

## Lesson 15 Practice Problems

1. Solve each equation and write the solutions using  $\pm$  notation.

a.  $x^2 = 144$

b.  $x^2 = 5$

c.  $4x^2 = 28$

d.  $x^2 = \frac{25}{4}$

e.  $2x^2 = 22$

f.  $7x^2 = 16$

2. Match each expression to an equivalent expression.

A.  $4 \pm 1$

1. -17 and 5

B.  $10 \pm \sqrt{4}$

2.  $4 + \sqrt{2}$  and  $4 - \sqrt{2}$

C.  $-6 \pm 11$

3. 8 and 12

D.  $4 \pm \sqrt{10}$

4. 3 and 5

E.  $\sqrt{16} \pm \sqrt{2}$

5.  $4 + \sqrt{10}$  and  $4 - \sqrt{10}$

3. a. Is  $\sqrt{4}$  a positive or negative number? Explain your reasoning.

b. Is  $\sqrt{5}$  a positive or negative number? Explain your reasoning.

c. Explain the difference between  $\sqrt{9}$  and the solutions to  $x^2 = 9$ .

4. *Technology required.* For each equation, find the exact solutions by completing the square and the approximate solutions by graphing. Then, verify that the solutions found using the two methods are close.

$$x^2 + 10x + 8 = 0$$

$$x^2 - 4x - 11 = 0$$

5. Jada is working on solving a quadratic equation, as shown here.

$p^2 - 5p = 0$	She thinks that her solution is correct because substituting 5 for $p$ in the original expression $p^2 - 5p$ gives $5^2 - 5(5)$ , which is $25 - 25$ or 0.
$p(p - 5) = 0$	
$p - 5 = 0$	
$p = 5$	

Explain the mistake that Jada made and show the correct solutions.

(From Unit 7, Lesson 9.)

6. Which expression in factored form is equivalent to  $30x^2 + 31x + 5$ ?

- A.  $(6x + 5)(5x + 1)$
- B.  $(5x + 5)(6x + 1)$
- C.  $(10x + 5)(3x + 1)$
- D.  $(30x + 5)(x + 1)$

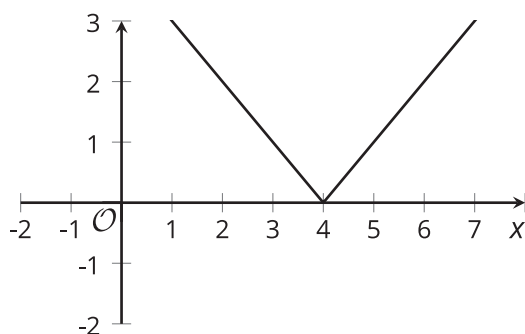
(From Unit 7, Lesson 10.)

7. Two rocks are launched straight up in the air. The height of Rock A is given by the function  $f$ , where  $f(t) = 4 + 30t - 16t^2$ . The height of Rock B is given by  $g$ , where  $g(t) = 5 + 20t - 16t^2$ . In both functions,  $t$  is time measured in seconds after the rocks are launched and height is measured in feet above the ground.

- a. Which rock is launched from a higher point?
- b. Which rock is launched with a greater velocity?

(From Unit 6, Lesson 6.)

8. a. Describe how the graph of  $f(x) = |x|$  has to be shifted to match the given graph.



- b. Find an equation for the function represented by the graph.

(From Unit 4, Lesson 14.)