

**Chapter
11****Fair Game Review****Evaluate the expression.**

1. $\frac{2}{3} + \frac{5}{3}$

2. $\frac{7}{8} - \frac{3}{4}$

3. $\frac{1}{10} - \frac{4}{5}$

4. $\frac{11}{6} + \frac{5}{12}$

5. $\frac{3}{4} \cdot \frac{1}{6}$

6. $\frac{5}{16} \cdot \frac{4}{3}$

7. $\frac{1}{3} \div \frac{5}{9}$

8. $\frac{8}{3} \div \frac{4}{15}$

9. You plan to jog $\frac{3}{4}$ of a mile tomorrow and $\frac{7}{8}$ of a mile the next day. How far will you jog over the next two days?

10. A recipe makes $\frac{9}{2}$ cups. A serving is $\frac{3}{4}$ cup. How many servings does the recipe make?

**Chapter
11****Fair Game Review** (continued)

Solve the proportion.

11. $\frac{2}{4} = \frac{d}{8}$

12. $\frac{2}{6} = \frac{5}{m}$

13. $\frac{12}{a} = \frac{4}{9}$

14. $\frac{8}{k} = \frac{5}{2}$

15. $\frac{35}{19} = \frac{21}{x}$

16. $\frac{17}{28} = \frac{c}{21}$

17. It costs \$136 for 16 students to visit a museum. How much does it cost for 25 students?

11.1

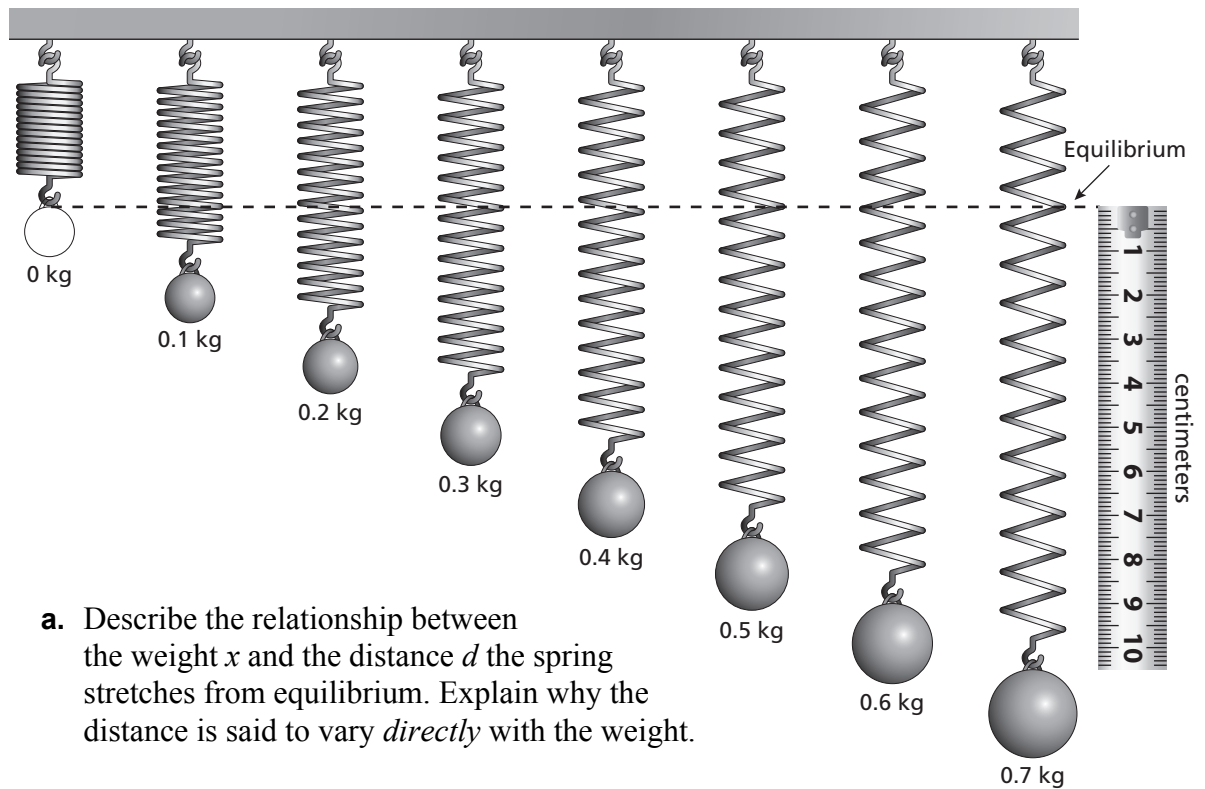
Direct and Inverse Variation

For use with Activity 11.1

Essential Question How can you recognize when two variables vary directly? How can you recognize when they vary inversely?

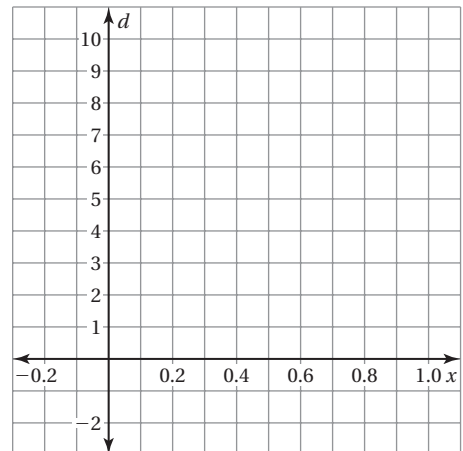
1 ACTIVITY: Recognizing Direct Variation

Work with a partner. You hang different weights from the same spring.



