

**Chapter**  
**1****Maintaining Mathematical Proficiency****Add or subtract.**

1.  $-1 + (-3)$

2.  $0 + (-12)$

3.  $5 - (-2)$

4.  $-4 - 7$

5. Find two pairs of integers whose sum is  $-6$ .6. In a city, the record monthly high temperature for March is  $56^{\circ}\text{F}$ . The record monthly low temperature for March is  $-4^{\circ}\text{F}$ . What is the range of temperatures for the month of March?**Multiply or divide.**

7.  $-2(13)$

8.  $-8 \bullet (-5)$

9.  $-14 \div 2$

10.  $-30 \div (-3)$

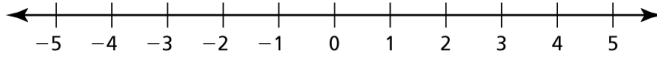
11. Find two pairs of integers whose product is  $-20$ .

12. A football team loses 3 yards in 3 consecutive plays. What is the total yardage gained?

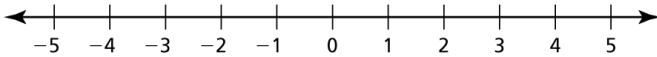
**Chapter  
2****Maintaining Mathematical Proficiency**

Graph the number.

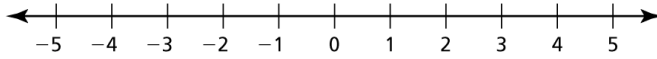
1.  $|-2|$



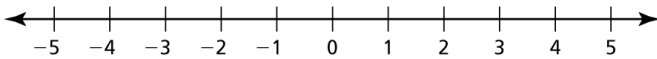
2.  $-3 + |-3|$



3.  $-1 - |-4|$



4.  $2 + |2|$

Complete the statement with  $<$ ,  $>$ , or  $=$ .

5.  $6$  \_\_\_\_\_  $5$

6.  $-2$  \_\_\_\_\_  $3$

7.  $-4$  \_\_\_\_\_  $-7$

8.  $-8$  \_\_\_\_\_  $-5$

9.  $|-5|$  \_\_\_\_\_  $5$

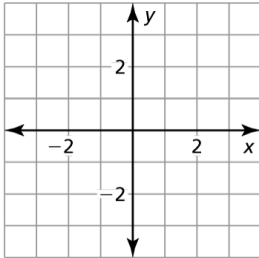
10.  $-7$  \_\_\_\_\_  $|-6|$

11. A number  $a$  is to the right of a number  $b$  on the number line. Which is greater,  $-a$  or  $-b$ ?12. A number  $a$  is to the left of a number  $b$  on the number line. Which is greater,  $|-a|$  or  $|-b|$ ?

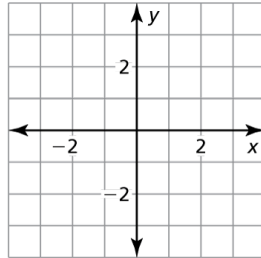
# Chapter 3 Maintaining Mathematical Proficiency

Plot the point in a coordinate plane. Describe the location of the point.

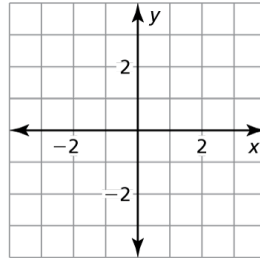
1.  $A(-3, 1)$



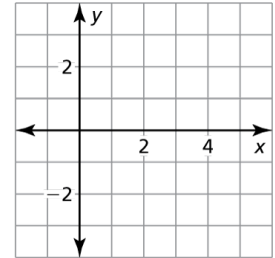
2.  $B(2, 2)$



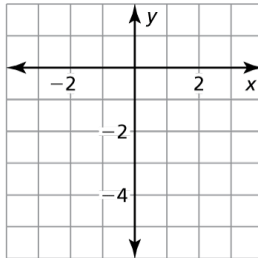
3.  $C(1, 0)$



4.  $D(5, 2)$



5. Plot the point that is on the  $y$ -axis and 5 units down from the origin.



Evaluate the expression for the given value of  $x$ .

