SKILL **6**

Are You Ready?

Squares and Square Roots

Teaching Skill 6

Objective Find the square or square root of a number.

Review the definition and the example of square of numbers. Stress that squaring a number is NOT the same as doubling a number. Ask: **What is the square of 3?** (9)

Review the definition and the example of perfect squares. Ask: **What are the first three perfect square numbers?** (1, 4, 9)

Review the definition and the example of square roots. Ask: **What is the square root of 9?** (3)

Point out that squaring a number and taking the square root of a number "undo" each other: $3^2 = 9$, $\sqrt{9} = 3$

PRACTICE ON YOUR OWN

In exercises 1–4, students find the squares of numbers.

In exercises 5–8, students find the square roots of numbers.

In exercises 9–16, students determine if a number is a perfect square, and if so, find its positive square root.

CHECK

Determine that students know how to identify perfect square numbers and how to take square roots.

Students who successfully complete the **Practice on Your Own** and **Check** are ready to move on to the next skill.

COMMON ERRORS

Students may double a number instead of squaring it when raising the number to the second power.

Students who made more than 3 errors in the **Practice on Your Own**, or who were not successful in the Check section, may benefit from the **Alternative Teaching Strategy**.

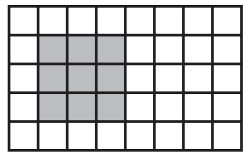
Alternative Teaching Strategy

Objective Find the square of a number.

Materials needed: graph paper

Tell students they can use graph paper to help determine what the square of a number is and whether a number is a perfect square.

Instruct students to form a larger shaded square by shading 3 rows and 3 columns on the graph paper.



Point out that this is the geometric representation of "3 squared" because it forms a square of length 3 and width 3.

Have students count the number of small squares inside the larger square. There are a total of 9. Ask: **Aside from counting, how would you find the area of the larger square?** (Multiply the length times the width, $3 \cdot 3$.) Equate this to the fact that 3 squared, or 3^2, is equal to $3 \cdot 3$ or 9.

Have students repeat this exercise with the numbers 5 and 6. Ask: **What is 5^2?** (25) **What is 6^2?** (36)

Remind students that "squared" is the same thing as raised to the second power.

Next, have students try to shade 12 small squares in the shape of a larger square. Ask? **Is it possible to form a large square using 12 small squares?** (No)

Tell students that a number is not a perfect square if they are not able to form a large square.

Have students try to form a large square with the numbers 4, 8, 9, and 10. Ask: **Which of the numbers are perfect squares?** (4 and 9)

Name ______________________ Date __________ Class __________

SKILL 6

Are You Ready?

Squares and Square Roots

Square of Numbers	Perfect Squares	Square Roots
The square of a number is the product of the number and itself.	A number is a perfect square if it is of the form n^2, where n is any whole number.	If a number is a perfect square, with two identical factors, then either factor is the square root of the number.
Example 1	**Example 2**	**Example 3**
The square of 5, or 5^2, is $5 \cdot 5 = 25$.	The number 49 is a perfect square because it can be written as $7 \cdot 7$ or 7^2.	The square root of 100, or $\sqrt{100}$, is 10 since $10 \cdot 10 = 100$.

Practice on Your Own

Find the square of each number.

1. 3^2 __________ **2.** 8^2 __________ **3.** 16^2 __________ **4.** 25^2 __________

Find each square root.

5. $\sqrt{16}$ __________ **6.** $\sqrt{144}$ __________ **7.** $\sqrt{400}$ __________ **8.** $\sqrt{81}$ __________

Tell whether each number is a perfect square. If so, identify its positive square root.

9. 24 __________ **10.** 1 __________ **11.** 225 __________ **12.** 48 __________

13. 169 __________ **14.** 196 __________ **15.** 50 __________ **16.** 1000 __________

Check

Find the square or square root of each number.

17. 7^2 __________ **18.** $\sqrt{25}$ __________ **19.** 12^2 __________ **20.** $\sqrt{100}$ __________

Tell whether each number is a perfect square. If so, identify its positive square root.

21. 36 __________ **22.** 75 __________ **23.** 121 __________ **24.** 65 __________

SKILL **53**

Are You Ready?

Simplify Radical Expressions

Teaching Skill 53

Objective Simplify radical expressions.

Review with students the definition of simplest form. Ask: **Is $\sqrt{4}$ written in simplest form?** (No) **Why or why not?** (4 is a perfect square factor.) **Is $\sqrt{\frac{1}{7}}$ written in simplest form?** (No, because there is a fraction under the radical sign.) **Is $\sqrt{\frac{5}{9}}$ written in simplest form?** (Yes, even though there is a fraction, the denominator does not have a radical in it.)

Next, review with students how to simplify radical expressions. Work through each example. Point out that when the expression involves a product or a fraction, it may be more convenient to multiply or divide first, then simplify. Provide the following example: $\sqrt{20}\sqrt{5}$. Ask: **Is 20 or 5 a perfect square?** (No) **If you multiply first, do you get a perfect square inside the radical?** (Yes, 100) Provide a similar example using a fraction (e.g. $\sqrt{\frac{45}{5}}$).