- a. Describe the relationship between the weight x and the distance d the spring stretches from equilibrium. Explain why the distance is said to vary *directly* with the weight.

- b. Graph the relationship between x and d . What are the characteristics of the graph?



11.1 Direct and Inverse Variation (continued)

- c. Write an equation that represents d as a function of x .
- d. In physics, the relationship between d and x is described by Hooke's Law. How would you describe Hooke's Law?

2 ACTIVITY: Recognizing Inverse Variation

Work with a partner. The area of each rectangle is 64 square inches.

The diagram shows seven rectangles of different dimensions, all with an area of 64 square inches. The dimensions are labeled as x and y .

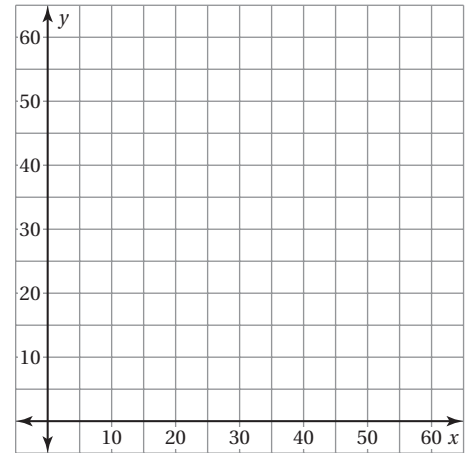
- Rectangle 1: $x = 64$ in., $y = 1$ in.
- Rectangle 2: $x = 32$ in., $y = 2$ in.
- Rectangle 3: $x = 16$ in., $y = 4$ in.
- Rectangle 4: $x = 8$ in., $y = 8$ in.
- Rectangle 5: $x = 4$ in., $y = 16$ in.
- Rectangle 6: $x = 2$ in., $y = 32$ in.
- Rectangle 7: $x = 1$ in., $y = 64$ in.

a. Describe the relationship between x and y . Explain why y is said to vary inversely with x .

11.1 Direct and Inverse Variation (continued)

- b. Graph the relationship between x and y .
What are the characteristics of the graph?

- c. Write an equation that represents y as a function of x .

**What Is Your Answer?**

3. **IN YOUR OWN WORDS** How can you recognize when two variables vary directly? How can you recognize when they vary inversely?

4. Does the flapping rate of a bird's wings vary directly or inversely with the length of its wings? Explain your reasoning.

11.1

Practice

For use after Lesson 11.1

Tell whether x and y show *direct variation*, *inverse variation*, or *neither*.
Explain your reasoning.

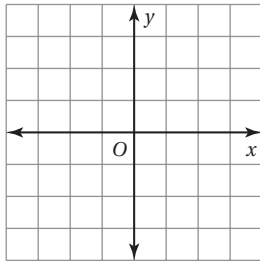
1.

x	1	2	3	4
y	7	14	21	28

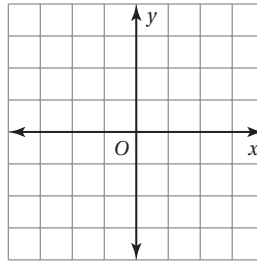
2. $2xy = 10$

The variable y varies directly with x . Write and graph a direct variation equation that relates x and y .

3. When $x = 3$, $y = 15$.

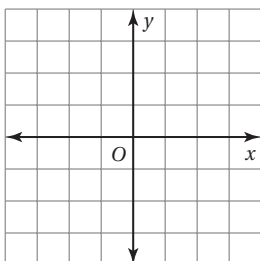


4. When $x = 8$, $y = 2$.

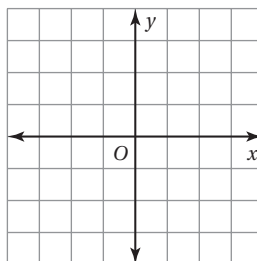


The variable y varies inversely with x . Write and graph an inverse variation equation that relates x and y .

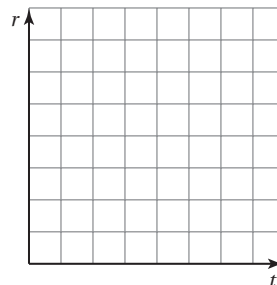
5. When $x = 5$, $y = 8$.



6. When $x = 9$, $y = -4$.



7. An airplane makes a 3000 mile flight. The average flying speed r (in miles per hour) is given by $r = \frac{3000}{t}$, where t is the time (in hours) it takes for the flight. Graph the function. Make a conclusion from the graph.



11.2 Graphing Rational Functions (continued)**2 ACTIVITY:** Analyzing the Graph of a Rational Function

Work with a partner. Use the graph in Activity 1.

- a. What is the *greatest* average cost of a calendar? Explain your reasoning.

- b. What is the *least* average cost of a calendar? Explain your reasoning.

What characteristic of the graph is associated with the least average cost?

3 ACTIVITY: Analyzing Profit and Revenue

Work with a partner. Consider the calendar project in Activity 1. Suppose your club sells 1400 calendars for \$10 each.

- a. Find the revenue your club earns from the calendars.

- b. How much profit does your club earn? Explain your reasoning.