6.  $2x + 1; x = 3$

7.  $16 - 4x; x = -4$

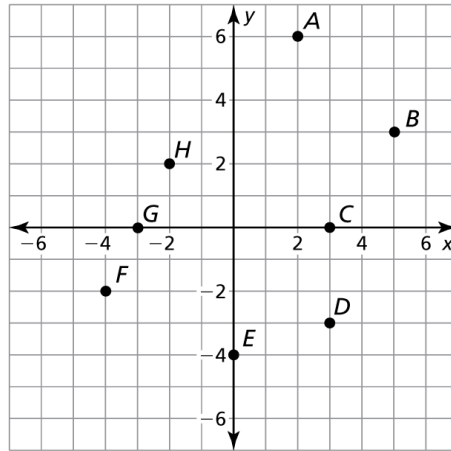
8.  $12x + 7; x = -2$

9.  $-9 - 3x; x = 5$

10. The length of a side of a square is represented by  $(24 - 3x)$  feet. What is the length of the side of the square when  $x = 6$ ?

**Chapter  
4****Maintaining Mathematical Proficiency**

Use the graph to answer the question.



1. What ordered pair corresponds to point  $A$ ?
2. What ordered pair corresponds to point  $H$ ?
3. What ordered pair corresponds to point  $E$ ?
4. Which point is located in Quadrant III?
5. Which point is located in Quadrant IV?
6. Which point is located on the negative  $x$ -axis?

Solve the equation for  $y$ .

7.  $x - y = -12$

8.  $8x + 4y = 16$

9.  $3x - 5y + 15 = 0$

10.  $0 = 3y - 6x + 12$

11.  $y - 2 = 3x + 4y$

12.  $6y + 3 - 2x = x$

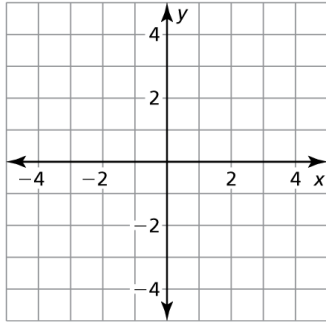
13. Rectangle  $ABCD$  has vertices  $A(4, -2)$ ,  $B(4, 5)$ , and  $C(7, 5)$ . What are the coordinates of vertex  $D$ ?

**Chapter 5**

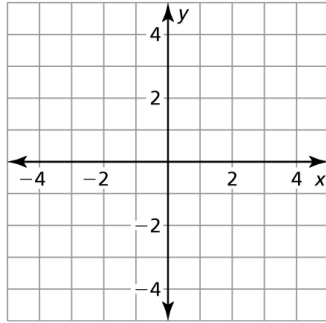
**Maintaining Mathematical Proficiency**

Graph the equation.

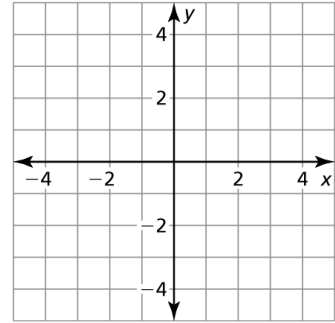
1.  $y + 2 = x$



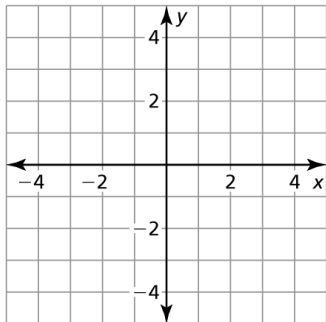
2.  $2x - y = 3$



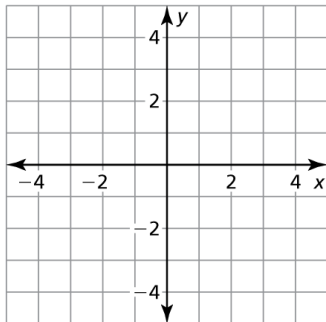
3.  $5x + 2y = 10$



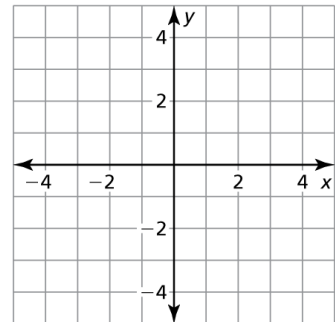
4.  $y - 3 = x$



5.  $3x - y = -2$

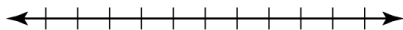


6.  $3x + 4y = 12$

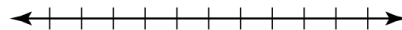


Solve the inequality. Graph the solution.

