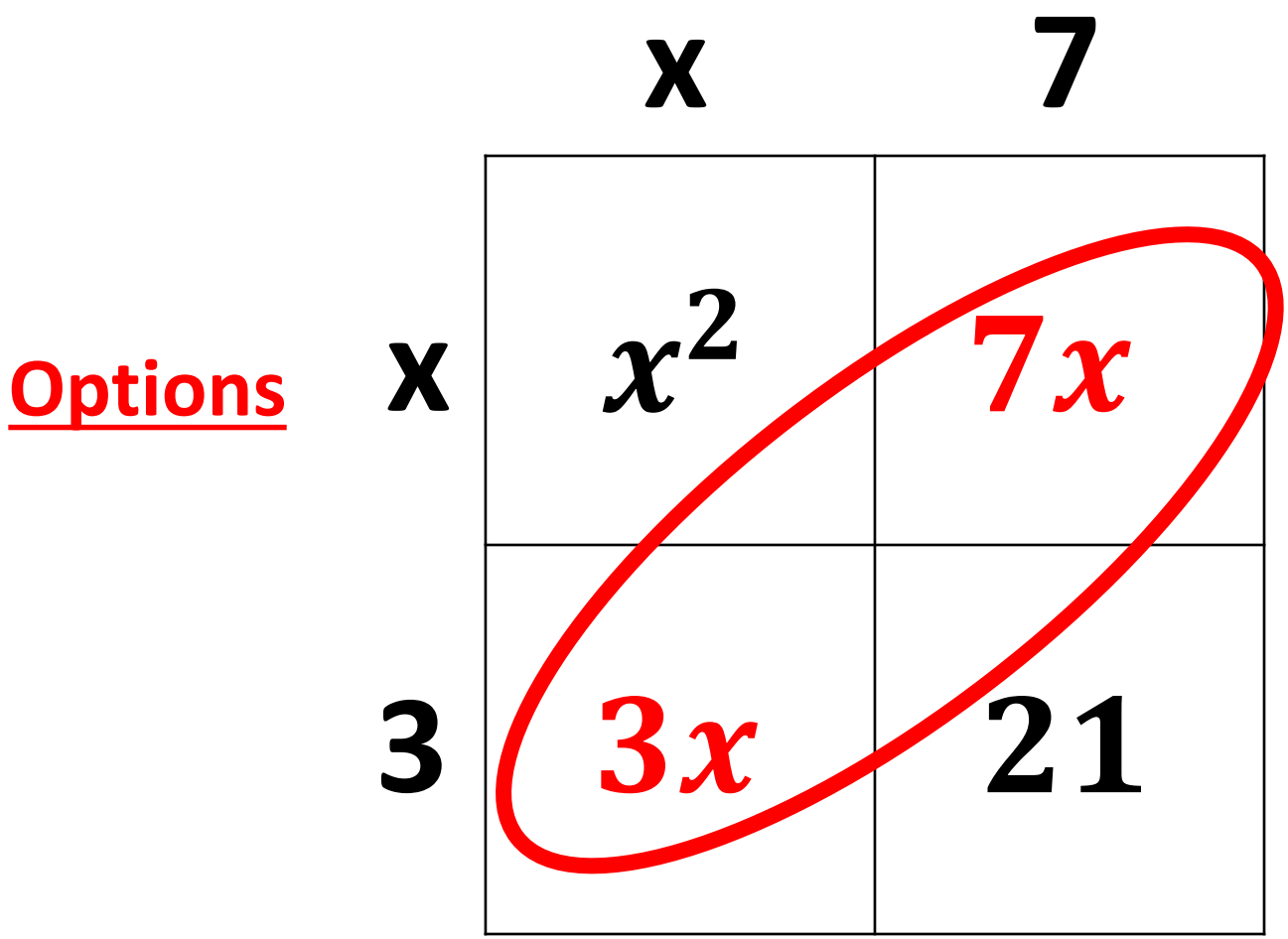
A.SSE.2 - Use the structure of an expression to identify ways to rewrite it.

Essential Questions

- Why do we factor a quadratic?
- How do I find the “zeroes” of a quadratic?
- How do I graph a quadratic using zeroes?