11.2 Graphing Rational Functions (continued)**What Is Your Answer?**

4. **IN YOUR OWN WORDS** What are the characteristics of the graph of a rational function? Illustrate your answer with the graphs of the following rational functions.

a. $y = \frac{x + 1}{x}$

b. $y = \frac{x + 2}{x}$

c. $y = \frac{x + 3}{x}$

11.2**Practice**

For use after Lesson 11.2

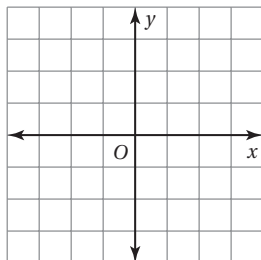
Find the excluded value of the function.

1. $y = \frac{3}{x - 8}$

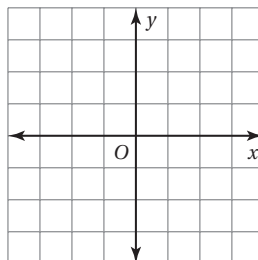
2. $y = \frac{1}{2x + 6}$

Graph the function. Identify the asymptotes of the graph of the function.
Describe the domain and range.

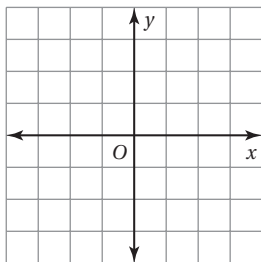
3. $y = -\frac{5}{x} + 2$



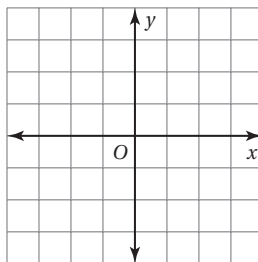
4. $y = \frac{2}{x + 4} - 3$

Graph the function. Compare the graph to the graph of $y = \frac{1}{x}$.

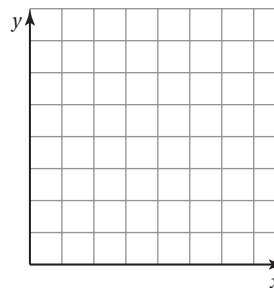
5. $y = \frac{1}{x - 1} - 6$



6. $y = \frac{-1}{x + 5} + 4$



7. A high school football team is taking a trip to an NFL game. Tickets cost \$82 and a charter bus costs \$350. The function $y = \frac{350}{x + 6} + 82$ represents the cost y (in dollars) per player when x players and 6 coaches go on the trip. Graph the function. How many players must go on the trip for the cost per player to be about \$90?



Extension
11.2**Practice**

For use after Extension 11.2

Find the inverse of each relation.

1. $(-2, -1), (-1, 2), (0, 5), (1, 8), (2, 11)$

2. $(-3, 8), (-1, 0), (0, -1), (1, 0), (3, 8)$

3. $(1, 3), (3, 5), (4, 6), (6, 7), (6, 10)$

4.

Input	-4	-2	0	2	4
Output	2	3	4	5	6

5.

Input	-3	-2	-1	0	1
Output	-1	0	-1	-4	-3

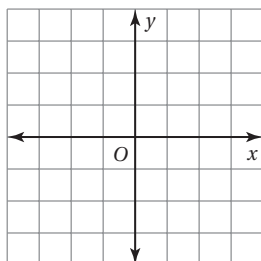
6.

Input	-8	-4	-4	0	8
Output	12	8	4	6	4

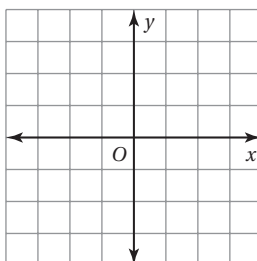
Extension
11.2**Practice (continued)**

Find the inverse of the function. Graph the inverse function.

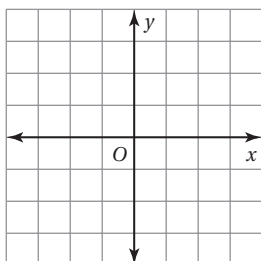
7. $f(x) = \frac{1}{2}x + 1$



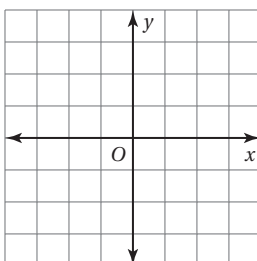
8. $f(x) = -4x - 6$



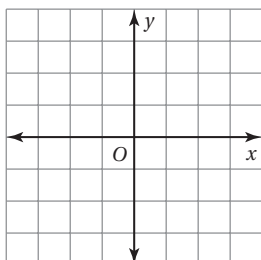
9. $f(x) = x^2 - 5$, where $x \geq 0$



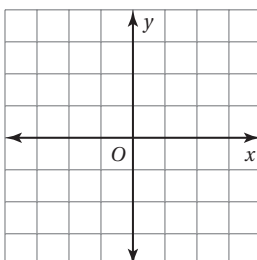
10. $f(x) = \frac{1}{3}x^2$, where $x \geq 0$



11. $f(x) = \frac{1}{x+4}$



12. $f(x) = \frac{1}{x} - 3$



13. Suppose f and g are inverse functions and $f(8) = -3$. What is the value of $g(-3)$?

11.3**Simplifying Rational Expressions**

For use with Activity 11.3

Essential Question How can you simplify a rational expression? What are the excluded values of a rational expression?

