### Lesson 12 Practice Problems

1. Here are four graphs. Match each graph with a quadratic equation that it represents.
* Graph A
* 
* Graph B
* 
* Graph C
* 
* Graph D
* 
	1. Graph A
	2. Graph B
	3. Graph C
	4. Graph D
	5. $y=x^{2}$
	6. $y=x^{2}+5$
	7. $y=x^{2}+7$
	8. $y=x^{2}−3$
1. The two equations $y=\left(x+2\right)\left(x+3\right)$ and $y=x^{2}+5x+6$ are equivalent.
	1. Which equation helps find the $x$-intercepts most efficiently?
	2. Which equation helps find the $y$-intercept most efficiently?
2. Here is a graph that represents $y=x^{2}$.
* On the same coordinate plane, sketch and label the graph that represents each equation:
	1. $y=x^{2}−4$
	2. $y=-x^{2}+5$
* 
1. Select **all** equations whose graphs have a $y$-intercept with a positive $y$-coordinate.
	1. $y=x^{2}+3x−2$
	2. $y=x^{2}−10x$
	3. $y=\left(x−1\right)^{2}$
	4. $y=5x^{2}−3x−5$
	5. $y=\left(x+1\right)\left(x+2\right)$
	6. Describe how the graph of $A\left(x\right)=\left|x\right|$ has to be shifted to match the given graph.
	7. Write an equation for the function represented by the graph.
* 
* (From Unit 4, Lesson 14.)
1. Here is a graph of the function $g$ given by $g\left(x\right)=a⋅b^{x}$.
* What can you say about the value of $b$? Explain how you know.
* 
* (From Unit 5, Lesson 13.)
	1. What are the $x$-intercepts of the graph that represents $y=\left(x+1\right)\left(x+5\right)$? Explain how you know.
	2. What is the $x$-coordinate of the vertex of the graph that represents $y=\left(x+1\right)\left(x+5\right)$? Explain how you know.
	3. Find the $y$-coordinate of the vertex. Show your reasoning.
	4. Sketch a graph of $y=\left(x+1\right)\left(x+5\right)$.
* (From Unit 6, Lesson 11.)
1. Determine the $x$-intercepts, the vertex, and the $y$-intercept of the graph of each equation.

| * equation
 | * $x$-intercepts
 | * vertex
 | * $y$-intercept
 |
| --- | --- | --- | --- |
| * $y=\left(x−5\right)\left(x−3\right)$
 | *
 | *
 | *
 |
| * $y=2x\left(8−x\right)$
 | *
 | *
 | *
 |

* (From Unit 6, Lesson 11.)
1. Equal amounts of money were invested in stock A and stock B. In the first year, stock A increased in value by 20%, and stock B decreased by 20%. In the second year, stock A decreased in value by 20%, and stock B increased by 20%.
* Was one stock a better investment than the other? Explain your reasoning.
* (From Unit 5, Lesson 15.)



© CC BY 2019 by Illustrative Mathematics®