

## Lesson 12 Practice Problems

1. Add the number that would make the expression a perfect square. Next, write an equivalent expression in factored form.

a.  $x^2 - 6x$

b.  $x^2 + 2x$

c.  $x^2 + 14x$

d.  $x^2 - 4x$

e.  $x^2 + 24x$

2. Mai is solving the equation  $x^2 + 12x = 13$ . She writes:

$$x^2 + 12x = 13$$

$$(x + 6)^2 = 49$$

$$x = 1 \text{ or } x = -13$$

Jada looks at Mai's work and is confused.  
She doesn't see how Mai got her answer.

Complete Mai's missing steps to help Jada see how Mai solved the equation.

3. Match each equation to an equivalent equation with a perfect square on one side.

A.  $x^2 + 8x = 2$

1.  $(x - 7)^2 = 54$

B.  $x^2 + 10x = -13$

2.  $(x + 5)^2 = 12$

C.  $x^2 - 14x = 5$

3.  $(x - 10)^2 = 91$

D.  $x^2 + 2x = 0$

4.  $(x + 4)^2 = 18$

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

5.  $(x + 1)^2 = 1$

F.  $x^2 - 20x = -9$

6.  $(x + 2)^2 = 9$

4. Solve each equation by completing the square.

$$x^2 - 6x + 5 = 12$$

$$x^2 - 2x = 8$$

$$11 = x^2 + 4x - 1$$

$$x^2 - 18x + 60 = -21$$

5. Rewrite each expression in standard form.

a.  $(x + 3)(x - 3)$

b.  $(7 + x)(x - 7)$

c.  $(2x - 5)(2x + 5)$

d.  $(x + \frac{1}{8})(x - \frac{1}{8})$

(From Unit 7, Lesson 8.)

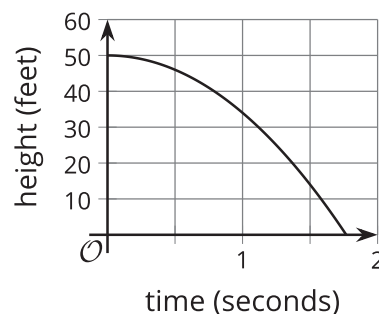
6. To find the product  $203 \cdot 197$  without a calculator, Priya wrote  $(200 + 3)(200 - 3)$ . Very quickly, and without writing anything else, she arrived at 39,991. Explain how writing the two factors as a sum and a difference may have helped Priya.

(From Unit 7, Lesson 8.)

7. A basketball is dropped from the roof of a building and its height in feet is modeled by the function  $h$ .

Here is a graph representing  $h$ .

Select **all** the true statements about this situation.



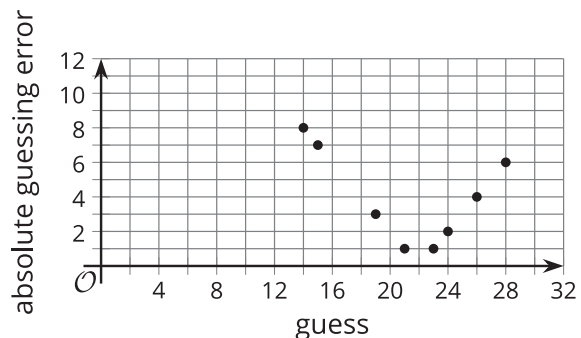
- A. When  $t = 0$  the height is 0 feet.
- B. The basketball falls at a constant speed.
- C. The expression that defines  $h$  is linear.
- D. The expression that defines  $h$  is quadratic.
- E. When  $t = 0$  the ball is about 50 feet above the ground.
- F. The basketball lands on the ground about 1.75 seconds after it is dropped.

(From Unit 6, Lesson 5.)

8. A group of students are guessing the number of paper clips in a small box.

The guesses and the guessing errors are plotted on a coordinate plane.

What is the actual number of paper clips in the box?



(From Unit 4, Lesson 13.)