Graphing a Quadratic Function

Date:

Standards

F.IF. 7a Graph quadratic functions

F.BF. 3 Identify effects on the graph by replacing f(x) with f(x) +k, kf(x), f(x+k)

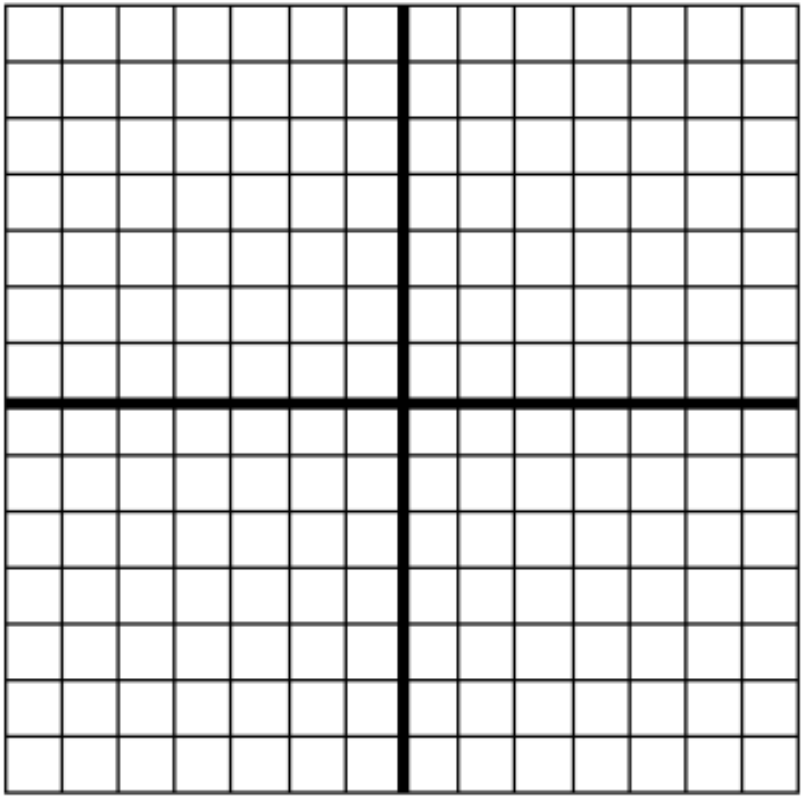
Essential Questions

- What is a quadratic function?
- How do I graph a quadratic function?
- How can I compare and contrast different functions?

How do I graph a parabola?

$$y = x^2$$

x	y
-2	
-1	
0	
1	
2	

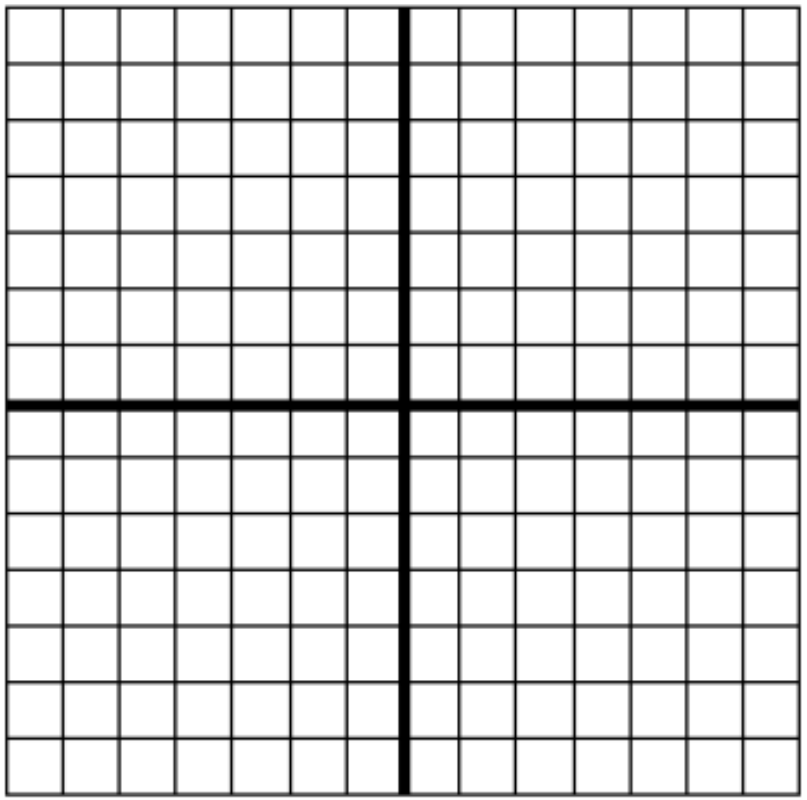


Important Characteristics:

How do I graph a parabola?