1 ACTIVITY: Simplifying a Rational Expression

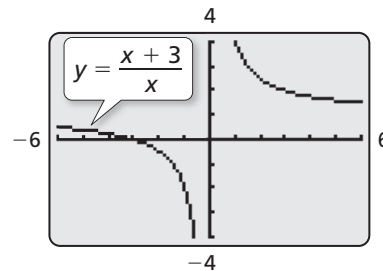
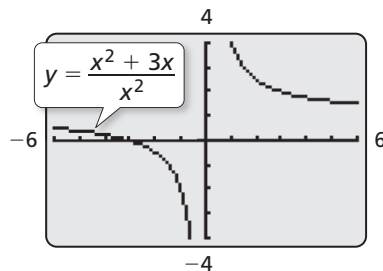
Work with a partner.

Sample: You can see that the rational expressions

$$\frac{x^2 + 3x}{x^2} \text{ and } \frac{x + 3}{x}$$

are equivalent by graphing the related functions

$$y = \frac{x^2 + 3x}{x^2} \text{ and } \frac{x + 3}{x}.$$



Both functions have the same graph.

Match each rational expression with its equivalent rational expression. Use a graphing calculator to check your answers.

a. $\frac{x^2 + x}{x^2}$ b. $\frac{x^2}{x^2 + x}$ c. $\frac{x + 1}{x^2 - 1}$ d. $\frac{x + 1}{x^2 + 2x + 1}$ e. $\frac{x^2 + 2x + 1}{x + 1}$

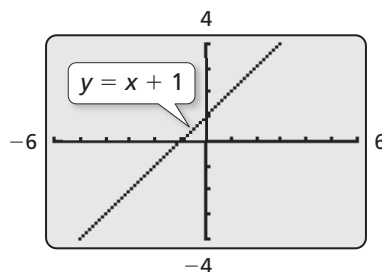
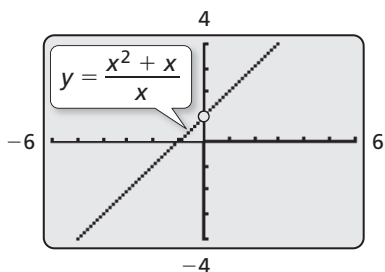
A. $\frac{1}{x + 1}$ B. $x + 1$ C. $\frac{x + 1}{x}$ D. $\frac{1}{x - 1}$ E. $\frac{x}{x + 1}$

11.3 Simplifying Rational Expressions (continued)**2 ACTIVITY:** Finding Excluded Values

Work with a partner. Are the graphs of

$$y = \frac{x^2 + x}{x} \text{ and } y = x + 1$$

exactly the same? Explain your reasoning.

**3 ACTIVITY:** Simplifying and Finding Excluded Values

Work with a partner. Simplify each rational expression, if possible. Then compare the excluded value(s) of the original expression with the excluded value(s) of the simplified expression.

a. $\frac{x^2 + 2x}{x^2}$

b. $\frac{x^2}{x^2 + 2x}$

c. $\frac{x^2}{x}$

11.3 Simplifying Rational Expressions (continued)

d.
$$\frac{x^2 + 4x + 4}{x + 2}$$

e.
$$\frac{x - 2}{x^2 - 4}$$

f.
$$\frac{1}{x^2 + 1}$$

What Is Your Answer?

4. **IN YOUR OWN WORDS** How can you simplify a rational expression?
What are the excluded values of a rational expression? Include the following rational expressions in your answer.

a.
$$\frac{x(x + 1)}{x}$$

b.
$$\frac{x^2 + 3x + 2}{x + 2}$$

c.
$$\frac{x + 3}{x^2 - 9}$$

11.3**Practice**

For use after Lesson 11.3

Simplify the rational expression, if possible. State the excluded value(s).

1. $\frac{20y^2}{5y}$

2. $\frac{18t^2}{12t^4}$

3. $\frac{2d}{d-1}$

4. $\frac{27a^2b^2}{36a^3b}$

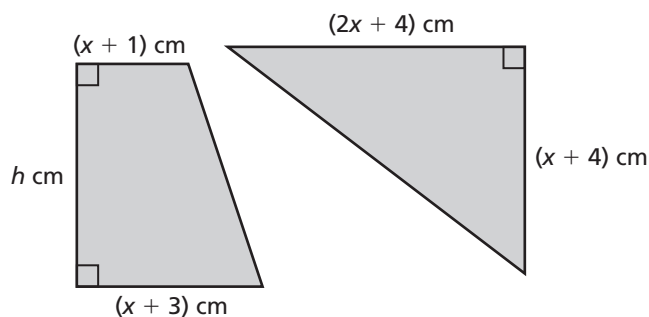
5. $\frac{m^3 - 9m^2}{5m^2 - 45m}$

6. $\frac{h^2 + 7}{6 - 2h}$

7. $\frac{24x - 6x^2}{x^2 - 3x - 4}$

8. $\frac{p^2 - 7p - 18}{2p^3 + 10p^2 + 12p}$

9. The shapes shown have the same area. Write and simplify an expression for the height h of the trapezoid.



11.4**Multiplying and Dividing Rational Expressions**

For use with Activity 11.4

Essential Question How can you multiply and divide rational expressions?

1 ACTIVITY: Matching Quotients and Products

Work with a partner. Match each quotient with a product and then with a simplified expression. Explain your reasoning.