Have students complete the exercises.

PRACTICE ON YOUR OWN

In exercises 1–8, students simplify radical expressions.

CHECK

Determine that students know how to simplify radical expressions.

Students who successfully complete the **Practice on Your Own** and **Check** are ready to move on to the next skill.

COMMON ERRORS

Students may leave a radical expression in the denominator of a fraction.

Students who made more than 2 errors in the **Practice on Your Own,** or who were not successful in the **Check** section, may benefit from the **Alternative Teaching Strategy.**

Alternative Teaching Strategy

Objective Simplify radical expressions.

Some students may benefit from seeing the connection between square roots and squares more directly.

Remind students that the first step in simplifying a radical is to check for perfect squares. If the number inside the radical is the square of an integer, it can be simplified. Write the following problem on the board:

$\sqrt{49} = \sqrt{7 \cdot 7} = \sqrt{7^2}$

Ask: **Since taking the square root of a number is the inverse of squaring the number, what can be said about the square root of a number squared?** (It is equal to the number.)

Have students complete the following table.

n	n^2
1	1
2	4
3	9
4	
5	
6	
7	
8	
9	
10	

$\sqrt{\ }$	$\sqrt{n^2} = n$
$\sqrt{1}$	$\sqrt{1^2} = 1$
$\sqrt{4}$	$\sqrt{2^2} = 2$
$\sqrt{9}$	$\sqrt{3^2} = 3$
$\sqrt{\ }$	$\sqrt{\ } =$
$\sqrt{\ }$	$\sqrt{\ } =$
$\sqrt{\ }$	$\sqrt{\ } =$
$\sqrt{\ }$	$\sqrt{\ } =$
$\sqrt{\ }$	$\sqrt{\ } =$
$\sqrt{\ }$	$\sqrt{\ } =$
$\sqrt{\ }$	$\sqrt{\ } =$

Write the problems below on the board. Have students rewrite the problems as n^2 and then simplify. Remind students that if the expression is a product, they can simplify each term separately and then multiply. Likewise, if the expression is a fraction, they can simplify the numerator and the denominator one at a time.

$\sqrt{16}\ \left(\sqrt{4^2} = 4\right)$; $\sqrt{81}\ \left(\sqrt{9^2} = 9\right)$;

$\sqrt{36}\sqrt{100}\ \left(\sqrt{6^2} = 6, \sqrt{10^2} = 10, 6 \cdot 10 = 60\right)$

$\sqrt{\frac{9}{25}}\ \left(\frac{\sqrt{9}}{\sqrt{25}} = \frac{\sqrt{3^2}}{\sqrt{5^2}} = \frac{3}{5}\right)$

Name ______________________________ Date __________ Class __________

SKILL 53

Are You Ready?

Simplify Radical Expressions

Definition: A radical expression is in *simplest form* when all of the following conditions are met.

1. The number, or expression, under the radical sign contains no perfect square factors (other than 1).
2. The expression under the radical sign does not contain a fraction.
3. If the expression is a fraction, the denominator does not contain a radical expression.

How to Simplify Radical Expressions		
Look for perfect square factors and simplify these first. If the radical expression is preceded by a negative sign, then the answer is negative.	If the expression is a product, simplify then multiply, or multiply then simplify, whichever is most convenient.	If the expression is (or contains) a fraction, simplify then divide, or divide then simplify, whichever is most convenient.
Example 1: Simplify $\sqrt{81}$. Since 81 is a perfect square factor, simplify the expression to 9. $\sqrt{81} = \sqrt{9 \cdot 9} = 9$ $-\sqrt{81} = -\sqrt{9 \cdot 9} = -9$	Example 2: Simplify $\sqrt{25}\sqrt{16}$. Since both numbers are perfect squares, simplify then multiply: $\sqrt{5 \cdot 5}\sqrt{4 \cdot 4} =$ $5 \cdot 4 = 20$	Example 3: Simplify $-\sqrt{\frac{4}{49}}$. $-\sqrt{\frac{4}{49}} = -\frac{\sqrt{2 \cdot 2}}{\sqrt{7 \cdot 7}} = -\frac{2}{7}$

Practice on Your Own

Simplify each expression.

1. $\sqrt{25}$ ____________

2. $\sqrt{9}\sqrt{36}$ ____________

3. $\sqrt{\frac{81}{121}}$ ____________

4. $-\sqrt{81}$ ____________

5. $\sqrt{100}\sqrt{4}$ ____________

6. $\sqrt{2(32)}$ ____________

7. $\sqrt{169}$ ____________

8. $-\sqrt{\frac{1}{625}}$ ____________

Check

Simplify each expression.

9. $\sqrt{16}$ ____________

10. $\sqrt{81}\sqrt{64}$ ____________

11. $-\sqrt{49}$ ____________

12. $\sqrt{\frac{4}{25}}$ ____________

13. $\sqrt{2}\sqrt{50}$ ____________

14. $-\sqrt{144}$ ____________

15. $-\sqrt{9}\sqrt{4}$ ____________

16. $\sqrt{\frac{9}{36}}$ ____________

SKILL 64

Are You Ready?

