### Lesson 10 Practice Problems

1. A quadratic function $f$ is defined by $f\left(x\right)=\left(x−7\right)\left(x+3\right)$.
	1. Without graphing, identify the $x$-intercepts of the graph of $f$. Explain how you know.
	2. Expand $\left(x−7\right)\left(x+3\right)$ and use the expanded form to identify the $y$-intercept of the graph of $f$.
2. What are the $x$-intercepts of the graph of the function defined by $\left(x−2\right)\left(2x+1\right)$?
	1. $\left(2,0\right)$ and $\left(-1,0\right)$
	2. $\left(2,0\right)$ and $\left(-\frac{1}{2},0\right)$
	3. $\left(-2,0\right)$ and $\left(1,0\right)$
	4. $\left(-2,0\right)$ and $\left(\frac{1}{2},0\right)$
3. Here is a graph that represents a quadratic function.
* Which expression could define this function?
* 
	1. $\left(x+3\right)\left(x+1\right)$
	2. $\left(x+3\right)\left(x−1\right)$
	3. $\left(x−3\right)\left(x+1\right)$
	4. $\left(x−3\right)\left(x−1\right)$
	5. What is the $y$-intercept of the graph of the equation $y=x^{2}−5x+4$?
	6. An equivalent way to write this equation is $y=\left(x−4\right)\left(x−1\right)$. What are the $x$-intercepts of this equation’s graph?
1. Noah said that if we graph $y=\left(x−1\right)\left(x+6\right)$, the $x$-intercepts will be at $\left(1,0\right)$ and $\left(-6,0\right)$. Explain how you can determine, without graphing, whether Noah is correct.
2. A company sells a video game. If the price of the game in dollars is $p$ the company estimates that it will sell $20,​000−500p$ games.
* Which expression represents the revenue in dollars from selling games if the game is priced at $p$ dollars?
	1. $\left(20,​000−500p\right)+p$
	2. $\left(20,​000−500p\right)−p$
	3. $\frac{20,000−500p}{p}$
	4. $\left(20,​000−500p\right)⋅p$
* (From Unit 6, Lesson 7.)
1. Write each quadratic expression in standard form. Draw a diagram if needed.
	1. $\left(x−3\right)\left(x−6\right)$
	2. $\left(x−4\right)^{2}$
	3. $\left(2x+3\right)\left(x−4\right)$
	4. $\left(4x−1\right)\left(3x−7\right)$
* (From Unit 6, Lesson 9.)
1. Consider the expression $\left(5+x\right)\left(6−x\right)$.
	1. Is the expression equivalent to $x^{2}+x+30$? Explain how you know.
	2. Is the expression $30+x−x^{2}$ in standard form? Explain how you know.
* (From Unit 6, Lesson 9.)
1. Here are graphs of the functions $f$ and $g$ given by $f\left(x\right)=100⋅\left(\frac{3}{5}\right)^{x}$ and $g\left(x\right)=100⋅\left(\frac{2}{5}\right)^{x}$.
* Which graph corresponds to $f$ and which graph corresponds to $g$? Explain how you know.
* 
* (From Unit 5, Lesson 12.)
1. Here are graphs of two functions $f$ and $g$.
* An equation defining $f$ is $f\left(x\right)=100⋅2^{x}$.
* Which of these could be an equation defining the function $g$?
* 
	1. $g\left(x\right)=25⋅3^{x}$
	2. $g\left(x\right)=50⋅\left(1.5\right)^{x}$
	3. $g\left(x\right)=100⋅3^{x}$
	4. $g\left(x\right)=200⋅\left(1.5\right)^{x}$
* (From Unit 5, Lesson 13.)



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