*Quotient of Two
Rational Expressions*

*Product of Two
Rational Expressions*

*Simplified
Expression*

a. $\frac{2x^2}{5} \div \frac{14x}{10}$

A. $\frac{5x^2}{2} \bullet \frac{10}{14x}$

1. $\frac{25x}{14}$

b. $\frac{2x^2}{5} \div \frac{10}{14x}$

B. $\frac{2x^2}{5} \bullet \frac{10}{14x}$

2. $\frac{7x^3}{2}$

c. $\frac{5x^2}{2} \div \frac{14x}{10}$

C. $\frac{5x^2}{2} \bullet \frac{14x}{10}$

3. $\frac{14x^3}{25}$

d. $\frac{5x^2}{2} \div \frac{10}{14x}$

D. $\frac{2x^2}{5} \bullet \frac{14x}{10}$

4. $\frac{2x}{7}$

e. $\frac{x^2 - 1}{x + 2} \div \frac{x + 1}{x^2 - 4}$

E. $\frac{x^2 - 1}{x - 2} \bullet \frac{x^2 - 4}{x + 1}$

5. $x^2 - x - 2$

f. $\frac{x^2 - 1}{x - 2} \div \frac{x + 1}{x^2 - 4}$

F. $\frac{x^2 - 1}{x - 2} \bullet \frac{x^2 - 4}{x - 1}$

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

g. $\frac{x^2 - 1}{x - 2} \div \frac{x - 1}{x^2 - 4}$

G. $\frac{x^2 - 1}{x + 2} \bullet \frac{x^2 - 4}{x - 1}$

7. $x^2 + x - 2$

h. $\frac{x^2 - 1}{x + 2} \div \frac{x - 1}{x^2 - 4}$

H. $\frac{x^2 - 1}{x + 2} \bullet \frac{x^2 - 4}{x + 1}$

8. $x^2 + 3x + 2$

11.4 Multiplying and Dividing Rational Expressions (continued)

*Quotient of Two
Rational Expressions*

i. $\frac{x-1}{2} \div (x-1)$

j. $\frac{x^2-1}{2} \div (x-1)$

k. $\frac{x-1}{2} \div \frac{1}{x-1}$

l. $\frac{2}{x^2-1} \div \frac{1}{x-1}$

*Product of Two
Rational Expressions*

I. $\frac{2}{x^2-1} \cdot (x-1)$

J. $\frac{x^2-1}{2} \cdot \frac{1}{x-1}$

K. $\frac{x-1}{2} \cdot \frac{1}{x-1}$

L. $\frac{x-1}{2} \cdot (x-1)$

*Simplified
Expression*

9. $\frac{x+1}{2}$

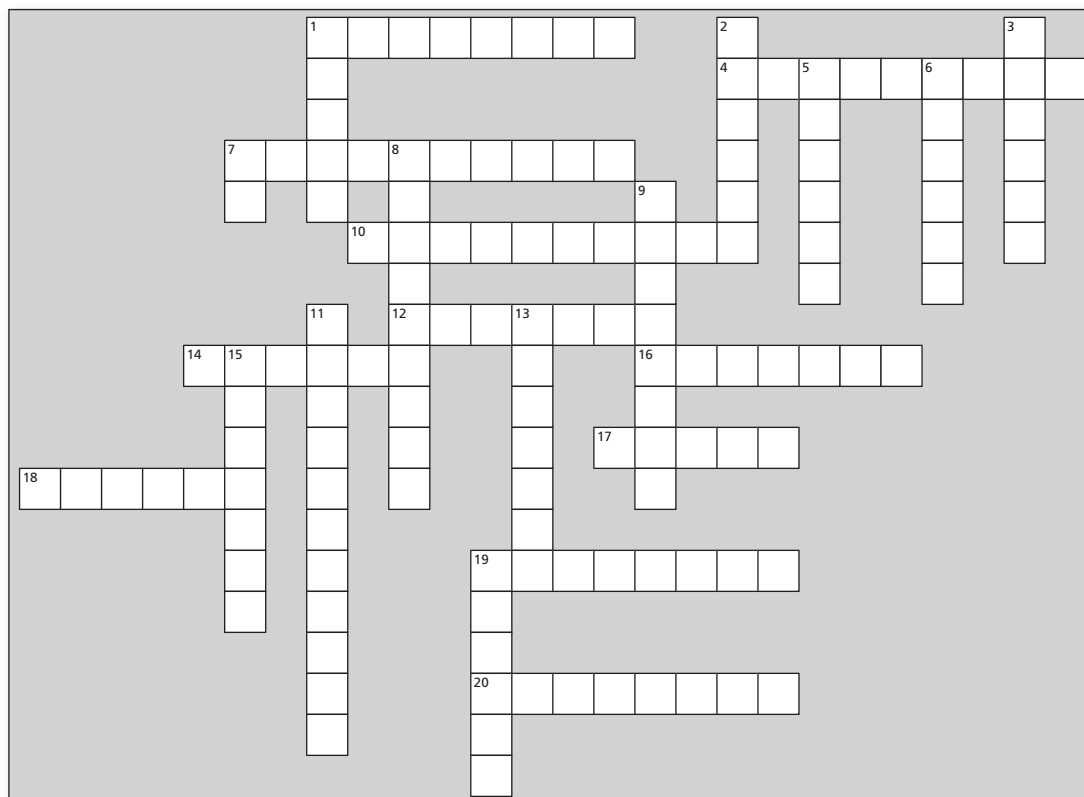
10. $\frac{1}{2}$

11. $\frac{2}{x+1}$

12. $\frac{(x-1)^2}{2}$

2 ACTIVITY: Solving a Math Crossword Puzzle

Work with a partner. Solve the crossword puzzle. Use the clues from the next page.