Multiply Binomials

Teaching Skill 64
Objective Multiply binomials.

Review with students the definition of a binomial. Ask: **Will a binomial always have two terms?** (Yes)

Point out that multiplying binomials is much like multiplying a polynomial by a monomial. The only difference is that you must use the Distributive Property twice.

Direct students' attention to the example. Explain that you will be distributing the x to both terms in the second set of parentheses and also the $+6$ to both terms in the second set of parentheses. Ask: **If you are multiplying two terms by two other terms, how many terms should you end up with before combining like terms?** (4) Work through the example.

If time permits, present and explain the FOIL method. Explain that FOIL reminds you to multiply all four sets of terms–the first terms, the outer terms, the inner terms, and the last terms. Remind students that they will still need to combine like terms.

Have students complete the practice exercises using either the Distributive Property or the FOIL method.

PRACTICE ON YOUR OWN
In exercises 1–10, students multiply binomials.

CHECK
Determine that students know how to multiply binomials.

Students who successfully complete the **Practice on Your Own** and **Check** are ready to move on to the next skill.

COMMON ERRORS
Students may multiply only the first terms and the last terms, rather than distributing.

Students who made more than 2 errors in the **Practice on Your Own,** or who were not successful in the **Check** section, may benefit from the **Alternative Teaching Strategy.**

Alternative Teaching Strategy
Objective Multiply binomials.

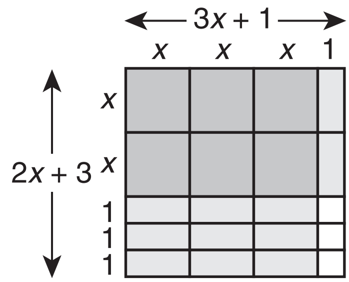
Materials needed: algebra tiles

Tell students that they are going to model the product of two binomials using algebra tiles.

Ask: **How do you find the area of a rectangle given its length and width?** (You multiply the length times the width.)

Explain that you are going to use algebra tiles to find the area of a rectangle that is $(2x + 3)$ units long and $(3x + 1)$ units wide by counting tiles. Write the equation $A = (2x + 3)(3x + 1)$ on the board.

Arrange the algebra tiles as shown below. Have the students draw a similar arrangement on their paper and label as shown.



Ask: **What is the area of each of the larger squares?** ($x \cdot x = x^2$) **How many are there?** (6) **What is the area of each of the smaller rectangles?** ($x \cdot 1 = x$) **How many are there?** (11) **What is the area of the smaller squares?** ($1 \cdot 1 = 1$) **How many are there?** (3) **What is the total area of the figure?** ($6x^2 + 11x + 3$)

Demonstrate how to find the same product using the Distributive Property (or FOIL) to confirm the answer.

Repeat this exercise to find the products of the following pairs of binomials:

$(2x + 2)(x + 3)$ and $(3x + 2)(2x + 1)$

Have students confirm their answers each time using the Distributive Property or FOIL.

Answers: $2x^2 + 8x + 6$ and $6x^2 + 7x + 2$

Name ______________________________ Date __________ Class __________

SKILL 64

Are You Ready?

Multiply Binomials

Definition: A binomial is the sum or difference of two monomials.

To multiply a binomial by another binomial, use the Distributive Property twice.

Example: Multiply $(x + 6)(3x - 5)$.		
	$= x(3x - 5) + 6(3x - 5)$	First use of the Distributive Property.
	$= x(3x) - x(5) + 6(3x) + 6(-5)$	Second use of the Distributive Property.
	$= 3x^2 - 5x + 18x - 30$	Multiply using properties of exponents.
	$= 3x^2 + 13x - 30$	Combine like terms $(-5x + 18x = 13x)$.

Practice on Your Own

Find each product.

1. $(n + 6)(n + 3)$ ____________

2. $(c + 12)(c - 5)$ ____________

3. $(10q + 3)(q + 4)$ ____________

4. $(k + 7)(3k - 1)$ ____________

5. $(u - 1)(u + 1)$ ____________

6. $(r + 6)(r + 6)$ ____________

7. $(5a - 4)(5a + 4)$ ____________

8. $(3g + 1)(8g + 12)$ ____________

9. $(5z + 8)(4z - 2)$ ____________

10. $(4p - 9)(2p - 1)$ ____________

Check

Find each product.

11. $(x + 4)(x + 7)$ ____________

12. $(2w + 6)(w - 9)$ ____________

13. $(p + 5)(p + 5)$ ____________

14. $(2t + 7)(2t - 7)$ ____________

15. $(7y - 3)(y - 1)$ ____________

16. $(3m + 4)(9m + 2)$ ____________

SKILL 69

Are You Ready?

Solve Multi-Step Equations

Teaching Skill 69
Objective Solve multi-step equations.

Explain that multi-step equations are equations that involve more than one step.

