Name_____ Date _____

Chapter 7 Fair Game Review

Simplify the expression.

1. $5y + 6 - 9y$

2. $-2h + 11 + 3h - 4$

3. $8a - 10 - 4a + 6 + a$

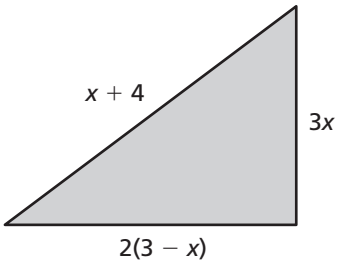
4. $7 - 2(m + 8)$

5. $5 - (d + 3) + 4(d - 6)$

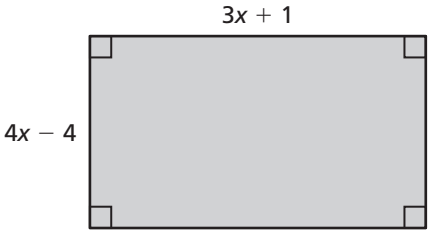
6. $16q + 9(-q - 2) + 7$

Write an expression for the perimeter of the figure.

7.



8.



Name _____ Date _____

Chapter 7

Fair Game Review (continued)

Find the greatest common factor.

9. 12, 33

10. 45, 70

11. 12, 18

12. 48, 80

13. 8, 26

14. −30, 105

15. You and your friend are playing a card game with only one way to score. You have 56 points and your friend has 40 points. What is the greatest number of points you could receive each time you score?

16. You have two pieces of fabric. One piece is 84 centimeters wide and the other piece is 147 centimeters wide. You want to cut both pieces into strips of equal width with no fabric left over. What is the widest you can cut the strips?

Name_____ Date _____

7.1 Polynomials

For use with Activity 7.1

Essential Question How can you use algebra tiles to model and classify polynomials?

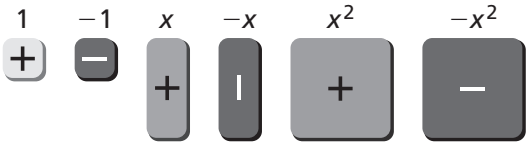
1 ACTIVITY: Meaning of Prefixes

Work with a partner. Think of a word that uses one of the prefixes with one of the base words. Then define the word and write a sentence that uses the word.

Prefix	*Base Word*
Mono	Dactyl
Bi	Cycle
Tri	Ped
Poly	Syllabic

2 ACTIVITY: Classifying Polynomials Using Algebra Tiles

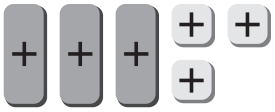
Work with a partner. Six different algebra tiles are shown at the right.



Write the polynomial that is modeled by the algebra tiles. Then classify the polynomial as a monomial, binomial, or trinomial. Explain your reasoning.

a.

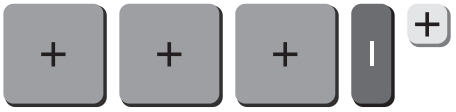
b.



Name _____ Date _____

7.1 Polynomials (continued)

c. 

d. 

e. 

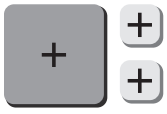
f. 

3 ACTIVITY: Solving an Algebra Tile Puzzle

Work with a partner. Write the polynomial modeled by the algebra tiles, evaluate the polynomial at the given value, and write the result in the corresponding square of the Sudoku puzzle. Then solve the puzzle.

A3, H7

Value when $x = 2$



A4, B3, E5, G6, I7

Value when $x = 2$

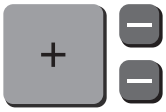
	1	2	3	4	5	6	7	8	9
A									
B									
C									
D									1
E									
F									
G									
H									
I									

Name_____ Date _____

7.1 Polynomials (continued)

A6, D7, E2, H5

Value when $x = -3$

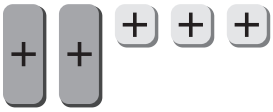


B5, F1, H3

Value when $x = -1$

A7, F9, I4

Value when $x = 3$



E8, F3, I6

Value when $x = -1$

C4, I3

Value when $x = 3$

B7, D1

Value when $x = -2$

What Is Your Answer?

4. **IN YOUR OWN WORDS** How can you use algebra tiles to model and classify polynomials? Explain why algebra tiles have the dimensions, shapes, and colors that they have.

Name _____ Date _____

7.1 Practice

For use after Lesson 7.1

Write the polynomial in standard form. Identify the degree and classify the polynomial by the number of terms.

