Lesson 7 Practice Problems

1. Find two numbers that...

   a. multiply to -40 and add to -6.

   b. multiply to -40 and add to 6.

   c. multiply to -36 and add to 9.

   d. multiply to -36 and add to -5.

   If you get stuck, try listing all the factors of the first number.

2. Create a diagram to show that $(x-5)(x+8)$ is equivalent to $x^2+3x-40$.

3. Write a $+$ or a $-$ sign in each box so the expressions on each side of the equal sign are equivalent.

   a. $(x \square 18)(x \square 3) = x^2 - 15x - 54$

   b. $(x \square 18)(x \square 3) = x^2 + 21x + 54$

   c. $(x \square 18)(x \square 3) = x^2 + 15x - 54$

   d. $(x \square 18)(x \square 3) = x^2 - 21x + 54$

4. Match each quadratic expression in standard form with its equivalent expression in factored form.

A. $x^2 - 2x - 35$	1. $(x+5)(x+7)$
B. $x^2 + 12x + 35$	2. $(x-5)(x-7)$
C. $x^2 + 2x - 35$	3. $(x+5)(x-7)$
D. $x^2 - 12x + 35$	4. $(x-5)(x+7)$

5. Rewrite each expression in factored form. If you get stuck, try drawing a diagram.

   a. $x^2 - 3x - 28$

   b. $x^2 + 3x - 28$

   c. $x^2 + 12x - 28$

   d. $x^2 - 28x - 60$

6. Which equation has exactly one solution?

   A. $x^2 = -4$

   B. $(x + 5)^2 = 0$

   C. $(x + 5)(x - 5) = 0$

   D. $(x + 5)^2 = 36$

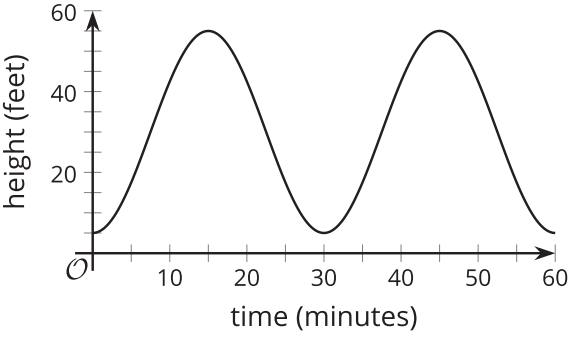
(From Unit 7, Lesson 5.)

7. The graph represents the height of a passenger car on a ferris wheel, in feet, as a function of time, in seconds since the ride starts.

   Use the graph to help you:

   a. Find $H(0)$.

   b. Does $H(t) = 0$ have a solution? Explain how you know.



   c. Describe the domain of the function.

   d. Describe the range of the function.

(From Unit 4, Lesson 11.)

8. 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.)

9. A bacteria population, p, can be represented by the equation $p = 100{,}000 \cdot \left(\frac{1}{4}\right)^d$, where d is the number of days since it was measured.

   a. What was the population 3 days before it was measured? Explain how you know.

   b. What is the last day when the population was more than 1,000,000? Explain how you know.

   (From Unit 5, Lesson 7.)