$$y = x^2 + 3$$

x	y
-2	
-1	
0	
1	
2	

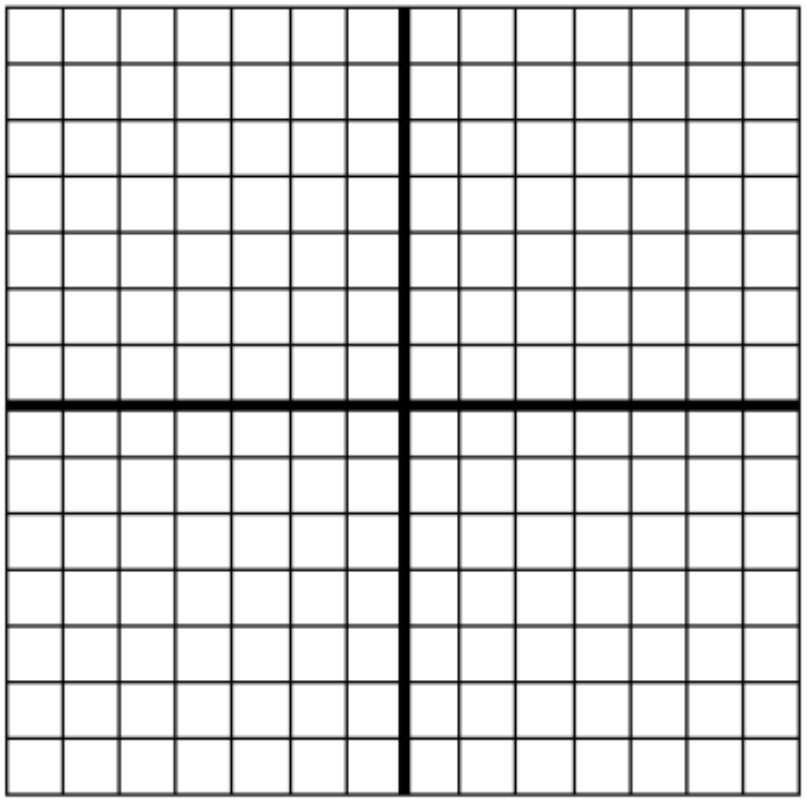


Contrast to Basic Graph:

How do I graph a parabola?

$$y = x^2 - 3$$

x	y
-2	
-1	
0	
1	
2	

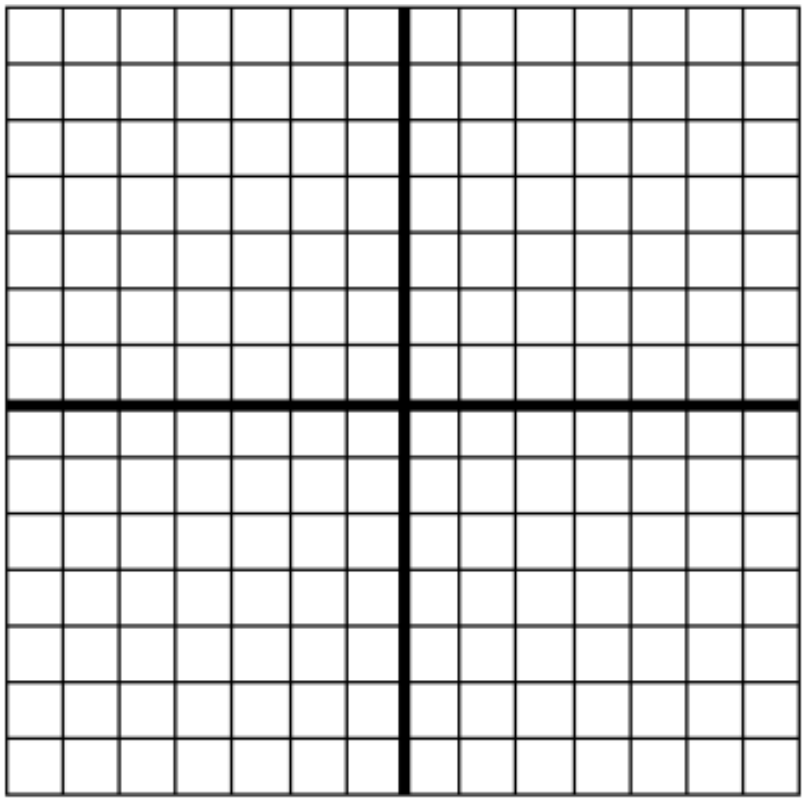


Contrast to Basic Graph:

How do I graph a parabola?