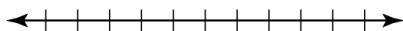
7.  $a - 3 > -2$



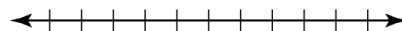
8.  $-4 \geq -2c$



9.  $2d - 5 < -3$



10.  $8 - 3r \leq 5 - 2r$



**Chapter  
6****Maintaining Mathematical Proficiency**

Evaluate the expression.

1.  $(14 + 20 - 6) \div 4 - 6^2$     2.  $(8 + 4)^2 + (13 - 10 \div 5)$     3.  $8 \div 4 \bullet 19 + 18 + 13$

4.  $3 \bullet 14 \bullet 11 + 4^2 + 19$     5.  $(21 + 2)(14 - 6) + 3^2$     6.  $7(3 \bullet 10 - 4^2) + 8$

Find the square root(s).

7.  $\sqrt{36}$

8.  $-\sqrt{49}$

9.  $-\sqrt{225}$

10.  $\sqrt{144}$

11.  $\sqrt{169}$

12.  $\sqrt{9}$

13.  $-\sqrt{16}$

14.  $\pm\sqrt{256}$

Write an equation for the  $n$ th term of the arithmetic sequence.

15. 1, 5, 9, 13, ...

16. 21, 15, 9, 3, ...

17. -2, 1, 4, 7, ...

18. 8, 6, 4, 2, ...

19. -10, -4, 2, 8, ...

20. 16, 8, 0, -8, ...

**Chapter  
7****Maintaining Mathematical Proficiency****Simplify the expression.**

1.  $5x - 6 + 3x$

2.  $3t + 7 - 3t - 4$

3.  $8s - 4 + 4s - 6 - 5s$

4.  $9m + 3 + m - 3 + 5m$

5.  $-4 - 3p - 7 - 3p - 4$

6.  $12(z - 1) + 4$

7.  $-6(x + 2) - 4$

8.  $3(h + 4) - 3(h - 4)$

9.  $7(z + 4) - 3(z + 2) - 2(z - 3)$

**Find the greatest common factor.**

10. 24, 32

11. 30, 55

12. 48, 84

13. 28, 72

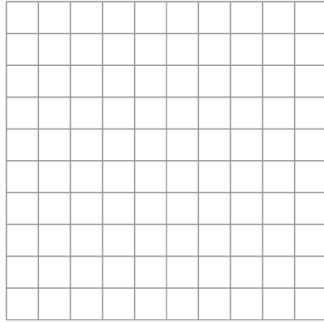
14. 42, 60

15. 35, 99

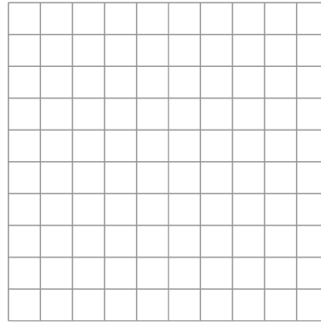
16. Explain how to find the greatest common factor of 42, 70, and 84.

**Chapter  
8****Maintaining Mathematical Proficiency****Graph the linear equation.**

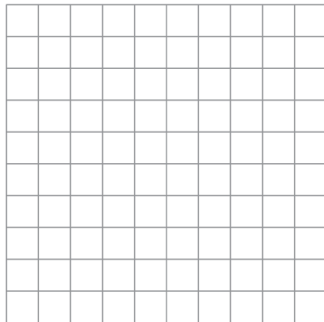
1.  $y = 4x - 5$



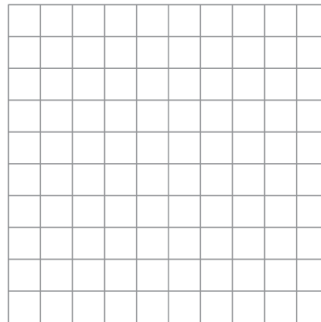
2.  $y = -2x + 3$



3.  $y = \frac{1}{2}x + 3$



4.  $y = -x + 2$

**Evaluate the expression when  $x = -4$ .**

5.  $2x^2 + 8$

6.  $-x^2 + 3x - 4$

7.  $-3x^2 - 4$

8.  $5x^2 - x + 8$

9.  $4x^2 - 8x$

10.  $6x^2 - 5x + 3$

11.  $-2x^2 + 4x + 4$

12.  $3x^2 + 2x + 2$



**Chapter  
1****Maintaining Mathematical Proficiency**

Simplify the expression.