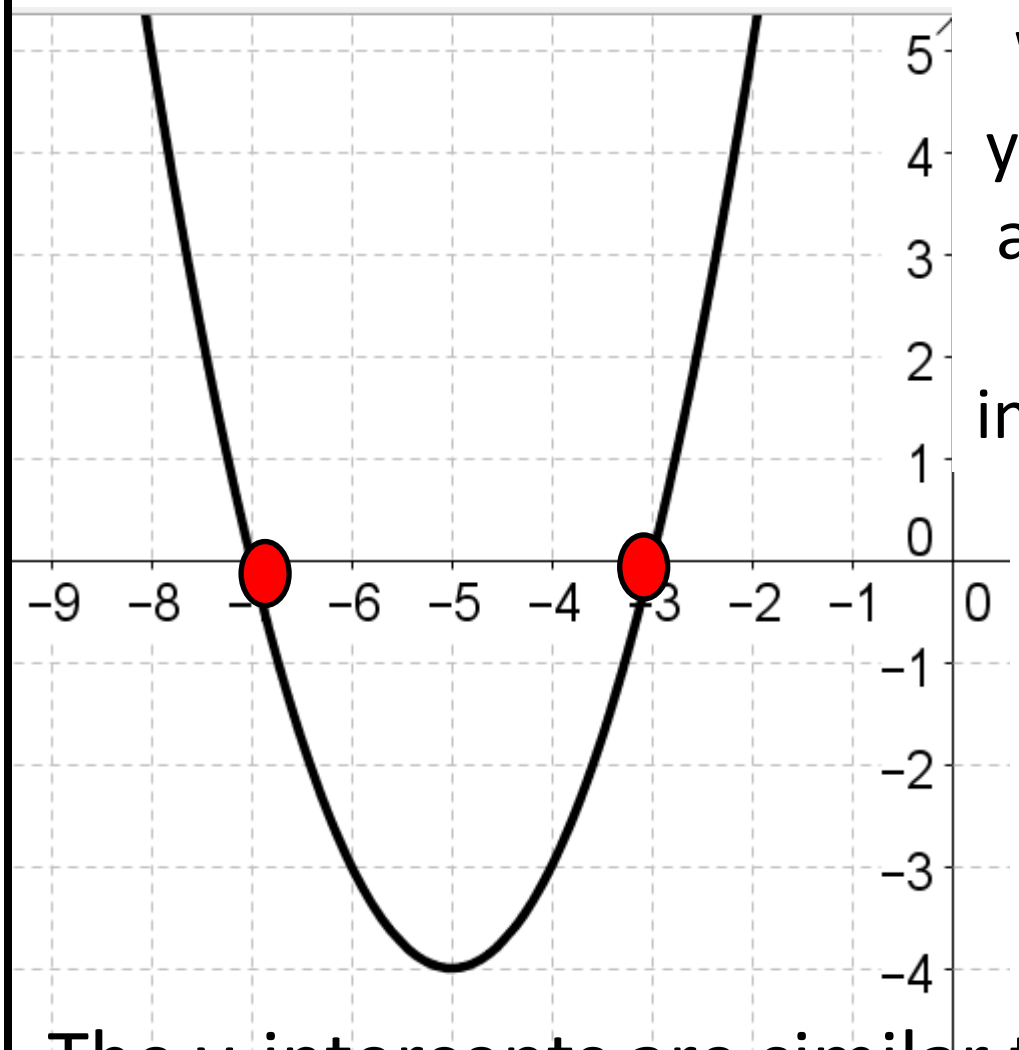
Why do we factor quadratics?

$$x^2 + 10x + 21$$



$$(x + 7)(x + 3)$$

Why do we factor quadratics?



What do you notice about the y-intercepts?

The y-intercepts are similar to what we factored.

We factor to find the x- intercepts

How do I find the "zeroes" of a quadratic?

$$y = x^2 + 10x + 21$$

$$y = (x + 7)(x + 3)$$

What do we know about the x-intercept?