Ask: **When you "do" operations on numbers, which comes first, addition and subtraction or multiplication and division?** (The order of operations tells you to multiply and divide before you add and subtract.) **Since you are "undoing" operations when you solve an equation, what order should you follow?** (the reverse order) Explain that this is not required, but that it makes the process easier.

Review the example with students. Point out that if students divide each term by 9 in the first step, they will be working with fractions for the rest of the problem. If you add 6 first, only the last step may produce a fraction.

Have students complete the practice exercises. Point out that exercises 7, 8, and 9 have parentheses and that students will need to use the Distributive Property before they use inverse operations.

PRACTICE ON YOUR OWN
In exercises 1–9, students solve multi-step equations.

CHECK
Determine that students know how to solve multi-step equations.

Students who successfully complete the **Practice on Your Own** and **Check** are ready to move on to the next skill.

COMMON ERRORS
Students may perform an inverse operation on only one side of the equation.

Students who made more than 2 errors in the **Practice on Your Own,** or who were not successful in the **Check** section, may benefit from the **Alternative Teaching Strategy.**

Alternative Teaching Strategy
Objective Solve multi-step equations.

Tell students they are going to solve multi-step equations to answer the following question: What are two-step equations?

Review with students how to solve multi-step equations. Instruct students to solve each problem and then write the letter corresponding to the correct answer above the problem numbers at the bottom of the page.

1. $5x - 6 = 54$
2. $6x + 2 = 1$
3. $24 = 2x + 2$
4. $15 + \frac{x}{5} = 10$
5. $-20 - 4x = 40$
6. $27 = \frac{x}{2} + 15$
7. $2(1 - x) = -48$
8. $4(2x + 3) - 7x = -1$
9. $5x - 2 = 9x + 30$
10. $5(x + 6) - 3x = x + 18$

A	-15
C	-8
D	25
E	12
I	-25
K	-12
L	-13
N	11
O	$-\frac{1}{6}$
T	24

Two-step equations are equations that:

__ __ __ __   __ __   __ __ __ __ __
8 4 10 1   6 2   7 5 3 9 1

Answer: Two-step equations are equations that like to dance.

Name ______________________ Date __________ Class __________

SKILL 69

Are You Ready?

Solve Multi-Step Equations

To solve an equation, you need to isolate the variable on one side of the equals sign. Follow the order of operations in reverse to solve a multi-step equation. That is, add and subtract before you multiply or divide. Sometimes, you need to use the Distributive Property before you use inverse operations.

Example: Solve $9x - 6 = 21$.

$$\begin{aligned} 9x - 6 &= 21 \\ \underline{+6} \quad &\ \ \underline{+6} \qquad \leftarrow \text{Add 6 to both sides.} \\ 9x \quad &= 27 \end{aligned}$$

$$\frac{9x}{9} = \frac{27}{9} \qquad \leftarrow \text{Divide both sides by 9.}$$

$$x = 3$$

Practice on Your Own

Solve.

1. $3x - 2 = 10$ ________

2. $7m + 3 = 45$ ________

3. $12 + \frac{t}{3} = 17$ ________

4. $\frac{p}{4} - 3 = -5$ ________

5. $-12 - 9y = -20$ ________

6. $26 = 5c - 4$ ________

7. $3\left(\frac{x}{3} + 2\right) = -9$ ________

8. $5(2n - 1) = -5$ ________

9. $2(h + 3) + 5h = -3$ ________

Check

Solve.

10. $8x + 1 = 17$ ________

11. $-3 + \frac{d}{5} = -7$ ________

12. $-12 + 6g = 14$ ________

13. $18 = \frac{t}{2} + 15$ ________

14. $-3(x + 4) = -5$ ________

15. $5(z - 2) + 3z = 14$ ________

Are You Ready?

Graph Linear Functions

Teaching Skill 75

Objective Graph a linear function.

Remind students that every linear function can be written in slope-intercept form, $y = mx + b$. Point out that when written in this form, it is possible to graph the linear function using the slope and the *y*-intercept.

Discuss the concept of slope with students. Remind students that the slope of a line indicates how steep the line is and can be interpreted as the amount of rise (change in vertical position) over the amount of run (change in horizontal position).

Next remind students that the *y*-intercept is the point where the line crosses the *y*-axis. Ask: **Which axis is the *y*-axis?** (the vertical axis)

Direct students' attention to the example. Ask: **What is the slope of the line?** ($-\frac{7}{6}$)

What is the *y*-intercept? (0, 5) Work through the example with students.

Ask: **Since you need rise over run for the slope, what do you do if the slope is an integer?** (Put a 1 in the denominator.)

Have students complete the practice exercises.

PRACTICE ON YOUR OWN

In exercises 1–6, students graph linear functions.

CHECK

Determine that students know how to graph linear functions.

Students who successfully complete the **Practice on Your Own** and **Check** are ready to move on to the next skill.

COMMON ERRORS

Students may plot the *y*-intercept on the wrong axis.