1. $4v^6$

2. $-2c^3 + 1 - 9c$

3. $5t^5 + 8$

4. $\frac{3}{2}m^6 + \frac{3}{4}m^8$

5. $-\sqrt{12}g^4$

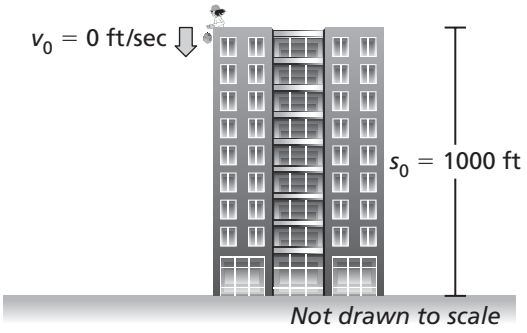
6. $1.8a - a^9 + 3.2a^{12}$

Tell whether the expression is a polynomial. If so, identify the degree and classify the polynomial by the number of terms.

7. $6 - 2d^{2.5}$

8. $-7u - 2u^2 - 2u^{10}$

9. You drop a ball off of a skyscraper. Use the polynomial $-16t^2 + v_0t + s_0$ to write a polynomial that represents the height of the ball. Then find the height of the ball after 5 seconds.



Name_____ Date _____

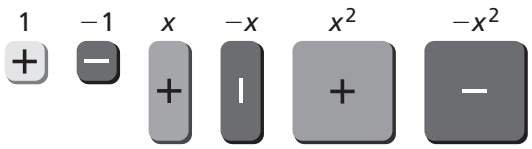
7.2 Adding and Subtracting Polynomials

For use with Activity 7.2

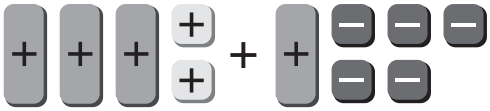
Essential Question How can you add polynomials? How can you subtract polynomials?

1 EXAMPLE: Adding Polynomials Using Algebra Tiles

Work with a partner. Six different algebra tiles are shown at the right.



Write the polynomial addition steps shown by the algebra tiles. Draw a sketch for each step.



Step 1: Group like tiles.

Step 2: Remove zero pairs.

Step 3: Simplify.

2 ACTIVITY: Adding Polynomials Using Algebra Tiles

Use algebra tiles to find the sum of each polynomial.

a. $(x^2 + 2x - 1) + (2x^2 - 2x + 1)$

b. $(4x + 3) + (x - 2)$

c. $(x^2 + 2) + (3x^2 + 2x + 5)$

d. $(2x^2 - 3x) + (x^2 - 2x + 4)$

e. $(x^2 - 3x + 2) + (x^2 + 4x - 1)$

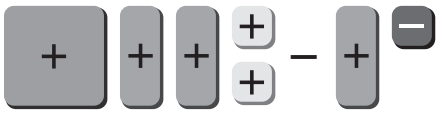
f. $(4x - 3) + (2x + 1) + (-3x + 2)$

g. $(-x^2 + 3x) + (2x^2 - 2x)$

h. $(x^2 + 2x - 5) + (-x^2 - 2x + 5)$

3 EXAMPLE: Subtracting Polynomials Using Algebra Tiles

Write the polynomial subtraction steps shown by the algebra tiles. Draw a sketch for each step.



Step 1: To subtract, add the opposite.

7.2 Adding and Subtracting Polynomials (continued)

Step 2: Group like tiles.

Step 3: Remove zero pairs.

Step 4: Simplify.

4 ACTIVITY: Subtracting Polynomials Using Algebra Tiles

Use algebra tiles to find the difference of the polynomials.

a. $(x^2 + 2x - 1) - (2x^2 - 2x + 1)$

b. $(4x + 3) - (x - 2)$

c. $(x^2 + 2) - (3x^2 + 2x + 5)$

d. $(2x^2 - 3x) - (x^2 - 2x + 4)$

What Is Your Answer?

5. IN YOUR OWN WORDS How can you add polynomials? Use the results of Activity 2 to summarize a procedure for adding polynomials without using algebra tiles.

6. IN YOUR OWN WORDS How can you subtract polynomials? Use the results of Activity 4 to summarize a procedure for subtracting polynomials without using algebra tiles.

Name _____ Date _____

7.2 Practice

For use after Lesson 7.2

Find the sum.

1. $(2d + 3) + (4d - 6)$

2. $(5m^2 - m + 2) + (3m^2 + 10)$

3. $(2t^2 - 6t - 3) + (-9t^2 + 9t - 5)$

4. $(4c^2 - 8c + 7) + (c^4 + 11c - 3)$

Find the difference.