$$y = (x + 3)^2$$

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

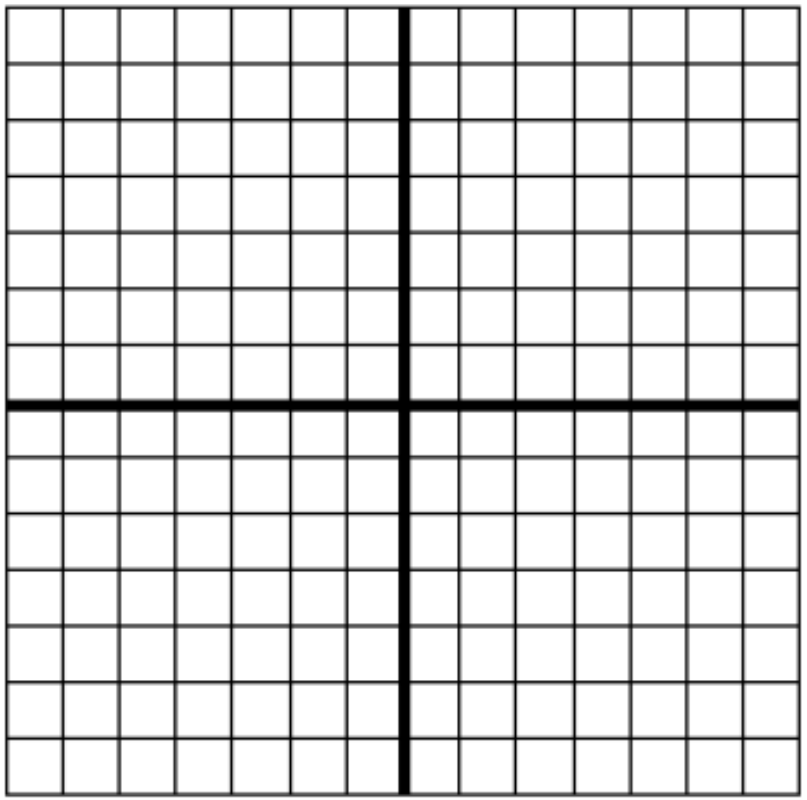


Contrast to Basic Graph:

How do I graph a parabola?

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

x	y
1	
2	
3	
4	
5	

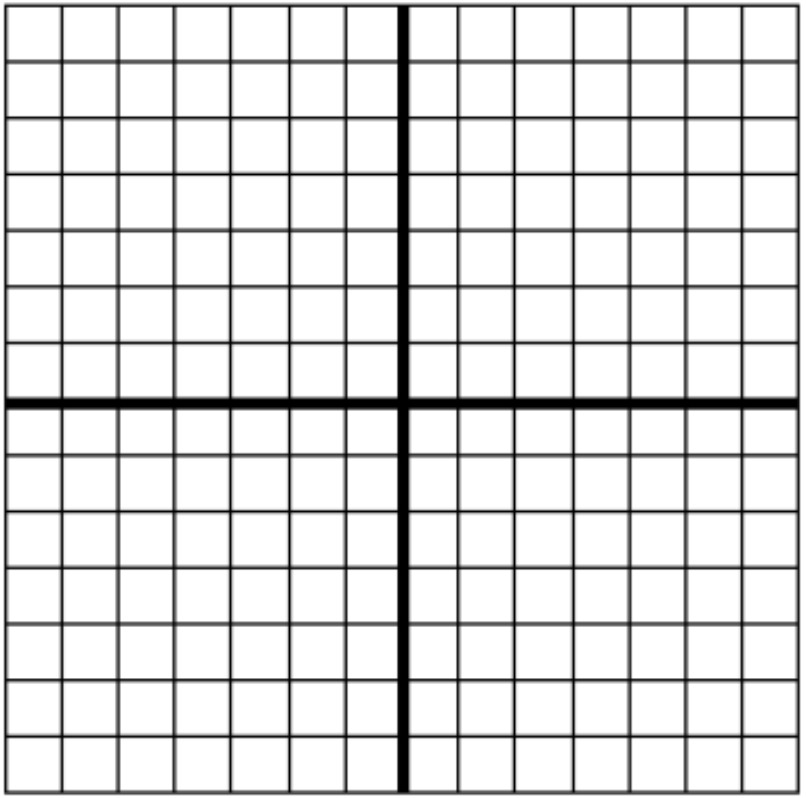


Contrast to Basic Graph:

How do I graph a parabola?