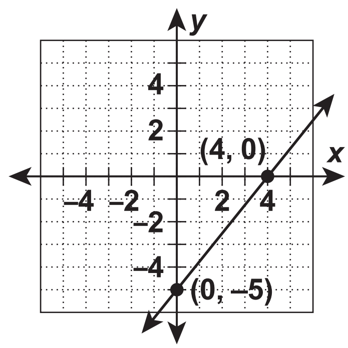
Students who made more than 1 error in the **Practice on Your Own,** or who were not successful in the **Check** section, may benefit from the **Alternative Teaching Strategy.**

Alternative Teaching Strategy

Objective Graph a linear function by finding the *x*- and *y*-intercepts.

Remind students that all they need to graph a line is two points. Explain that they can use the *x*-intercept and the *y*-intercept as the two points.

Draw and label the following on the board:



Point to the point (4, 0). Ask: **What is this point called?** (the *x*-intercept) **Why?** (because it is the point where the line crosses the *x*-axis) **What is the value of *y* at this point?** (0) Explain to the students that they can find an *x*-intercept from an equation by substituting 0 for *y* and then solving for *x.*

Follow a similar process to establish that the *y*-intercept can be determined by substituting 0 for *x* and then solving for *y.*

Present the following example: $y = 3x - 9$. Show students how to find the *x*-intercept by substituting 0 for *y* ($x = 3$). Then draw a coordinate plane and plot the *x*-intercept. Remind students that the *x*-coordinate is always the horizontal position and that the *y*-coordinate is the vertical position.

Next, have students find the *y*-intercept by substituting 0 for *x* and solving for *y* ($y = -9$). Then plot the point on the coordinate plane. Draw a line through the two points.

Have students use *x*- and *y*-intercepts to graph the following equations:

$y = 2x + 4$; $y = \frac{1}{2}x - 3$; and $y = -5x - 5$.

Name ____ Date ____________ Class ____________

SKILL 75

Are You Ready?

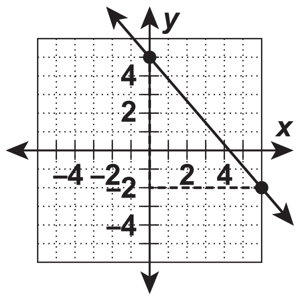
Graph Linear Functions

When a linear function is written in slope-intercept form ($y = mx + b$), you have two pieces of information that help you graph the function–the slope and the y-intercept.

slope (m) = rise over run (how much the line rises vertically from left to right compared to how much it runs horizontally). If the slope is negative, the line will fall from left to right, rather than rising.	***y*-intercept (b)** = where the function crosses the vertical (y) axis. The point is (0, b).

Example: Graph the function $y = -\frac{7}{6}x + 5$

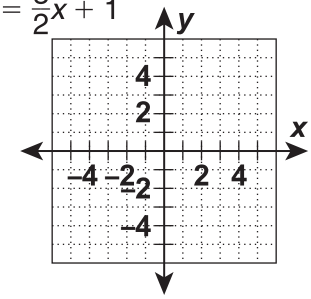
Step 1: Place a dot on the y-intercept (0, 5).
Step 2: Fall 7 units vertically and then run 6 units to the right.
Place a second dot at the new location.
Step 3: Draw a line through the two dots.



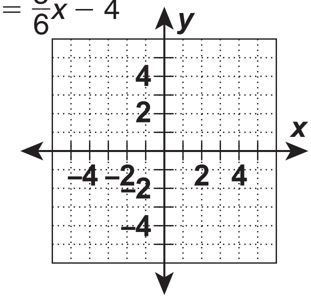
Practice on Your Own

Graph each function.