1.  $|-3 + (-1)| =$

2.  $|10 - 11| =$

3.  $|-6 + 8| =$

4.  $|9 - (-1)| =$

5.  $|-12 - (-8)| =$

6.  $|-15 - 7| =$

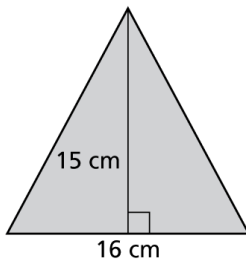
7.  $|-12 + 3| =$

8.  $|5 + (-15)| =$

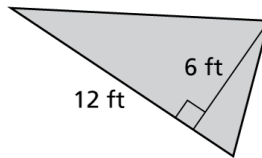
9.  $|1 - 12| =$

Find the area of the triangle.

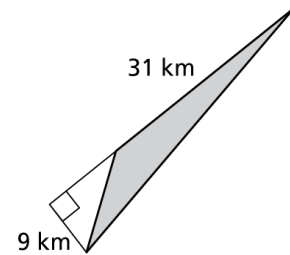
10.



11.



12.



**Chapter  
2****Maintaining Mathematical Proficiency**

Write an equation for the  $n$ th term of the arithmetic sequence. Then find  $a_{20}$ .

1. 5, 11, 17, 23, ...

2. 22, 34, 46, 58, ...

3. -13, 0, 13, 26, ...

4. -4.5, -4.0, -3.5, -3.0, ...

5. 40, 25, 10, -5, ...

6.  $-\frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{5}{2}, \dots$

Solve the literal equation for  $x$ .

7.  $3x - 9y = 12$

8.  $16y - 4x = 40$

9.  $6x + 5 = 30y - 7$

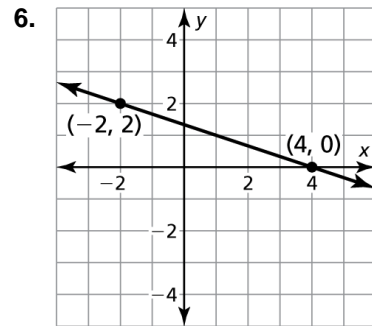
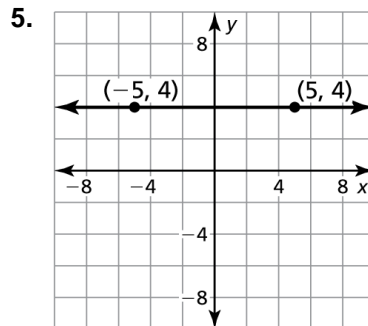
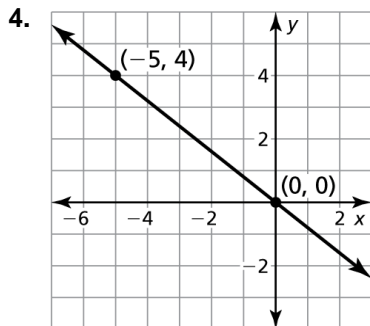
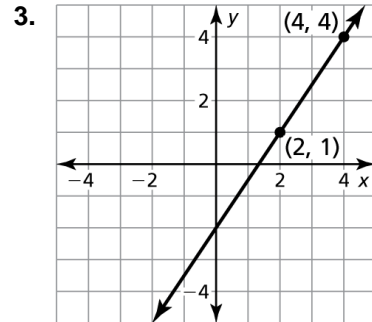
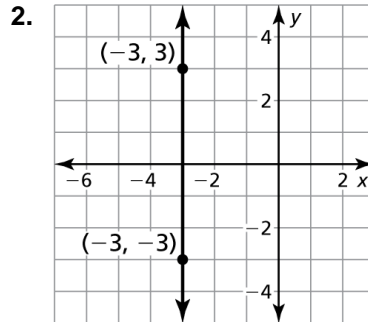
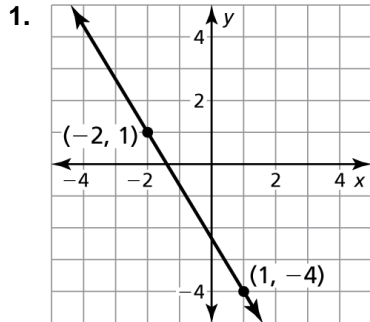
10.  $2x - y = 11x - 18$

11.  $10y = 2x + 3zx + 1$

12.  $14z = 2x + 4xy$

# Chapter 3 Maintaining Mathematical Proficiency

Find the slope of the line.



