### Lesson 13 Practice Problems

1. Here are four graphs. Match each graph with the 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. $y=x^{2}+x$
	6. $y=-x^{2}+2$
	7. $y=x^{2}−x$
	8. $y=x^{2}+3x$
1. Complete the table without graphing the equations.

| * equation
 | * $x$-intercepts
 | * $x$-coordinate of the vertex
 |
| --- | --- | --- |
| * $y=x^{2}+12x$
 | *
 | *
 |
| * $y=x^{2}−3x$
 | *
 | *
 |
| * $y=-x^{2}+16x$
 | *
 | *
 |
| * $y=-x^{2}−24x$
 | *
 | *
 |

1. Here is a graph that represents $y=x^{2}$.
	1. Describe what would happen to the graph if the original equation were changed to $y=x^{2}−6x$. Predict the $x$- and $y$-intercepts of the graph and the quadrant where the vertex is located.
	*
	* 
	1. Sketch the graph of the equation $y=x^{2}−6x$ on the same coordinate plane as $y=x^{2}$.
2. Select **all** equations whose graph opens upward.
	1. $y=-x^{2}+9x$
	2. $y=10x−5x^{2}$
	3. $y=\left(2x−1\right)^{2}$
	4. $y=\left(1−x\right)\left(2+x\right)$
	5. $y=x^{2}−8x−7$
3. *Technology required*. Write an equation for a function that can be represented by each given graph. Then, use graphing technology to check each equation you wrote.
* Graph 1
* 
* Graph 2
* 
* Graph 3
* 
*
1. Match each quadratic expression that is written as a product with an equivalent expression that is expanded.
	1. $\left(x+3\right)\left(x+4\right)$
	2. $\left(x+3\right)\left(x+7\right)$
	3. $\left(3x+4\right)\left(x+3\right)$
	4. $\left(x+7\right)\left(3x+1\right)$
	5. $x^{2}+10x+21$
	6. $3x^{2}+13x+12$
	7. $3x^{2}+22x+7$
	8. $x^{2}+7x+12$
* (From Unit 6, Lesson 8.)
1. When buying a home, many mortgage companies require a down payment of 20% of the price of the house. What is the down payment on a $125,000 home?
* (From Unit 5, Lesson 14.)
1. A bank loans $4,000 to a customer at a $9\frac{1}{2}\%$ annual interest rate.
* Write an expression to represent how much the customer will owe, in dollars, after 5 years without payment.
* (From Unit 5, Lesson 15.)



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