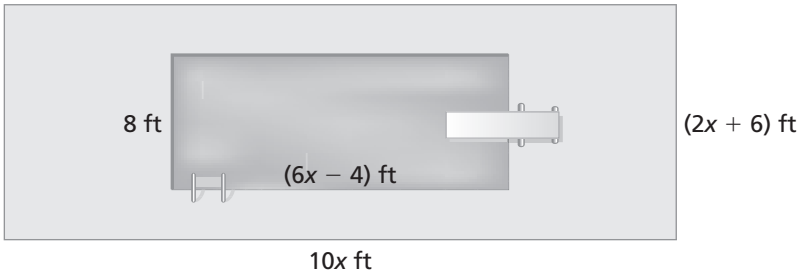
5. $(3s + 4) - (6s^2 - 2s)$

6. $(9w^2 - 5) - (4w^2 + 9w + 7)$

7. $(y^2 - 6y + 12) - (-3y^2 - 6y + 10)$

8. $(8z^3 + 6z^2 - 9) - (4z^2 - 7z - 4)$

9. You are installing a swimming pool. Write a polynomial that represents the area of the walkway.



Name_____ Date _____

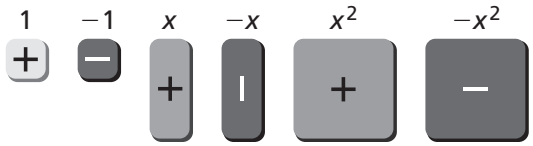
7.3 Multiplying Polynomials

For use with Activity 7.3

Essential Question How can you multiply two binomials?

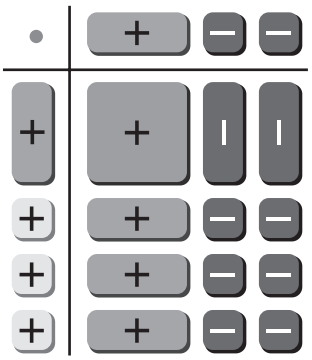
1 ACTIVITY: Multiplying Binomials Using Algebra Tiles

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

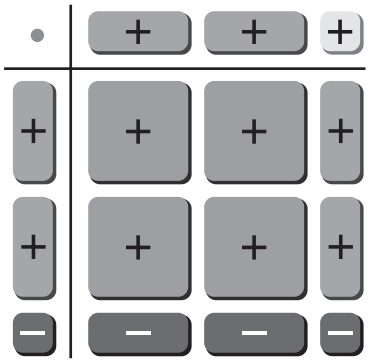


Write the product of the two binomials shown by the algebra tiles.

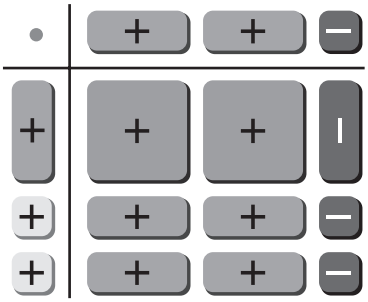
a. $(x + 3)(x - 2) =$ _____



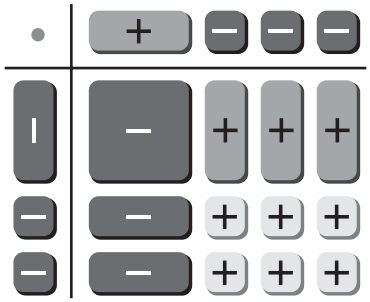
b. $(2x - 1)(2x + 1) =$ _____



c. $(x + 2)(2x - 1) =$ _____



d. $(-x - 2)(x - 3) =$ _____



Name _____ Date _____

7.3 Multiplying Polynomials (continued)

2 ACTIVITY: Multiplying Monomials Using Algebra Tiles

Work with a partner. Write the product. Explain your reasoning.

a. $+ \cdot + =$ _____

b. $+ \cdot - =$ _____

c. $- \cdot - =$ _____

d. $+ \cdot + =$ _____

e. $+ \cdot - =$ _____

f. $- \cdot + =$ _____

g. $- \cdot - =$ _____

h. $+ \cdot + =$ _____

i. $+ \cdot - =$ _____

j. $- \cdot - =$ _____

7.3 Multiplying Polynomials (continued)

3 ACTIVITY: Multiplying Binomials Using Algebra Tiles

Use algebra tiles to find each product.

a. $(2x - 2)(2x + 1)$

b. $(4x + 3)(x - 2)$

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

d. $(2x - 3)(x + 4)$

e. $(3x + 2)(-x - 1)$

f. $(2x + 1)(-3x + 2)$

g. $(x - 2x)^2$

h. $(2x - 3)^2$

What Is Your Answer?

4. IN YOUR OWN WORDS How can you multiply two binomials? Use the results of Activity 3 to summarize a procedure for multiplying binomials without using algebra tiles.