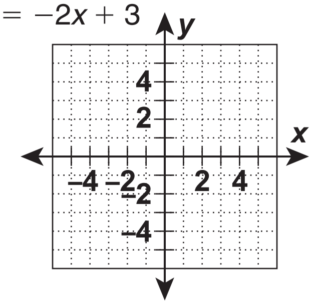
1. $y = \frac{3}{2}x + 1$



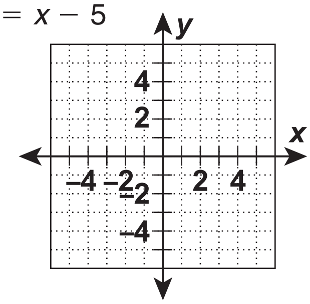
2. $y = \frac{5}{6}x - 4$



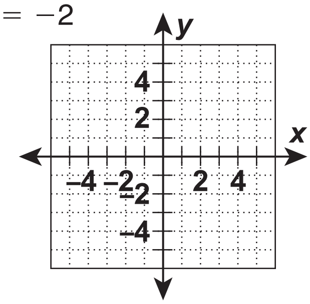
3. $y = -2x + 3$



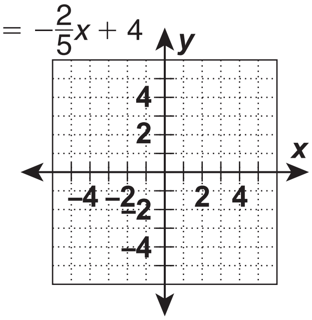
4. $y = x - 5$



5. $y = -2$



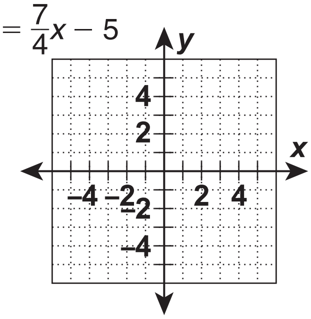
6. $y = -\frac{2}{5}x + 4$



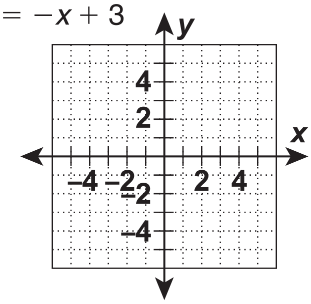
Check

Graph each function.

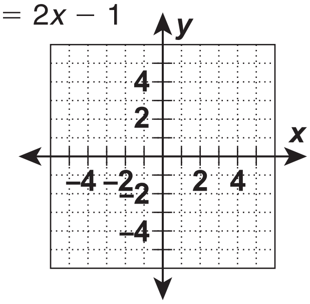
7. $y = \frac{7}{4}x - 5$



8. $y = -x + 3$



9. $y = 2x - 1$



16. No

17. {1, 17}

18. {1, 3, 5, 9, 15, 45}

19. {1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 80, 160}

20. {1, 2, 4, 7, 14, 28}

SKILL 4 ANSWERS:

Practice on Your Own

1. 4

2. 14

3. $4a$

4. x^2y

5. $6a^2$

6. $2x^2y$

7. $16ef$

8. $14rs$

9. $5xz$

Check

10. 12

11. $12e^2f$

12. $4a^3$

13. gh

14. $6a^3$

15. $10x^3$

SKILL 5 ANSWERS:

Practice on Your Own

1. {1, 3, 11, 33}

2. {1, 23}

3. {1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90}

4. {1, 2, 4, 5, 10, 20}

5. composite, 5×5 or 1×25

6. composite, 2×23 or 1×46

7. prime

8. composite, 2×6 or 3×4 or 1×12

9. prime

10. prime

11. composite, 11×11 or 1×121

12. prime

Check

13. composite, 3×9 or 1×27

14. prime

15. composite, 9×9 or 1×81

16. composite, 2×14 or 4×7 or 1×28

17. prime

18. composite, 2×9 or 3×6 or 1×18

19. composite, 3×7 or 1×21

20. prime

SKILL 6 ANSWERS:

1. 9

2. 64

3. 256

4. 625

5. 4

6. 12

7. 20

8. 9

9. No

10. Yes, 1

11. Yes, 15

12. No

13. Yes, 13

14. Yes, 14

15. No

16. No

Check

17. 49
18. 5
19. 144
20. 10
21. Yes, 6
22. No
23. Yes, 11
24. No

SKILL 7 ANSWERS:

Practice on Your Own

1. $9 \cdot 9 \cdot 9 \cdot 9$
2. $1 \cdot 1 \cdot 1 \cdot 1 \cdot 1$
3. $x \cdot x \cdot x$
4. $8 \cdot 8$
5. $(-2) \cdot (-2) \cdot (-2)$
6. $p \cdot p \cdot p \cdot p \cdot p \cdot p$
7. 10^6
8. 12^4
9. m^5
10. 5^6
11. 9^2
12. p^3

Check

13. $2 \cdot 2 \cdot 2 \cdot 2$
14. $(-4) \cdot (-4)$
15. $h \cdot h \cdot h \cdot h \cdot h$
16. 25^3
17. s^4
18. 8^3
19. 4^1 or 4

SKILL 8 ANSWERS:

1. 32
2. 16
3. 1
4. $15^2 = 225$
5. $(-10)^3 = -1000$
6. $1 + 1 = 2$
7. $16 + 9 = 25$
8. $36 \cdot 4 = 144$
9. $64 \div 16 = 4$

Check

10. 64
11. 1
12. $9^2 = 81$
13. $100 - 1 = 99$
14. $-8 + 27 = 19$
15. $-1 \cdot 32 = -32$
16. $25 \cdot 10 = 250$
17. $1000 \div 125 = 8$
18. $81 \div 1 = 81$

SKILL 9 ANSWERS:

Practice on Your Own

1. 146.39
2. 236
3. 50
4. 15.3
5. 0.005
6. 4.0
7. 230; $(80 + 150)$
8. 180; (9×20)
9. 5; $(10 \div 2)$
10. 1200; $(400 + 700 + 100)$

SKILL 53 ANSWERS:

Practice on Your Own

1. 5
2. 18
3. $\frac{9}{11}$
4. -9
5. 20
6. 8
7. 13
8. $-\frac{1}{25}$

Check

9. 4
10. 72
11. -7
12. $\frac{2}{5}$
13. 10
14. -12
15. -6
16. $\frac{1}{2}$

SKILL 54 ANSWERS:

