### Lesson 7 Practice Problems

1. Find two numbers that...
	1. multiply to -40 and add to -6.
	2. multiply to -40 and add to 6.
	3. multiply to -36 and add to 9.
	4. multiply to -36 and add to -5.
* If you get stuck, try listing all the factors of the first number.
1. Create a diagram to show that $(x−5)(x+8)$ is equivalent to $x^{2}+3x−40$.
2. Write a $+$ or a $−$ sign in each box so the expressions on each side of the equal sign are equivalent.
	1. $(x  18)(x  3)=x^{2}−15x−54$
	2. $(x  18)(x  3)=x^{2}+21x+54$
	3. $(x  18)(x  3)=x^{2}+15x−54$
	4. $(x  18)(x  3)=x^{2}−21x+54$
3. Match each quadratic expression in standard form with its equivalent expression in factored form.​​​​​​
	1. $x^{2}−2x−35$
	2. $x^{2}+12x+35$
	3. $x^{2}+2x−35$
	4. $x^{2}−12x+35$
	5. $(x+5)(x+7)$
	6. $(x−5)(x−7)$
	7. $(x+5)(x−7)$
	8. $(x−5)(x+7)$
4. Rewrite each expression in factored form. If you get stuck, try drawing a diagram.
	1. $x^{2}−3x−28$
	2. $x^{2}+3x−28$
	3. $x^{2}+12x−28$
	4. $x^{2}−28x−60$
5. Which equation has exactly one solution?
	1. $x^{2}=-4$
	2. $(x+5)^{2}=0$
	3. $(x+5)(x−5)=0$
	4. $(x+5)^{2}=36$
* (From Unit 7, Lesson 5.)
1. The graph represents the height of a passenger car on a ferris wheel, in feet, as a function of time, in seconds.
* Use the graph to help you:
	1. Find $H(0)$.
	2. Does $H(t)=0$ have a solution? Explain how you know.
	3. Describe the domain of the function.
	4. Describe the range of the function.
* 
* (From Unit 4, Lesson 11.)
1. Elena solves the equation $x^{2}=7x$ by dividing both sides by $x$ to get $x=7$. She says the solution is 7.
* Lin solves the equation $x^{2}=7x$ by rewriting the equation to get $x^{2}−7x=0$. When she graphs the equation $y=x^{2}−7x$, the $x$-intercepts are $(0,0)$ and $(7,0)$. She says the solutions are 0 and 7.
* Do you agree with either of them? Explain or show how you know.
* (From Unit 7, Lesson 5.)
1. A bacteria population, $p$, can be represented by the equation $p=100,​000⋅\left(\frac{1}{4}\right)^{d}$, where $d$ is the number of days since it was measured.
	1. What was the population 3 days before it was measured? Explain how you know.
	2. What is the last day when the population was more than 1,000,000? Explain how you know.
* (From Unit 5, Lesson 7.)



© CC BY 2019 by Illustrative Mathematics®