5. Find two binomials with the given product.

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

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

Name _____ Date _____

7.3 Practice

For use after Lesson 7.3

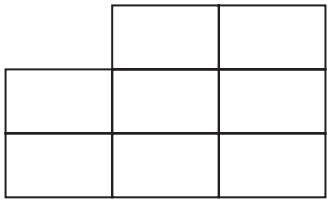
Use the Distributive Property to find the product.

1. $(g + 6)(g + 7)$

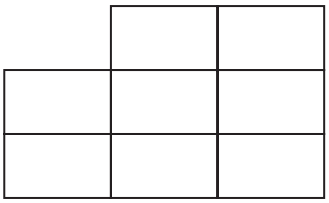
2. $(3w + 4)(4w - 8)$

Use a table to find the product.

3. $(a - 6)(a - 3)$



4. $(5d - 5)(9d + 2)$



Use the FOIL Method to find the product.

5. $(2x - 8)(x + 9)$

6. $(7 - n)(4 + 3n)$

7. You go to a movie theater $(2t + 3)$ times each year and pay $(t + 7)$ dollars each time, where t is the number of years after 2011.

a. Write a polynomial that represents your yearly ticket cost.

b. What is your yearly ticket cost in 2014?

Name_____ Date _____

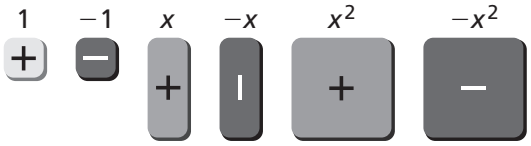
7.4 Special Products of Polynomials

For use with Activity 7.4

Essential Question What are the patterns in the special products $(a + b)(a - b)$, $(a + b)^2$, and $(a - b)^2$?

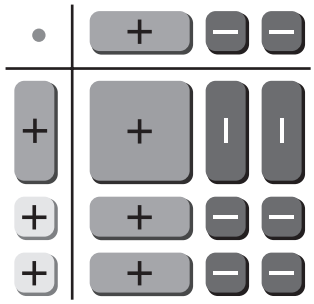
1 ACTIVITY: Finding a Sum and Difference Pattern

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

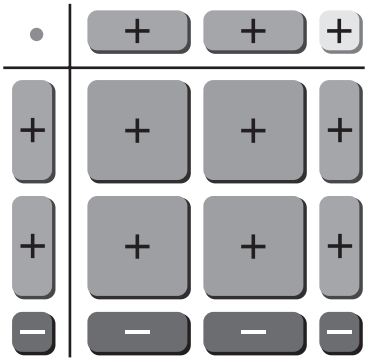


Write the product of the two binomials shown by the algebra tiles.

a. $(x + 2)(x - 2) =$ _____



b. $(2x - 1)(2x + 1) =$ _____



2 ACTIVITY: Describing a Sum and Difference Pattern

Work with a partner.

a. Describe the pattern for the special product: $(a + b)(a - b)$.

Name _____ Date _____

7.4 Special Products of Polynomials (continued)

b. Use the pattern you described to find each product. Check your answers using algebra tiles.

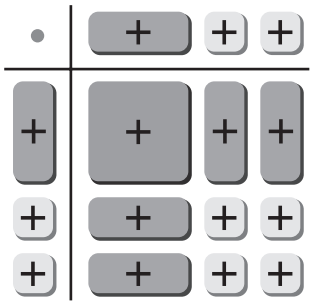
i. $(x + 3)(x - 3)$ **ii.** $(x - 4)(x + 4)$ **iii.** $(3x + 1)(3x - 1)$

iv. $(3y + 4)(3y - 4)$ **v.** $(2x - 5)(2x + 5)$ **vi.** $(z + 1)(z - 1)$

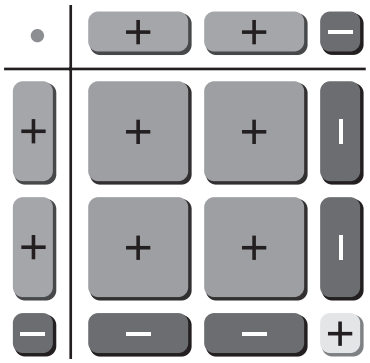
3 ACTIVITY: Finding the Square of a Binomial Pattern

Write the product of the two binomials shown by the algebra tiles.

a. $(x + 2)^2 =$ _____



b. $(2x - 1)^2 =$ _____



7.4 Special Products of Polynomials (continued)

4 ACTIVITY: Describing the Square of a Binomial Pattern

Work with a partner.

a. Describe the pattern for the special product: $(a + b)^2$.

b. Describe the pattern for the special product: $(a - b)^2$.

c. Use the patterns you described to find each product. Check your answers using algebra tiles.

i. $(x + 3)^2$ **ii.** $(x - 2)^2$ **iii.** $(3x + 1)^2$

iv. $(3y + 4)^2$ **v.** $(2x - 5)^2$ **vi.** $(z + 1)^2$

What Is Your Answer?