11.4 Multiplying and Dividing Rational Expressions (continued)**Across**

1. Inverse of subtraction
 4. $\triangle$ or $\triangle$
 7. Greek mathematician
 10. Longest side of a right triangle
 12. $x(x + 1)$
 14. $y = kx$
 16. $y = \frac{k}{x}$
 17. 
 18. 3 ft^3
 19. $\frac{2}{3}$ or $\frac{4}{5}$
 20. 

Down

1. 30°
 2. C of this is $2\pi r$
 3. Dimension of 
 5. 120°
 6. Is the same as
 7. About 3.14
 8. Graph approaches $x = h$
 9. $\frac{x}{x + 1}$
 11. Two numbers whose product is 1
 13. x in $\frac{1}{x}$
 15. $-1, 0, 1$, etc.
 19. x in $x(x + 1)$

What Is Your Answer?

3. **IN YOUR OWN WORDS** How can you multiply and divide rational expressions? Include the following in your answer.

a. $\frac{x + 3}{x} \bullet \frac{1}{x + 3}$

b. $\frac{x + 3}{x} \div \frac{1}{x}$

11.4**Practice**

For use after Lesson 11.4

Find the product.

1. $\frac{8k^2}{7} \cdot \frac{k-5}{2k^4}$

2. $\frac{8}{w+6} \cdot \frac{3w^2+18w}{2}$

3. $\frac{2b^3}{b^2-2b-15} \cdot \frac{b-5}{6b}$

4. $\frac{4n^2-8n}{n^2+9n+14} \cdot \frac{n^2-4}{4n}$

Find the quotient.

5. $\frac{g+3}{4g^2} \div \frac{g+3}{12g}$

6. $\frac{y}{-5y^2-20y} \div \frac{y^2}{y^2+2y-8}$

7. $\frac{a^2-64}{a} \div (3a^3+24a^2)$

8. $\frac{r^2-7r}{3} \div (r^2+r-56)$

9. Two distinct prairie dog populations,
- P_1
- and
- P_2
- can be modeled by

$$P_1 = \frac{100x^2}{x+1} \text{ and } P_2 = \frac{100x^2}{x+3}, \text{ where } x \text{ is the number of years since 2000.}$$

- a. Write a function that models the ratio of Population 1 to Population 2,
that is $\frac{P_1}{P_2}$.

- b. Find the ratio of Population 1 to Population 2 in 2004.

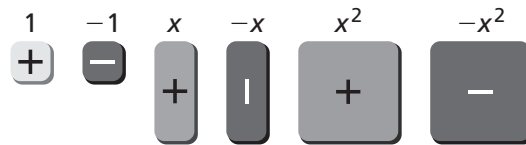
11.5**Dividing Polynomials**

For use with Activity 11.5

Essential Question How can you divide one polynomial by another polynomial?

1 ACTIVITY: Dividing Polynomials

Work with a partner. Six different algebra tiles are shown below.



Step 1: Arrange tiles to model

$$(x^2 + 5x + 4) \div (x + 1)$$

in a rectangular pattern.

Step 2: Complete the pattern.



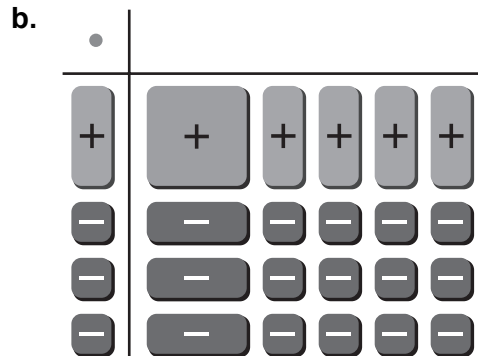
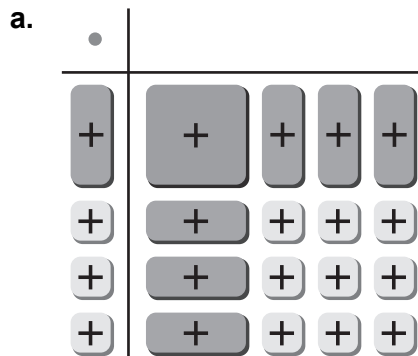
Step 3: Use the completed pattern to write

$$(x^2 + 5x + 4) \div (x + 1) = \underline{\hspace{2cm}}.$$

Dividend $\div$ Divisor = Quotient

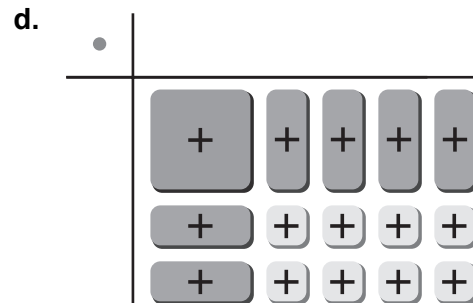
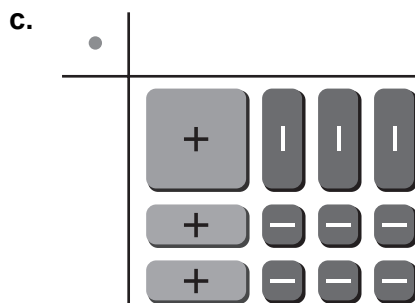
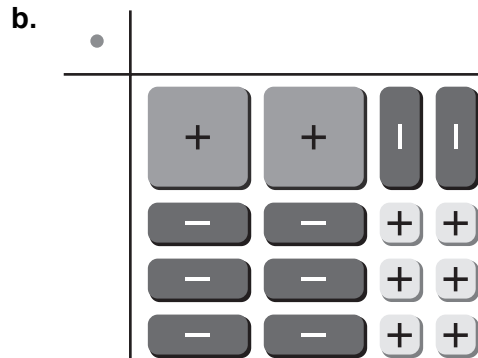
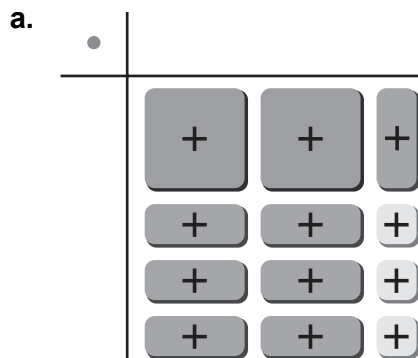
11.5 Dividing Polynomials (continued)