$$y = 2x^2$$

x	y
-2	
-1	
0	
1	
2	

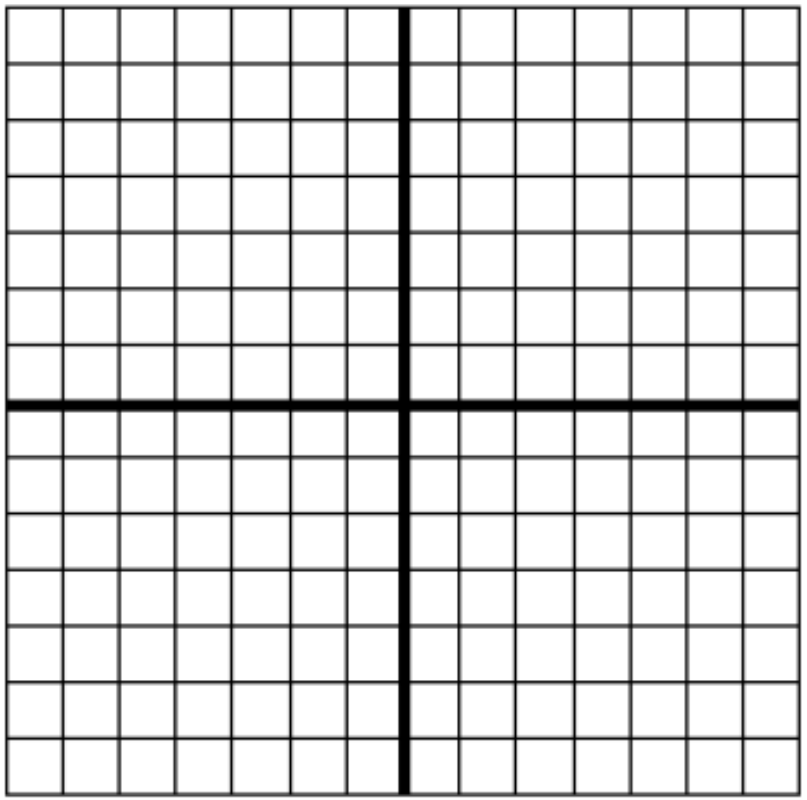


Important Characteristics:

How do I graph a parabola?

$$y = \frac{1}{2}x^2$$

x	y
-2	
-1	
0	
1	
2	

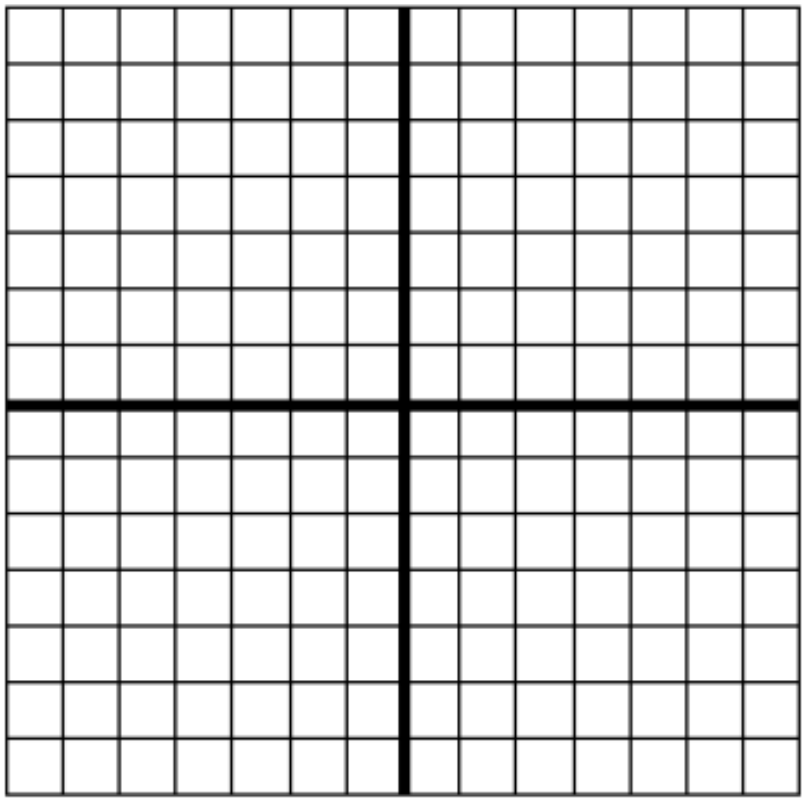


Important Characteristics:

How do I graph a parabola?

$$y = -2x^2$$

x	y
-2	
-1	
0	
1	
2	



Important Characteristics:

How can I compare and contrast different functions?

a > 0 parabola faces up

0 < a <1 Parabola stretches

a < 0 parabola faces down

k > 0 Shifts up

k < 0 Shifts down

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

h > 0 Shift to the right

h < 0 Shift to the left

REFLECTION:

1) What are the main points of the lesson?
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 – Graphing the Parabola

1. Graph the function $y = x^2 - 5$
2. Describe the effect on the domain and range
3. Describe the effect on the intervals
4. Give the coordinates to the vertex
5. Describe the shift of the parabola