Practice on Your Own

1. 15
2. 8
3. 0.4
4. 1.19
5. 10
6. 4
7. 0.75
8. 0.7
9. 6
10. 7
11. 0
12. 12

Check

13. 11
14. 2.3
15. 10
16. 25
17. 13
18. 0
19. 1.1
20. 1

SKILL 55 ANSWERS:

Practice on Your Own

1. 3
2. 4
3. 31
4. 3
5. 6
6. 14
7. 50
8. 9
9. 26
10. 43
11. 0
12. 4

Check

13. 4
14. 0
15. 25
16. 22
17. 2
18. 58

SKILL 62 ANSWERS:

Practice on Your Own

1. $16d + 40$
2. $m^2 - m$
3. $9b^2 + 9b$
4. $48 - 60q$
5. $5p^2 + 30p$
6. $50w - 30w^2$
7. $-10r - 2r^4$
8. $n^4 + n^2$
9. $9g^2 + 3g$
10. $2e^4 - 2e^3$
11. $2h^3 - 10h^2 + 30h$
12. $x^4y + x^2y^6$

Check

13. $60x - 30$
14. $4y^2 - 36y$
15. $55 - 22k$
16. $49t - 49t^2$
17. $w^3 - w^4$
18. $3g^3 - 15g^2$
19. $p^3 - 2p^2 + 5p$
20. $3u^3v^3 + u^2v^4$

SKILL 63 ANSWERS:

Practice on Your Own

1. $12m - 2n$
2. $-2x + 8y$
3. $15p + q$
4. $20d + 2e$
5. $24t^2 - 9t$
6. $r^2s + 6rs + 5rs^2$
7. $15f^2 - 5f + 5$
8. $3p^3 + 2p^2 + 8p$
9. $13g^2 - 26g^3$
10. $5j^3k + 5jk^2 + 4j^2$

Check

11. $-5x + 5y$
12. $2a + 15b$
13. $26g - 2h$
14. $8u^3 - 7u^2 - 5u$
15. $27p^2 - 10p - 13$
16. $12c - 4c^2$

SKILL 64 ANSWERS:

Practice on Your Own

1. $n^2 + 9n + 18$
2. $c^2 + 7c - 60$
3. $10q^2 + 43q + 12$
4. $3k^2 + 20k - 7$
5. $u^2 - 1$
6. $r^2 + 12r + 36$
7. $25a^2 - 16$
8. $24g^2 + 44g + 12$
9. $20z^2 + 22z - 16$
10. $8p^2 - 22p + 9$

Check

11. $x^2 + 11x + 28$
12. $2w^2 - 12w - 54$
13. $p^2 + 10p + 25$
14. $4t^2 - 49$
15. $7y^2 - 10y + 3$
16. $27m^2 + 42m + 8$

SKILL 68 ANSWERS:

Practice on Your Own

1. $m = 14$

2. $h = -18$

3. $x = 9$

4. $b = 10$

5. $y = -3$

6. $k = -12$

7. $p = 5$

8. $t = 21$

9. $x = -4$

10. $h = 11$

11. $x = 2$

12. $r = -7$

Check

13. $x = 5$

14. $c = 12$

15. $d = -4$

16. $s = -30$

17. $z = -15$

18. $w = 48$

19. $b = -12$

20. $x = 1$

SKILL 69 ANSWERS:

Practice on Your Own

1. $x = 4$

2. $m = 6$

3. $t = 15$

4. $p = -8$

5. $y = \frac{8}{9}$

6. $c = 6$

7. $x = -15$

8. $n = 0$

9. $h = -\frac{9}{7}$

Check

10. $x = 2$

11. $d = -20$

12. $g = \frac{13}{3}$

13. $t = 6$

14. $x = -\frac{7}{3}$

15. $z = 3$

SKILL 70 ANSWERS:

Practice on Your Own

1. $y = 3$

2. $m = -\frac{5}{4}$

3. $x = -1$

4. $t = 2$

5. $x = -\frac{1}{2}$

6. $b = 0$

7. $k = \frac{1}{4}$

8. $x = 3$

9. $a = -1$

Check

10. $x = 8$

11. $t = \frac{5}{3}$

12. $y = -6$

13. $p = 2$

14. $b = -4$

15. $x = -\frac{1}{2}$

SKILL 71 ANSWERS:

Practice on Your Own

1. $x = 18$

2. $x = -42$

3. $y = 1$

13. $y < 10$ 

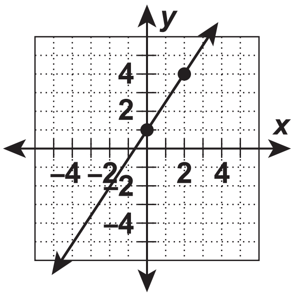
14. $x \geq -4$ 

15. $m < 8$ 

SKILL 75 ANSWERS:

Practice on Your Own

1.