Write an equation of the line that passes through the given point and has the given slope.

7.  $(0, -8); m = \frac{3}{5}$

8.  $(-4, 3); m = \frac{1}{3}$

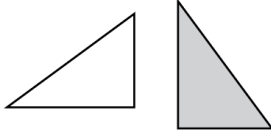
9.  $(2, -1); m = 5$

# Chapter 4

## Maintaining Mathematical Proficiency

Tell whether the shaded figure is a translation, reflection, rotation, or dilation of the nonshaded figure.

1.



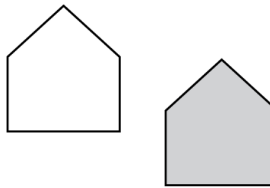
2.



3.

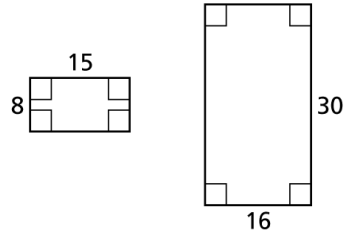


4.

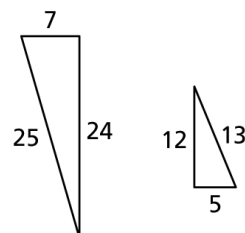


Tell whether the two figures are similar. Explain your reasoning.

5.



6.



**Chapter  
5****Maintaining Mathematical Proficiency**

Find the coordinates of the midpoint  $M$  of the segment with the given endpoints.  
Then find the distance between the two points.

1.  $A(3, 1)$  and  $B(5, 5)$

2.  $F(0, -6)$  and  $G(8, -4)$

3.  $P(-2, -7)$  and  $B(-4, 5)$

4.  $S(10, -5)$  and  $T(7, -9)$

Solve the equation.

5.  $9x - 6 = 7x$

6.  $2r + 6 = 5r - 9$

7.  $20 - 3n = 2n + 30$

8.  $8t - 5 = 6t - 4$

**Chapter  
6****Maintaining Mathematical Proficiency**

Write an equation of the line passing through point  $P$  that is perpendicular to the given line.

1.  $P(5, 2)$ ,  $y = 2x + 6$

2.  $P(4, 2)$ ,  $y = 6x - 3$

3.  $P(-1, -2)$ ,  $y = -3x + 6$

4.  $P(-8, 3)$ ,  $y = 3x - 1$

5.  $P(6, 7)$ ,  $y = x - 5$

6.  $P(3, 7)$ ,  $y = \frac{1}{4}x + 4$

Write the sentence as an inequality.

7. A number  $g$  is at least 4 and no more than 12.

8. A number  $r$  is more than 2 and less than 7.

9. A number  $q$  is less than or equal to 6 or greater than 1.

10. A number  $p$  is fewer than 17 or no less than 5.

11. A number  $k$  is greater than or equal to  $-4$  and less than 1.

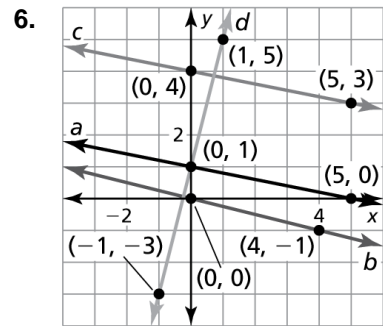
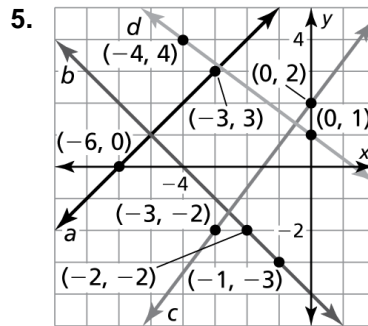
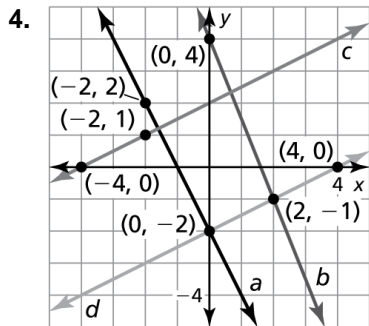
**Chapter  
7**

**Maintaining Mathematical Proficiency**

Solve the equation by interpreting the expression in parentheses as a single quantity.