Complete the pattern and write the division problem.



2 ACTIVITY: Dividing Polynomials

Work with a partner. Write two different polynomial division problems that can be associated with the given algebra tile pattern. Check your answers by multiplying.



11.5 Dividing Polynomials (continued)**3** **ACTIVITY:** Dividing Polynomials

Work with a partner. Solve each polynomial division problem.

a. $(3x^2 - 8x - 3) \div (x - 3)$

b. $(8x^2 - 2x - 3) \div (4x - 3)$

What Is Your Answer?

4. **IN YOUR OWN WORDS** How can you divide one polynomial by another polynomial? Include the following in your answer.

a. $(3x^2 + 20x - 7) \div (x + 7)$

b. $(4x^2 - 4x - 3) \div (2x - 3)$

11.5**Practice**

For use after Lesson 11.5

Find the quotient.

1. $(b^2 + 11b + 18) \div (b + 2)$

2. $(n^2 - n - 30) \div (n + 5)$

3. $(4w^2 + 9w - 3) \div (w + 3)$

4. $(5c^2 - 10 - 2c) \div (c - 1)$

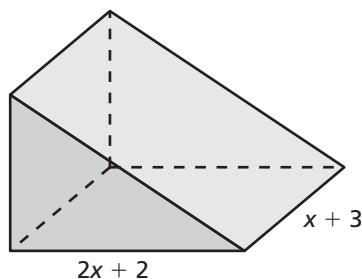
5. $(21 + 8x^2 - 26x) \div (4x - 7)$

6. $(15h - 4 + 6h^2) \div (2h + 9)$

7. $(r^2 - 12) \div (r + 8)$

8. $(12y^2 + 8y) \div (3y - 4)$

9. The volume of the triangular prism is $x^3 + 6x^2 + 11x + 6$. Write an expression for the height of the prism.



11.6

Adding and Subtracting Rational Expressions

For use with Activity 11.6

Essential Question How can you add and subtract rational expressions?

1 ACTIVITY: Adding Rational Expressions

Work with a partner. You and a friend have a summer job mowing lawns. Working alone it takes you 40 hours to mow all of the lawns. Working alone it takes your friend 60 hours to mow all of the lawns.

- a. Write a rational expression that represents the portion of the lawns you can mow in t hours.

$$\begin{array}{c} \text{Portion you} \\ \text{mow in } t \text{ hours} \end{array} = \begin{array}{c} \boxed{} \\ \uparrow \\ \text{Time} \end{array} \cdot \begin{array}{c} \boxed{} \\ \boxed{} \\ \uparrow \\ \text{Rate} \end{array}$$

- b. Write a rational expression that represents the portion of the lawns your friend can mow in t hours.

$$\begin{array}{c} \text{Portion your friend} \\ \text{mows in } t \text{ hours} \end{array} = \begin{array}{c} \boxed{} \\ \uparrow \\ \text{Time} \end{array} \cdot \begin{array}{c} \boxed{} \\ \boxed{} \\ \uparrow \\ \text{Rate} \end{array}$$

- c. Add the two expressions to write a rational expression for the portion of the lawns that the two of you working together can mow in t hours.

$$\begin{array}{c} \boxed{} \\ \uparrow \\ \text{Time} \end{array} \cdot \begin{array}{c} \boxed{} \\ \boxed{} \\ \uparrow \\ \text{Rate} \end{array} + \begin{array}{c} \boxed{} \\ \uparrow \\ \text{Time} \end{array} \cdot \begin{array}{c} \boxed{} \\ \boxed{} \\ \uparrow \\ \text{Rate} \end{array} = \begin{array}{c} \boxed{} \\ \boxed{} \end{array}$$

- d. Use the expression in part (c) to find the total time it takes both of you working together to mow all of the lawns. Explain your reasoning.

11.6 Adding and Subtracting Rational Expressions (continued)**2 ACTIVITY:** Adding Rational Expressions

Work with a partner. You are hang gliding. For the first 10,000 feet, you travel x feet per minute. You then enter a valley in which the wind is greater, and for the next 6000 feet, you travel $2x$ feet per minute.