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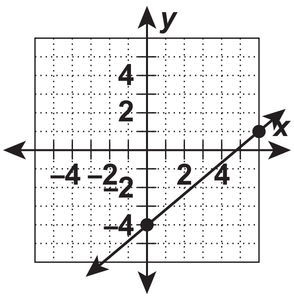

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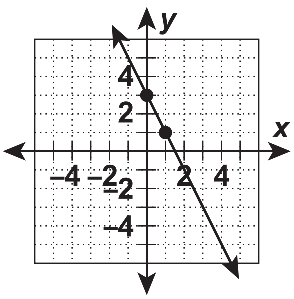

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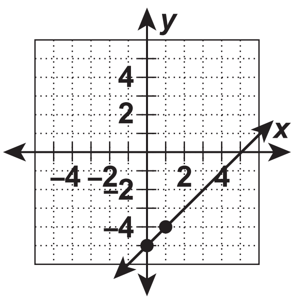

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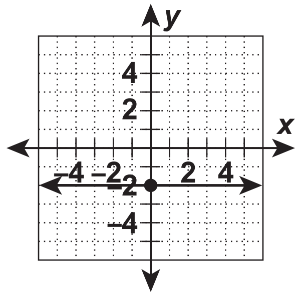

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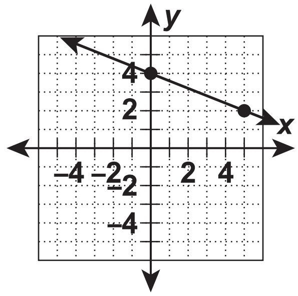

Check

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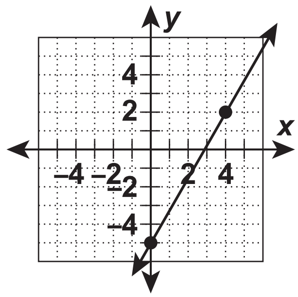

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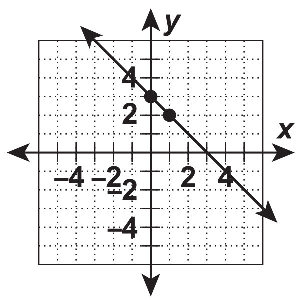

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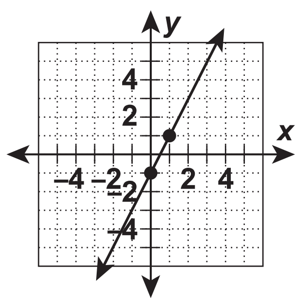


13. $y < 10$

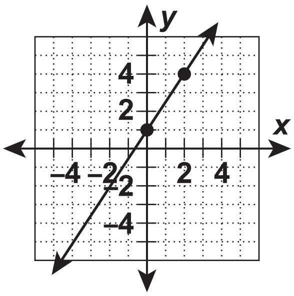
14. $x \geq -4$

15. $m < 8$

SKILL 75 ANSWERS:

Practice on Your Own

1.



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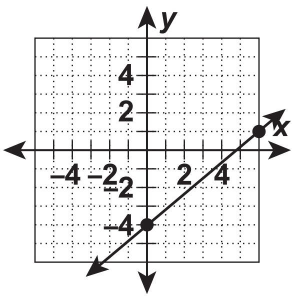

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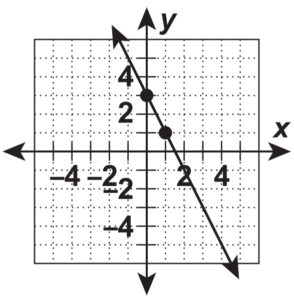

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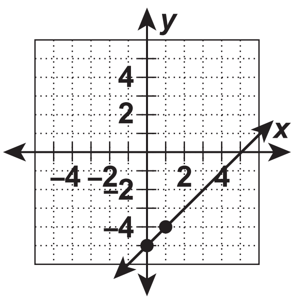

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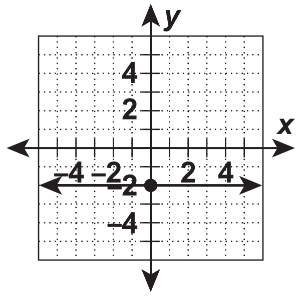

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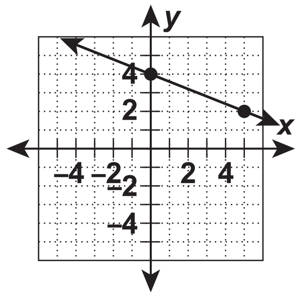

Check

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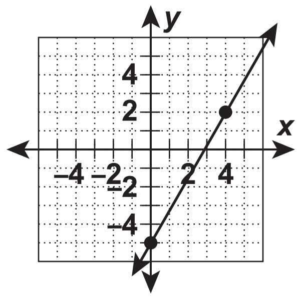

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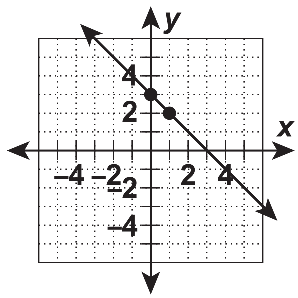

9.