1.  $5(10 - x) = 100$       2.  $6(x + 8) - 12 = -48$       3.  $3(2 - x) + 4(2 - x) = 56$

Determine which lines are parallel and which are perpendicular.



7. Explain why you can rewrite  $4(x - 9) + 5(9 - x) = 11$  as  $-(x - 9) = 11$ ? Then solve the equation.

# Chapter 8

## Maintaining Mathematical Proficiency

Tell whether the ratios form a proportion.

1.  $\frac{3}{4}, \frac{16}{12}$

2.  $\frac{35}{63}, \frac{45}{81}$

3.  $\frac{12}{96}, \frac{16}{100}$

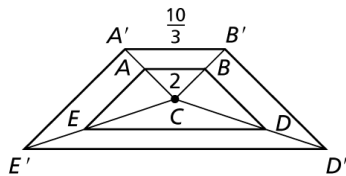
4.  $\frac{15}{24}, \frac{75}{100}$

5.  $\frac{17}{68}, \frac{32}{128}$

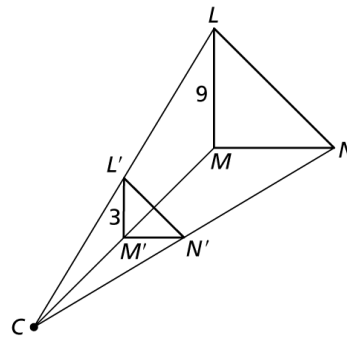
6.  $\frac{65}{105}, \frac{156}{252}$

Find the scale factor of the dilation.

7.



8.





**Chapter  
9****Maintaining Mathematical Proficiency**

Simplify the expression.

1.  $\sqrt{500}$

2.  $\sqrt{189}$

3.  $\sqrt{252}$

4.  $\frac{4}{\sqrt{3}}$

5.  $\frac{11}{\sqrt{5}}$

6.  $\frac{8}{\sqrt{2}}$

Solve the proportion.

7.  $\frac{x}{21} = \frac{2}{7}$

8.  $\frac{x}{5} = \frac{9}{4}$

9.  $\frac{3}{x} = \frac{14}{42}$

10.  $\frac{20}{27} = \frac{6}{x}$

11.  $\frac{x-4}{5} = \frac{10}{9}$

12.  $\frac{15}{5x+25} = \frac{3}{9}$

13. The Pythagorean Theorem states that  $a^2 + b^2 = c^2$ , where  $a$  and  $b$  are legs of a right triangle and  $c$  is the hypotenuse. Are you able to simplify the Pythagorean Theorem further to say that  $a + b = c$ ? Explain.

**Chapter  
10****Maintaining Mathematical Proficiency**

Find the product.

1.  $(x - 4)(x - 9)$

2.  $(k + 6)(k - 7)$

3.  $(y + 5)(y - 13)$

4.  $(2r + 3)(3r + 1)$

5.  $(4m - 5)(2 - 3m)$

6.  $(7w - 1)(6w + 5)$

Solve the equation by completing the square. Round your answer to the nearest hundredth, if necessary.

7.  $x^2 + 6x = 10$

8.  $p^2 - 14p = 5$

9.  $z^2 + 16z + 7 = 0$

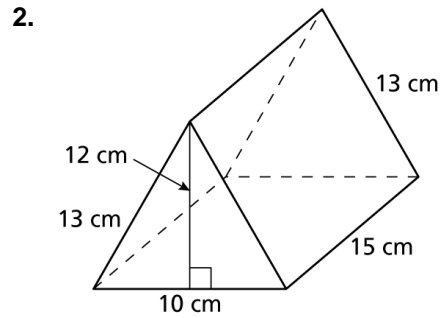
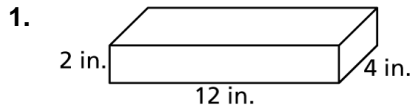
10.  $z^2 + 5z - 2 = 0$

11.  $x^2 + 2x - 5 = 0$

12.  $c^2 - c - 1 = 0$

**Chapter  
11****Maintaining Mathematical Proficiency**

Find the surface area of the prism.



Find the missing dimension.

- A rectangle has an area of 25 square inches and a length of 10 inches. What is the width of the rectangle?
  
  
  
  
  
  
  
  
  
  
- A triangle has an area of 32 square centimeters and a base of 8 centimeters. What is the height of the triangle?