5. IN YOUR OWN WORDS What are the patterns in the special products $(a + b)(a - b)$, $(a + b)^2$, and $(a - b)^2$? Use the results of Activities 2 and 4 to write formulas for these special products.

Name _____ Date _____

7.4 Practice

For use after Lesson 7.4

Find the product.

1. $(m - 7)(m + 7)$

2. $(p + 10)(p - 10)$

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

4. $(9d - 6)(9d + 6)$

5. $(a + 5)^2$

6. $(2k - 4)^2$

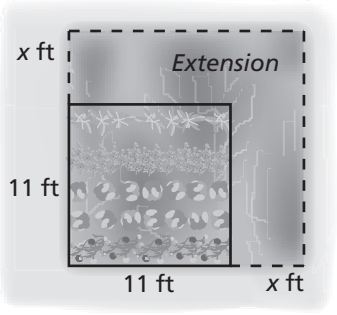
7. $(5 - 3r)^2$

8. $(2 + 12f)^2$

9. A garden is extended on two sides.

a. The area of the garden after the extension is represented by $(x + 11)^2$. Find this product.

b. Use the polynomial in part (a) to find the area of the garden when $x = 4$. What is the area of the extension?



Name_____ Date _____

7.5 Solving Polynomial Equations in Factored Form

For use with Activity 7.5

Essential Question How can you solve a polynomial equation that is written in factored form?

Two polynomial equations are equivalent when they have the same solutions. For instance, the following equations are equivalent because the only solutions of each equation are $x = 1$ and $x = 2$.

Factored Form	Standard Form	Nonstandard Form
$(x - 1)(x - 2) = 0$	$x^2 - 3x + 2 = 0$	$x^2 - 3x = -2$

Check this solution by substituting 1 and 2 for x in each equation.

1 ACTIVITY: Matching Equivalent Forms of an Equation

Work with a partner. Match each factored form of the equation with two other forms of equivalent equations. Notice that an equation is considered to be in factored form only when the product of the factors is equal to 0.

	Factored Form		Standard Form		Nonstandard Form
a.	$(x - 1)(x - 3) = 0$	**A.**	$x^2 - x - 2 = 0$	**1.**	$x^2 - 5x = -6$
b.	$(x - 2)(x - 3) = 0$	**B.**	$x^2 + x - 2 = 0$	**2.**	$(x - 1)^2 = 4$
c.	$(x + 1)(x - 2) = 0$	**C.**	$x^2 - 4x + 3 = 0$	**3.**	$x^2 - x = 2$
d.	$(x - 1)(x + 2) = 0$	**D.**	$x^2 - 5x + 6 = 0$	**4.**	$x(x + 1) = 2$
e.	$(x + 1)(x - 3) = 0$	**E.**	$x^2 - 2x - 3 = 0$	**5.**	$x^2 - 4x = -3$

2 ACTIVITY: Writing a Conjecture

Work with a partner. Substitute 1, 2, 3, 4, 5, and 6 for x in each equation. Write a conjecture describing what you discovered.

a. $(x - 1)(x - 2) = 0$ **b.** $(x - 2)(x - 3) = 0$ **c.** $(x - 3)(x - 4) = 0$

7.5 Solving Polynomial Equations in Factored Form (continued)

d. $(x - 4)(x - 5) = 0$ **e.** $(x - 5)(x - 6) = 0$ **f.** $(x - 6)(x - 1) = 0$

3 ACTIVITY: Special Properties of 0 and 1

Work with a partner. The numbers 0 and 1 have special properties that are shared by no other numbers. For each of the following, decide whether the property is true for 0, 1, both, or neither. Explain your reasoning.

a. If you add _____ to a number n, you get n.

b. If the product of two numbers is _____, then one or both numbers are 0.

c. The square of _____ is equal to itself.

d. If you multiply a number n by _____, you get n.

e. If you multiply a number n by _____, you get 0.

f. The opposite of _____ is equal to itself.

7.5 Solving Polynomial Equations in Factored Form (continued)

4 ACTIVITY: Writing About Solving Equations

Work with a partner. Imagine that you are part of a study group in your algebra class. One of the students in the group makes the following comment.

"I don't see why we spend so much time solving equations that are equal to zero. Why don't we spend more time solving equations that are equal to other numbers?"

Write an answer for this student.

What Is Your Answer?

