

## Lesson 10 Practice Problems

1. To write  $11x^2 + 17x - 10$  in factored form, Diego first listed pairs of factors of -10.

$$(\underline{\quad} + 5)(\underline{\quad} + -2)$$

a. Use what Diego started to complete the rewriting.

$$(\underline{\quad} + 2)(\underline{\quad} + -5)$$

b. How did you know you've found the right pair of expressions? What did you look for when trying out different possibilities?

$$(\underline{\quad} + 10)(\underline{\quad} + -1)$$

$$(\underline{\quad} + 1)(\underline{\quad} + -10)$$

2. To rewrite  $4x^2 - 12x - 7$  in factored form, Jada listed some pairs of factors of  $4x^2$ :

$$(2x + \underline{\quad})(2x + \underline{\quad})$$

Use what Jada started to rewrite  $4x^2 - 12x - 7$  in factored form.

$$(4x + \underline{\quad})(1x + \underline{\quad})$$

3. Rewrite each quadratic expression in factored form. Then, use the zero product property to solve the equation.

a.  $7x^2 - 22x + 3 = 0$

b.  $4x^2 + x - 5 = 0$

c.  $9x^2 - 25 = 0$

4. Han is solving the equation  $5x^2 + 13x - 6 = 0$ .

$$5x^2 + 13x - 6 = 0$$

Here is his work:

$$(5x - 2)(x + 3) = 0$$

$$x = 2 \quad \text{or} \quad x = -3$$

Describe Han's mistake. Then, find the correct solutions to the equation.

5. A picture is 10 inches wide by 15 inches long. The area of the picture, including a frame that is  $x$  inch thick, can be modeled by the function  $A(x) = (2x + 10)(2x + 15)$ .
- Use function notation to write a statement that means: the area of the picture, including a frame that is 2 inches thick, is 266 square inches.
  - What is the total area if the picture has a frame that is 4 inches thick?

(From Unit 7, Lesson 1.)

6. To solve the equation  $0 = 4x^2 - 28x + 39$ , Elena uses technology to graph the function  $f(x) = 4x^2 - 28x + 39$ . She finds that the graph crosses the  $x$ -axis at  $(1.919, 0)$  and  $(5.081, 0)$ .
- What is the name for the points where the graph of a function crosses the  $x$ -axis?
  - Use a calculator to compute  $f(1.919)$  and  $f(5.081)$ .
  - Explain why 1.919 and 5.081 are approximate solutions to the equation  $0 = 4x^2 - 28x + 39$  and are not exact solutions.

(From Unit 7, Lesson 2.)

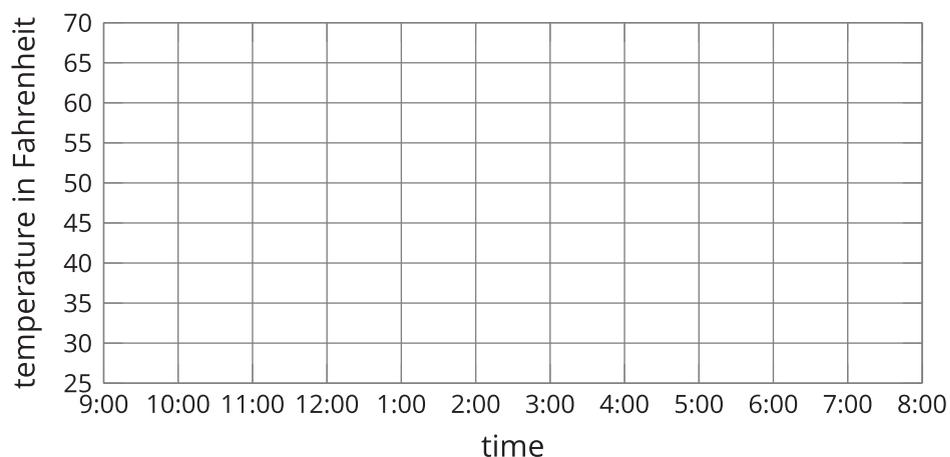
7. Which equation shows a next step in solving  $9(x - 1)^2 = 36$  that will lead to the correct solutions?
- $9(x - 1) = 6$  or  $9(x - 1) = -6$
  - $3(x - 1) = 6$
  - $(x - 1)^2 = 4$
  - $(9x - 9)^2 = 36$

(From Unit 7, Lesson 3.)

8. Here is a description of the temperature at a certain location yesterday.

“It started out cool in the morning, but then the temperature increased until noon. It stayed the same for a while, until it suddenly dropped quickly! It got colder than it was in the morning, and after that, it was cold for the rest of the day.”

Sketch a graph of the temperature as a function of time.



(From Unit 4, Lesson 8.)

9. *Technology required.* The number of people,  $p$ , who watch a weekly TV show is modeled by the equation  $p = 100,000 \cdot (1.1)^w$ , where  $w$  is the number of weeks since the show first aired.

- How many people watched the show the first time it aired? Explain how you know.
- Use technology to graph the equation.
- On which week does the show first get an audience of more than 500,000 people?

(From Unit 5, Lesson 9.)