At the x-intercept, y=0

$$0 = (x + 7)(x + 3)$$

$$0 = x + 3$$

$$-3 \quad -3$$

$$-3 = x$$

$$(-3, 0)$$

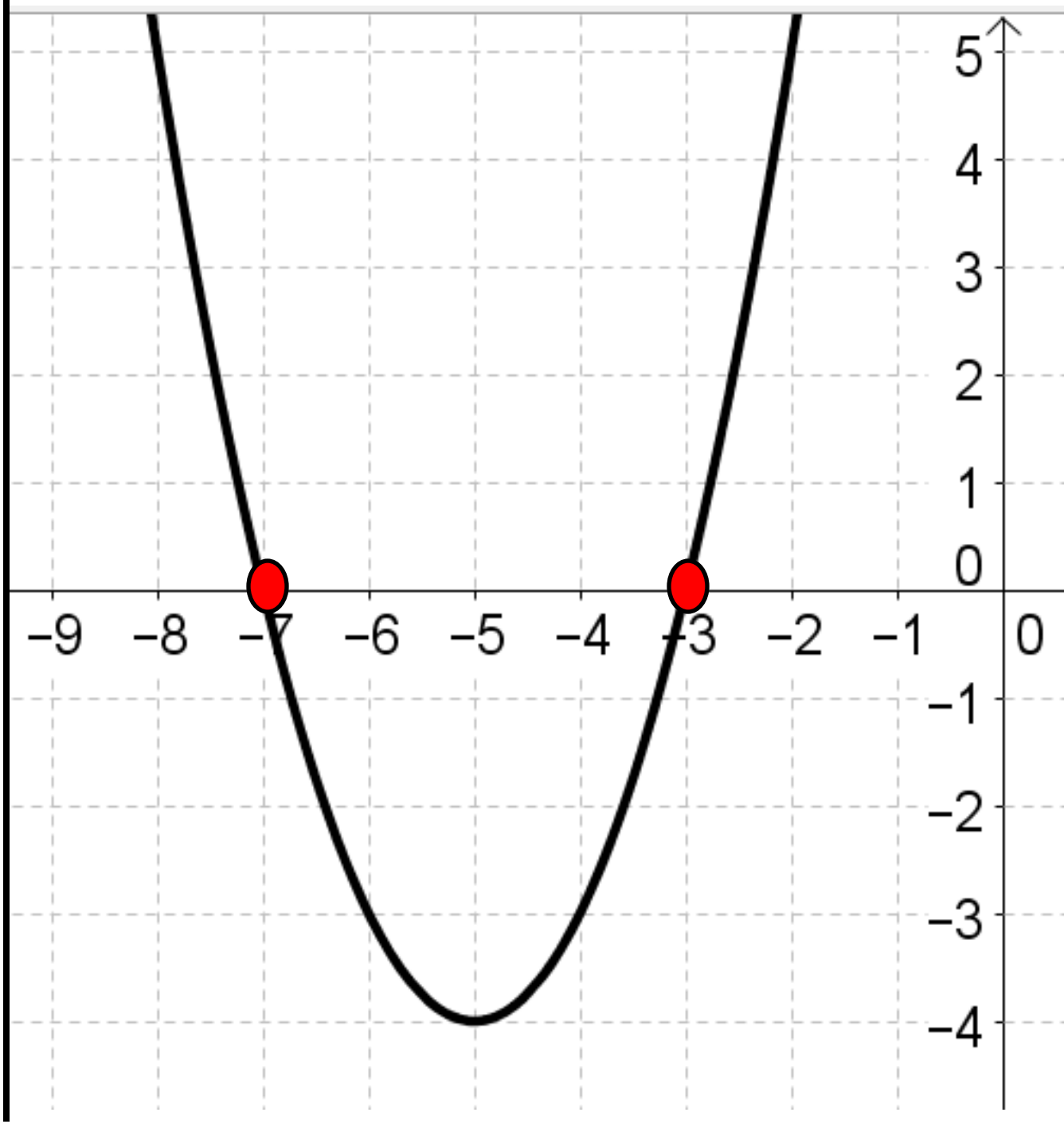
$$0 = x + 7$$

$$-7 \quad -7$$

$$-7 = x$$

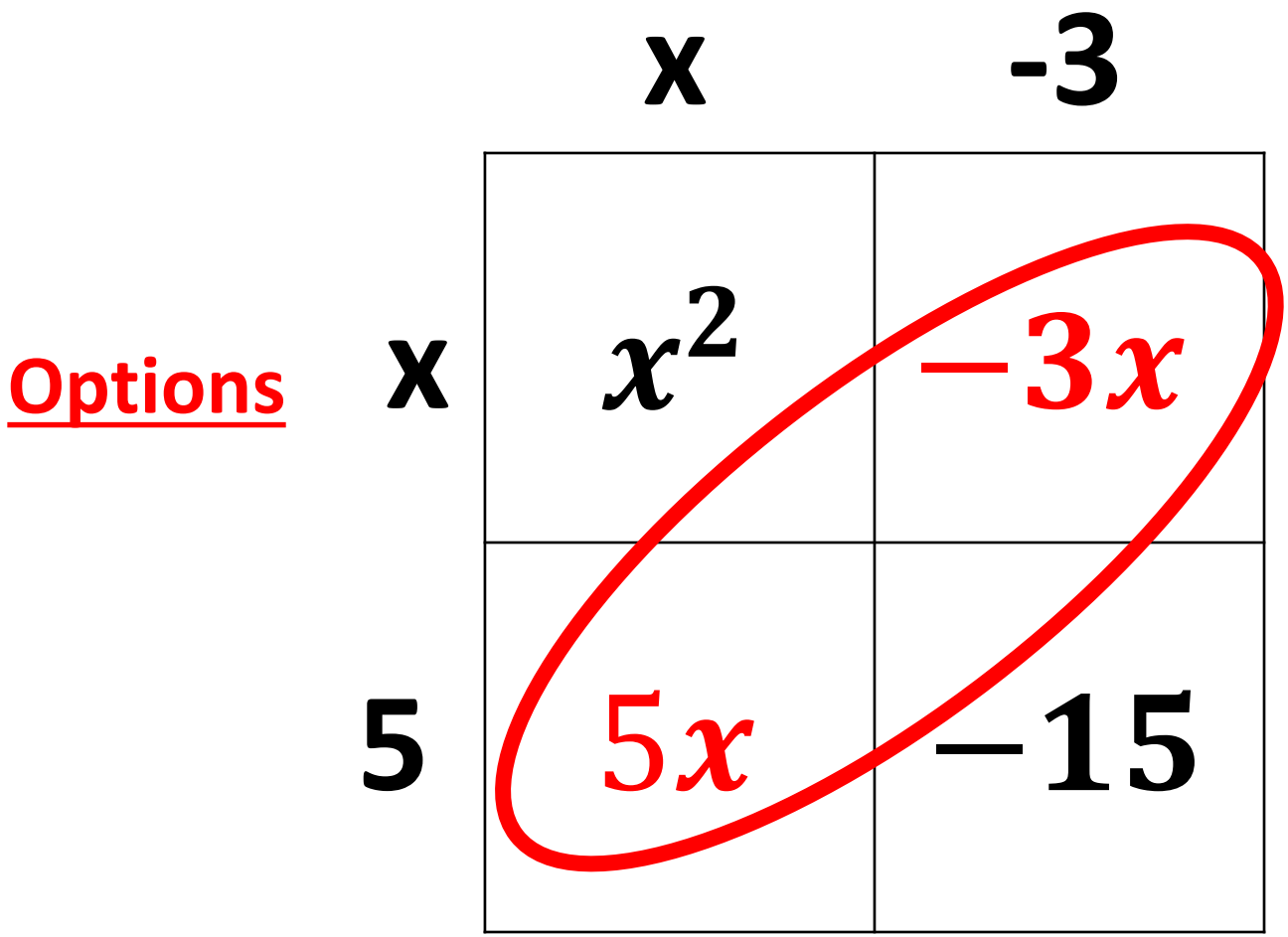
$$(-7, 0)$$

How do I find the "zeroes" of a quadratic?



How do I factor a quadratic with 3 terms

$$x^2 + 2x - 15$$



$$(x - 3)(x + 5)$$

How do I find the “zeroes” of a quadratic?

$$y = (x - 3)(x + 5)$$

$$0 = (x - 3)(x + 5)$$

$$0 = x - 3$$

$$+3 \quad +3$$

$$3 = x$$

$$(3, 0)$$

$$0 = x + 5$$

$$-5 \quad -5$$

$$-5 = x$$

$$(-5, 0)$$

How do I use the zeroes to graph a quadratic?