5. One of the properties in Activity 3 is called the Zero-Product Property. It is one of the most important properties in all of algebra. Which property is it? Explain how it is used in algebra and why it is so important.

6. **IN YOUR OWN WORDS** How can you solve a polynomial equation that is written in factored form?

Name _____ Date _____

7.5 Practice

For use after Lesson 7.5

Solve the equation.

1. $b(b - 4) = 0$

2. $-8k(k + 3) = 0$

3. $(n - 6)(n + 6) = 0$

4. $(v + 11)(v + 2) = 0$

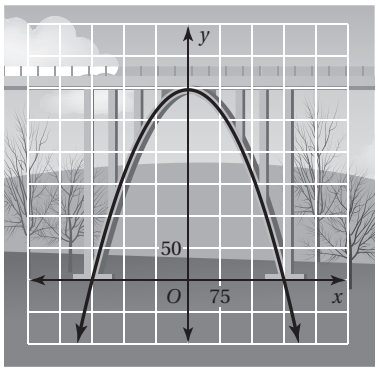
5. $(h - 9) = 0$

6. $(5 + x)(7 - x) = 0$

7. $(3r - 9)(2r + 2) = 0$

8. $\left(\frac{1}{2}p - 8\right)\left(\frac{1}{4}p - 1\right) = 0$

9. The arch of a bridge can be modeled by $y = -\frac{1}{170}(x - 225)(x + 225)$, where x and y are measured in feet. The x-axis represents the ground. Find the width of the arch of the bridge at ground level.



Name_____ Date _____

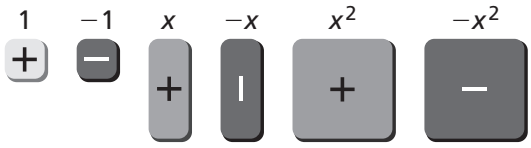
7.6 Factoring Polynomials Using the GCF

For use with Activity 7.6

Essential Question How can you use common factors to write a polynomial in factored form?

1 ACTIVITY: Finding Monomial Factors

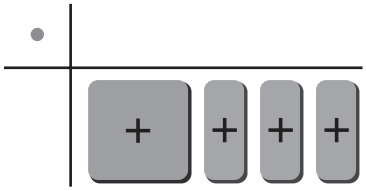
Work with a partner. Six different algebra tiles are shown below.



Sample:

Step 1: Look at the rectangular array for $x^2 + 3x$.

Step 2: Use algebra tiles to label the dimensions of the rectangle.

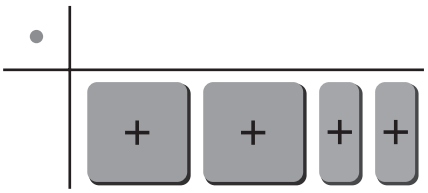


Step 3: Write the polynomial in factored form by finding the dimensions of the rectangle.

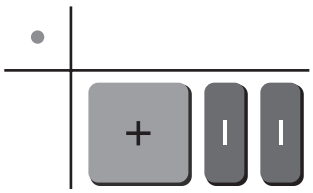
Area $= x^2 + 3x =$ _____

Use algebra tiles to write each polynomial in factored form.

a.



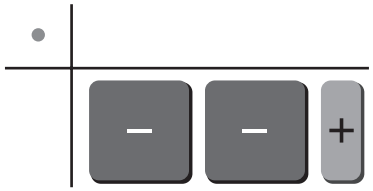
b.



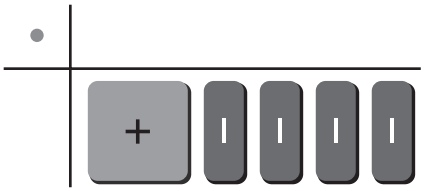
Name _____ Date _____

7.6 Factoring Polynomials Using the GCF (continued)

c.



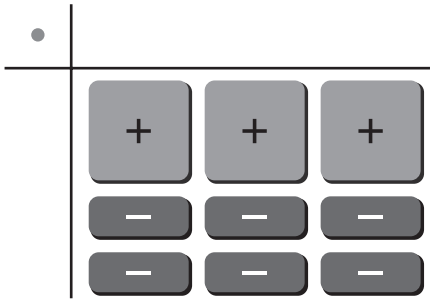
d.



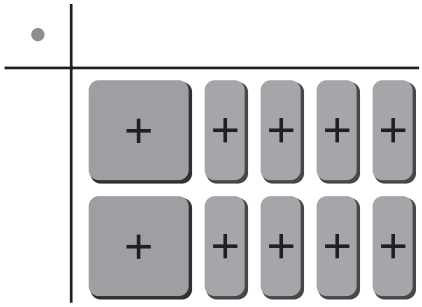
2 ACTIVITY: Finding Monomial Factors

Work with a partner. Use algebra tiles to write each polynomial in factored form.

