## Unit 7 Lesson 22: Features of Parabolas

### 1 Matching Quadratic Graphs (Warm up)

#### Student Task Statement

Match the equation to the graph. Be prepared to explain your reasoning.

1. $y=x^{2}+x$
2. $y=-x^{2}−3x$
3. $y=\left(x−1\right)\left(x+5\right)$
4. $y=x^{2}+5x+1$
* A
* 
* B
* 
* C
* 
* D
* 

### 2 Features of a Quadratic Graph

#### Images for Launch



#### Student Task Statement

1. Graph the function $y=x^{2}−10x+16$.
2. Find the coordinates for the
	1. $x$-intercepts
	2. $y$-intercept
	3. vertex
3. Draw a dashed line along the line of symmetry for the graph.
4. What do you notice about the line of symmetry as it relates to the:
	1. vertex
	2. $x$-intercepts
5. Use the line of symmetry and the $y$-intercept to find another point on the parabola.

### 3 What Do You Know?

#### Student Task Statement

1. Write a function that is represented by a graph with $x$-intercepts at $\left(-3,0\right)$ and $\left(1,0\right)$.
	1. Without graphing the function, find the $y$-intercept. Explain or show your reasoning.
	2. Without using graphing technology, use the three points you know to sketch the graph of this function.
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	1. What is the $x$-coordinate of the vertex? Explain your reasoning.
	2. Using the $x$-coordinate you found for the vertex, find the coordinate pair for the vertex.
2. 
	1. What do you know about the coordinates of the $y$-intercept?
	2. What do you know about the coordinates of the vertex?



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