$$y = x^2 + 2x - 15$$

a= 1

b= 2

c= -15

$$-\frac{b}{2a} = -\frac{2}{2 \cdot 1} = -\frac{2}{2} = -1$$

$$y = x^2 + 2x - 15$$

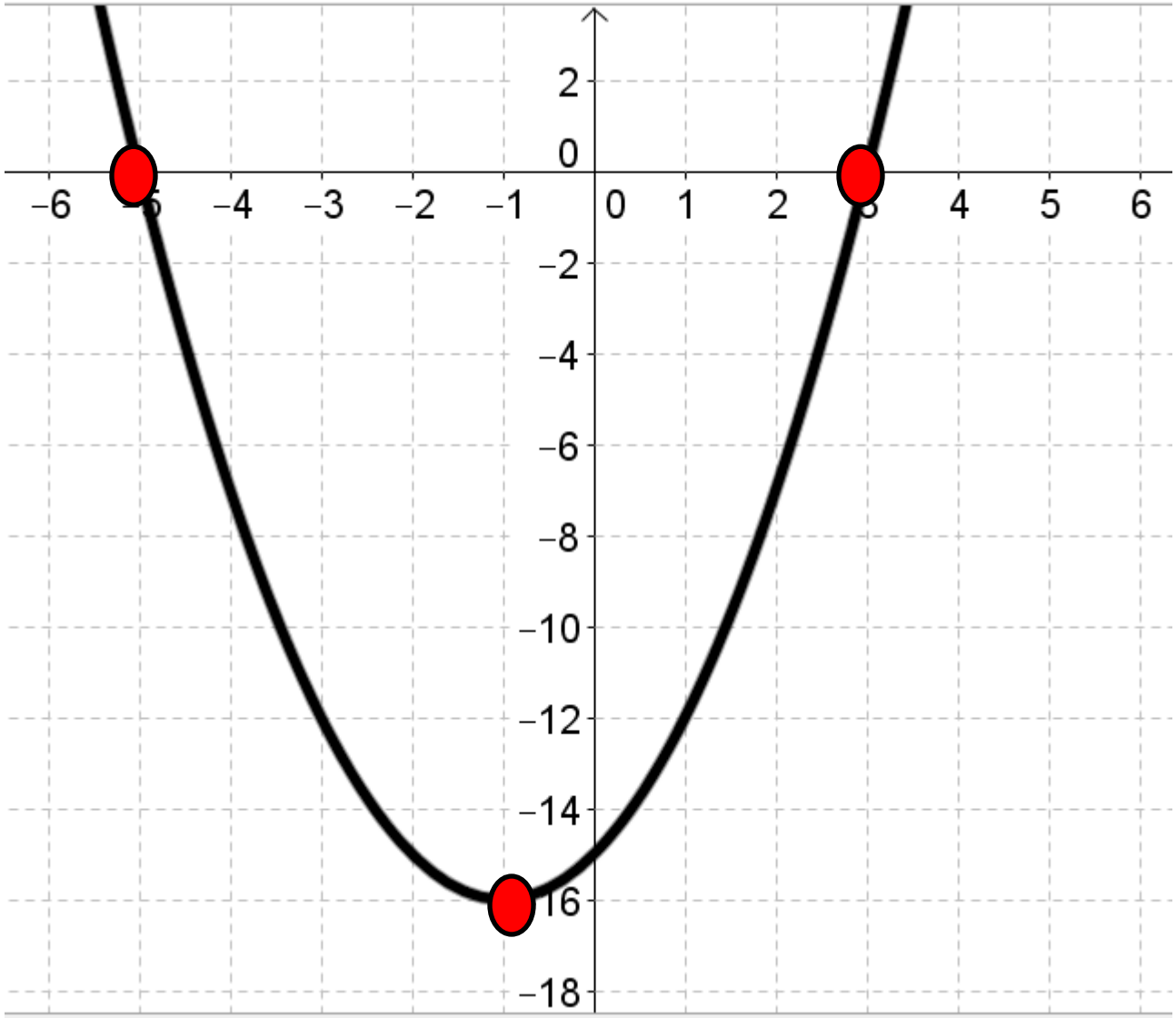
$$y = (-1)^2 + 2(-1) - 15$$

$$y = 1 - 2 - 15$$

$$y = -16$$

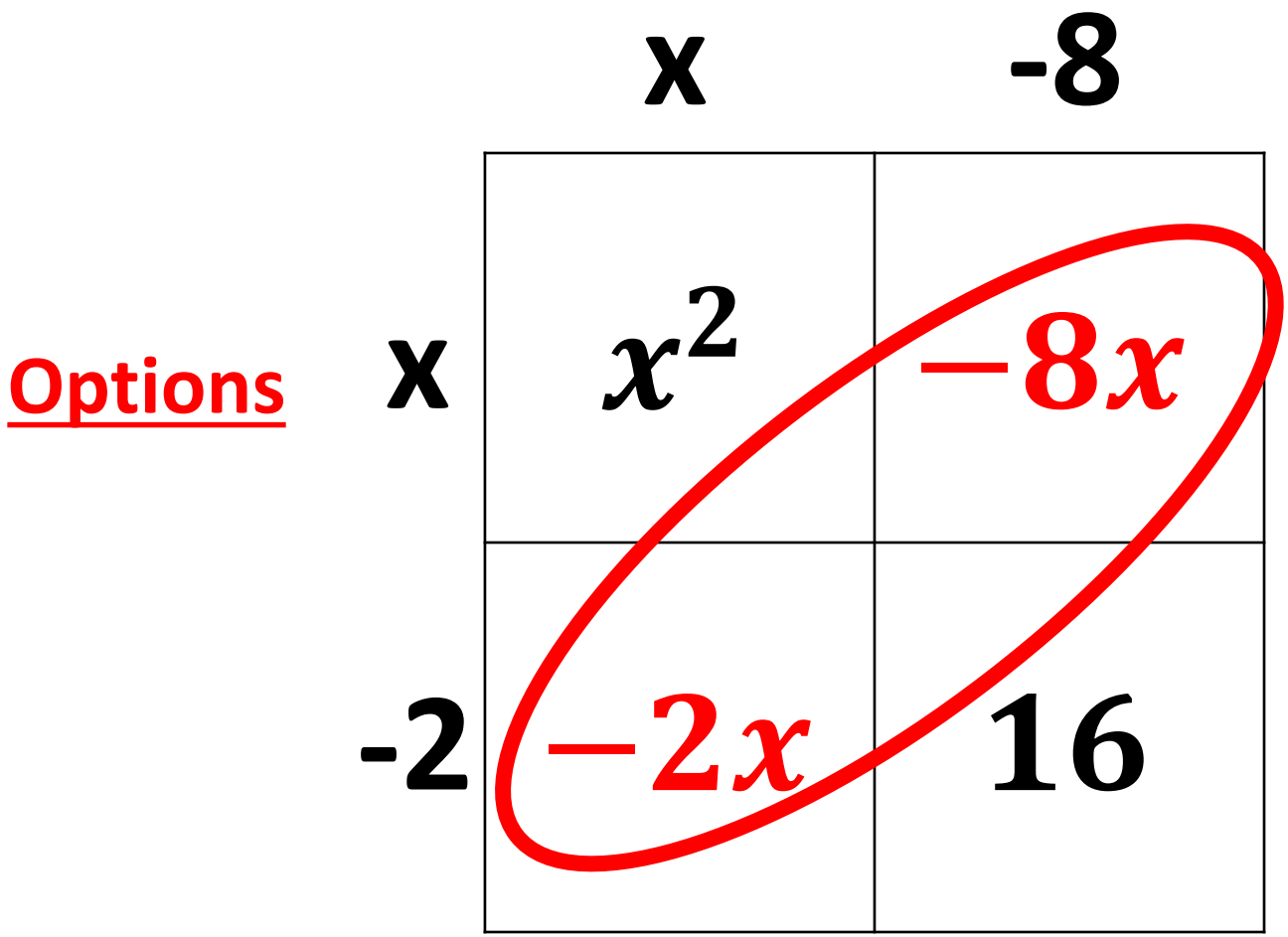
Vertex @ (-1, -16)

How do I use the zeroes to graph a quadratic?



How do I use the zeroes to graph a quadratic?

$$x^2 - 10x + 16$$



$$(x - 8)(x - 2)$$

How do I use the zeroes to graph a quadratic?

$$y = (x - 8)(x - 2)$$

$$0 = (x - 8)(x - 2)$$

$$0 = x - 8$$

$$+8 \quad +8$$

$$8 = x$$

$$(8, 0)$$

$$0 = x - 2$$

$$+2 \quad +2$$

$$2 = x$$

$$(2, 0)$$

How do I use the zeroes to graph a quadratic?