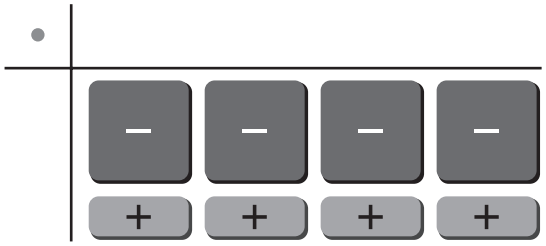
a.



b.



c.



7.6 Factoring Polynomials Using the GCF (continued)

3 ACTIVITY: Finding Monomial Factors

Work with a partner. Use algebra tiles to model each polynomial as a rectangular array. Then write the polynomial in factored form by finding the dimensions of the rectangle.

a. $3x^2 - 9x$ **b.** $7x + 14x^2$ **c.** $-2x^2 + 6x$

What Is Your Answer?

4. Consider the polynomial $4x^2 - 8x$.

a. What are the terms of the polynomial?

b. List all the factors that are common to both terms.

c. Of the common factors, which is the greatest? Explain your reasoning.

5. IN YOUR OWN WORDS How can you use common factors to write a polynomial in factored form?

Name _____ Date _____

7.6 Practice

For use after Lesson 7.6

Factor the polynomial.

1. $5n^2 - 15n$

2. $6t^3 + 12t^2 - 4t$

Solve the equation.

3. $4a - 16 = 0$

4. $14r^2 + 7r = 0$

5. $-6w^2 = 18w$

6. $14z^2 = 42z$

7. $4x^3 + 36x^2 = 0$

8. $-2p^2 = 9p^3 - 5p^2$

9. The area (in square feet) of the billboard can be represented by $18x^3 + 12x^2$.

a. Write an expression that represents the length of the billboard.

b. Find the area of the billboard when $x = 2$.

Name_____ Date _____

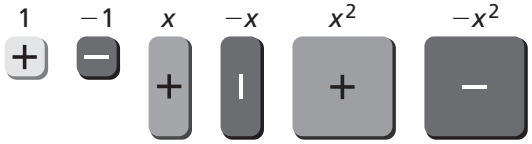
7.7 Factoring $x^2 + bx + c$

For use with Activity 7.7

Essential Question How can you factor the trinomial $x^2 + bx + c$ into the product of two binomials?

1 ACTIVITY: Finding Binomial Factors

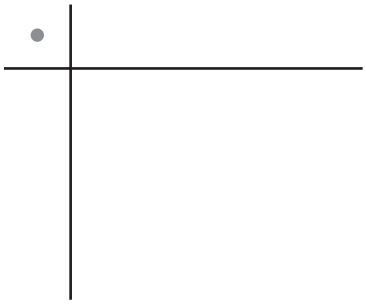
Work with a partner. Six different algebra tiles are shown below.



Sample:

Step 1: Arrange the algebra tiles into a rectangular array to model $x^2 + 5x + 6$.

Step 2: Use algebra tiles to label the dimensions of the rectangle.

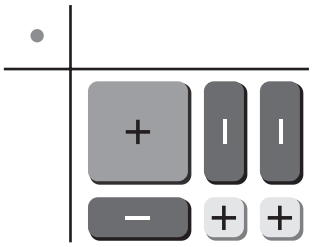


Step 3: Write the polynomial in factored form by finding the dimensions of the rectangle.

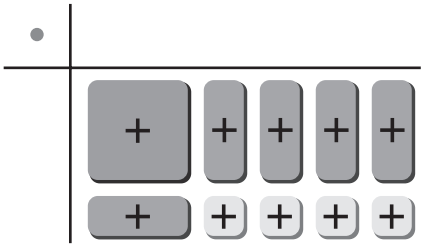
Area $= x^2 + 5x + 6 =$ _____

Use algebra tiles to write each polynomial as the product of two binomials. Check your answer by multiplying.

a.



b.



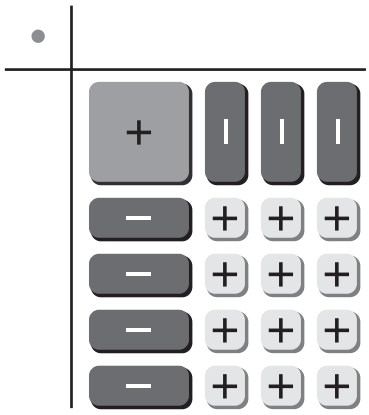
Name _____ Date _____

7.7 Factoring $x^2 + bx + c$ (continued)

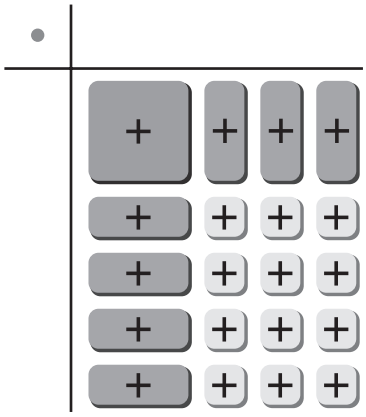
2 ACTIVITY: Finding Binomial Factors

Work with a partner. Use algebra tiles to write each polynomial as the product of two binomials. Check your answer by multiplying.

a.



b.