- a. Use the formula $d = rt$ to write a rational expression that represents the time it takes you to travel the first 10,000 feet.

$$\begin{array}{l} \text{Time to travel} \\ \text{first 10,000 feet} \end{array} = \frac{\boxed{}}{\boxed{}} \quad \begin{array}{l} \leftarrow \text{Distance} \\ \leftarrow \text{Rate} \end{array}$$

- b. Use the formula $d = rt$ to write a rational expression that represents the time it takes you to travel the next 6000 feet.

$$\begin{array}{l} \text{Time to travel} \\ \text{next 6000 feet} \end{array} = \frac{\boxed{}}{\boxed{}} \quad \begin{array}{l} \leftarrow \text{Distance} \\ \leftarrow \text{Rate} \end{array}$$

- c. Add the two expressions to write a rational expression that represents the total time it takes you to travel 16,000 feet.

$$\frac{\boxed{}}{\boxed{}} + \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$$

- d. Use the expression in part (c) to find the total time it takes you to travel 16,000 feet when your rate during the first 10,000 feet is 2000 feet per minute.

11.6 Adding and Subtracting Rational Expressions (continued)**What Is Your Answer?**

- 3. IN YOUR OWN WORDS** How can you add and subtract rational expressions? Include the following in your answer.

a. $\frac{x}{5} + \frac{x}{10}$

b. $\frac{3}{x} + \frac{4}{x}$

c. $\frac{9}{x} + \frac{2}{3x}$

d. $\frac{x}{2} - \frac{x}{4}$

e. $\frac{x+1}{3} - \frac{1}{3}$

f. $\frac{1}{x} - \frac{1}{x^2}$

11.6**Practice**

For use after Lesson 11.6

Find the sum or difference.

1. $\frac{3}{5g} + \frac{6}{5g}$

2. $\frac{1}{2v+3} + \frac{4}{2v+3}$

3. $\frac{11m}{4m-2} - \frac{3m+2}{4m-2}$

4. $\frac{y^2}{y^2+y-6} - \frac{9}{y^2+y-6}$

5. $\frac{3a+1}{4a} + \frac{a-2}{6a}$

6. $\frac{k^2+8}{k-5} - k$

7. $\frac{4x^2-x}{3x-12} + \frac{x^2+4}{4-x}$

8. $\frac{6}{d+5} - \frac{3d-7}{d^2+2d-15}$

9. You drive 45 miles from home to a relative's house and 45 miles back home. Due to construction, your speed on the way back is only 60% of your speed on the way there. Let r be your speed (in miles per hour) while driving to your relative's house. Write an expression that represents the amount of time you spend driving on your trip.

11.7

Solving Rational Equations

For use with Activity 11.7

Essential Question How can you solve a rational equation?

1 ACTIVITY: Solving Rational Equations

Work with a partner. A hockey goalie faces 799 shots and saves 707 of them.

- a. What is his save percentage?

$$\text{Save Percentage} = \frac{\boxed{}}{\boxed{}} \leftarrow \begin{array}{l} \boxed{} \leftarrow \text{Shots saved} \\ \boxed{} \leftarrow \text{Shots faced} \end{array}$$

- b. Suppose the goalie has x additional consecutive saves. Write an expression for his new save percentage.

$$\text{Save Percentage} = \frac{\boxed{}}{\boxed{}} \leftarrow \begin{array}{l} \boxed{} \leftarrow 707 \text{ plus } x \text{ additional saves} \\ \boxed{} \leftarrow 799 \text{ plus } x \text{ additional shots faced} \end{array}$$

- c. Complete the table showing the goalie's save percentage as x increases.

Additional Saves, x	0	20	40	60	80	100	120	140
Save Percentage								

- d. The goalie wants to end the season with a save percentage of .900. How many additional consecutive saves must he have to achieve this? Justify your answer by solving an equation.

11.7 Solving Rational Equations (continued)**2 ACTIVITY:** Solving Rational Equations

Work with a partner. A baseball player has been at bat 47 times and has 8 hits.

- a. What is his batting average?

$$\text{Batting Average} = \frac{\boxed{}}{\boxed{}}$$

- b. Suppose the player has x additional consecutive hits. Write an expression for his new batting average.

$$\text{Batting Average} = \frac{\boxed{}}{\boxed{}}$$

- c. Complete the table showing the player's batting average as x increases.

Additional Hits, x	0	1	2	3	4	5	6	7
Batting Average								

- d. The player wants to end the season with a batting average of .250. How many additional consecutive hits must he have to achieve this? Justify your answer by solving an equation.

11.7 Solving Rational Equations (continued)**What Is Your Answer?**

- 3. IN YOUR OWN WORDS** How can you solve a rational equation? Include the following in your answer.

a. $\frac{x - 6}{6} = \frac{2}{3}$

b. $\frac{x + 56}{6} = \frac{1}{2}$

c. $\frac{x}{4} + \frac{x}{2} = \frac{2x}{3}$

11.7**Practice**

For use after Lesson 11.7

Solve the equation. Check your solution.

1. $\frac{4}{h-3} = \frac{8}{h}$

2. $\frac{6}{q-2} = \frac{5}{q-1}$

3. $\frac{m}{m+3} = \frac{5}{m+7}$

4. $\frac{c-3}{5c-6} = \frac{c}{c-3}$

5. $\frac{6}{z-3} - \frac{3}{z} = \frac{6}{z}$

6. $\frac{4}{k} + \frac{14}{k+5} = \frac{8}{k+5}$

7. $\frac{d}{d+3} + \frac{1}{d-1} = \frac{4}{d^2+2d-3}$

8. $\frac{t}{t-7} - \frac{5}{t-4} = \frac{3t+3}{t^2-11t+28}$

9. An academic challenge team has 24 members, 9 of which are boys. The team is required to have 50% boys and 50% girls for a competition. How many boys does the team need to add to reach this proportion?