$$y = x^2 - 10x + 16$$

a= 1

b= -10

c= 16

$$-\frac{b}{2a} = -\frac{-10}{2 \cdot 1} = -\frac{-10}{2} = 5$$

$$y = x^2 + 2x - 15$$

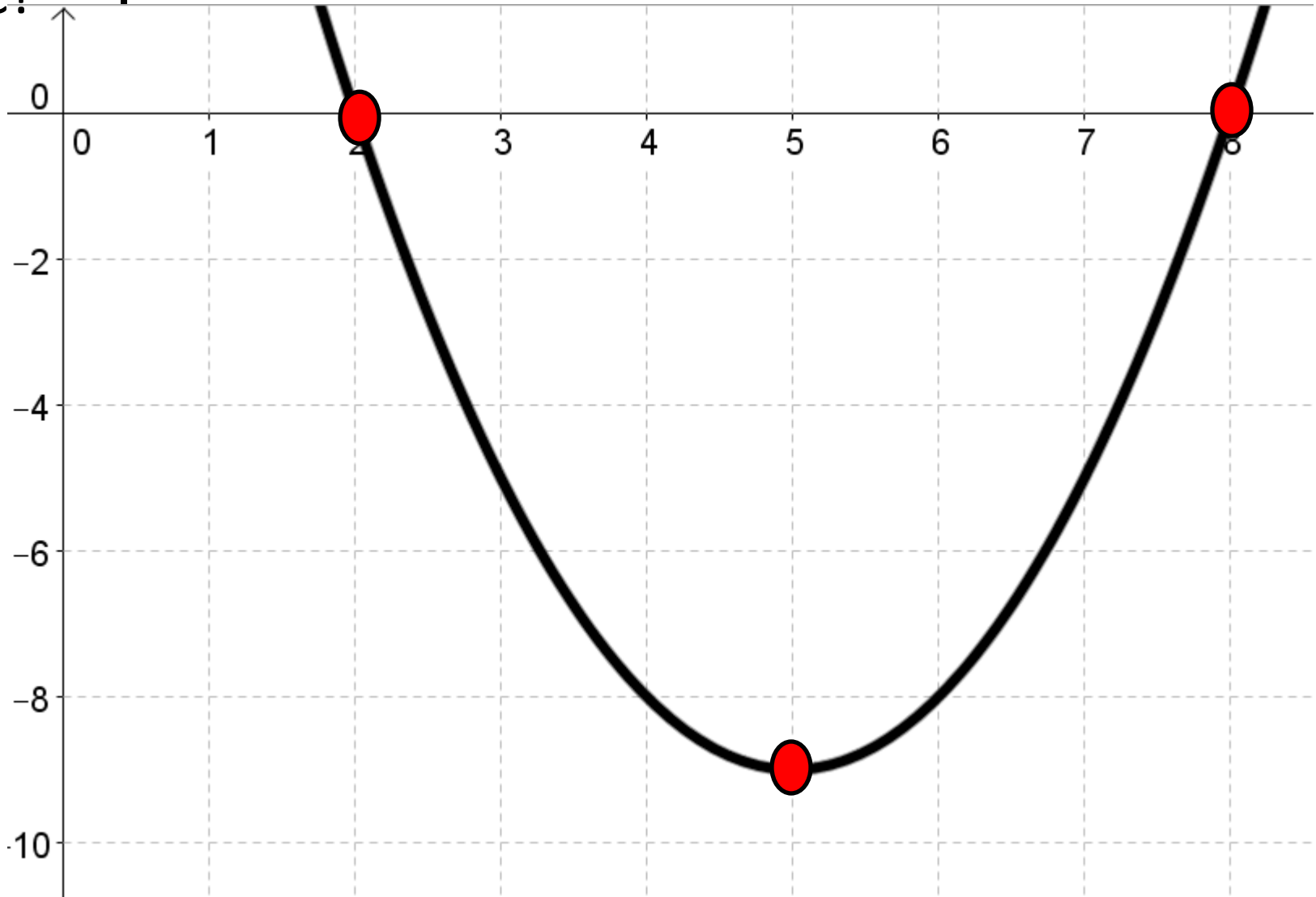
$$y = (5)^2 - 10(5) + 16$$

$$y = 25 - 50 + 16$$

$$y = -9$$

Vertex @ (5, -9)

How do I use the zeroes to graph a quadratic?



REFLECTION:

1) Answer one of the essential questions
2) How have previous lessons helped or connect with this lesson?
3) What are you still confused on or what new info did you learn?

Homework: Finding the Zeroes

1) $y = x^2 + 8x + 15$
   - Factor
   - Find the zeroes
   - Find the vertex
   - Graph the quadratic
2) $\mathrm{y} = \mathrm{x}^2 + 8\mathrm{m} - 20$
   - Factor
   - Find the zeroes
   - Find the vertex
   - Graph the quadratic