3 ACTIVITY: Finding Binomial Factors

Work with a partner. Write each polynomial as the product of two binomials. Check your answer by multiplying.

a. $x^2 + 6x + 9$ **b.** $x^2 - 6x + 9$ **c.** $x^2 + 6x + 8$

7.7 Factoring $x^2 + bx + c$ (continued)

d. $x^2 - 6x + 8$ **e.** $x^2 + 6x + 5$ **f.** $x^2 - 6x + 5$

What Is Your Answer?

4. IN YOUR OWN WORDS How can you factor the trinomial $x^2 + bx + c$ into the product of two binomials?

a. Describe a strategy that uses algebra tiles.

b. Describe a strategy that does not use algebra tiles.

5. Use one of your strategies to factor each trinomial.

a. $x^2 + 6x - 16$ **b.** $x^2 - 6x - 16$ **c.** $x^2 + 6x - 27$

Name _____ Date _____

7.7 Practice

For use after Lesson 7.7

Factor the polynomial.

1. $w^2 + 8x + 15$

2. $b^2 + 12b + 27$

3. $y^2 - 9y + 18$

4. $h^2 - 15h + 26$

5. $n^2 + n - 42$

6. $k^2 - 5k - 14$

Solve the equation.

7. $t^2 - 14t + 33 = 0$

8. $d^2 - 3d = 54$

9. The area (in square meters) covered by a building can be represented by $x^2 + 7x - 30$.

a. Write binomials that represent the length and width of the building.

b. Find the perimeter of the building when $x = 15$ meters.

Name_____ Date _____

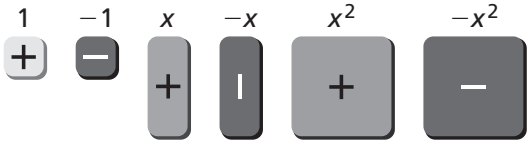
7.8 Factoring $ax^2 + bx + c$

For use with Activity 7.8

Essential Question How can you factor the trinomial $ax^2 + bx + c$ into the product of two binomials?

1 ACTIVITY: Finding Binomial Factors

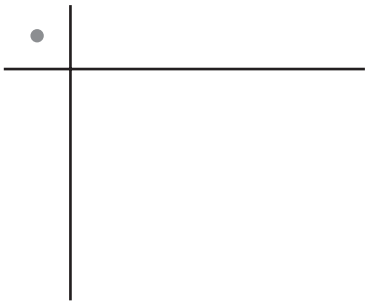
Work with a partner. Six different algebra tiles are shown below.



Sample:

Step 1: Arrange the algebra tiles into a rectangular array to model $2x^2 + 5x + 2$.

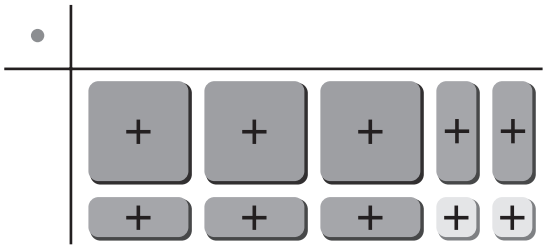
Step 2: Use algebra tiles to label the dimensions of the rectangles.



Step 3: Write the polynomial in factored form by finding the dimensions of the rectangle.

Area $= 2x^2 + 5x + 2 =$ _____

Use algebra tiles to write the polynomial as the product of two binomials. Check your answer by multiplying.

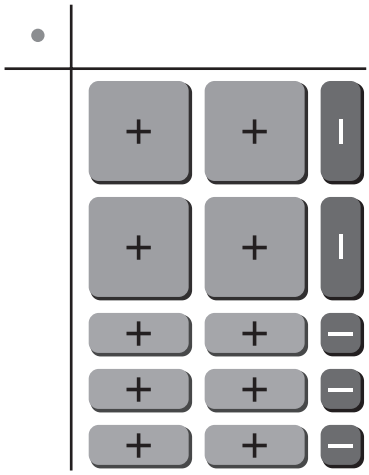


Name _____ Date _____

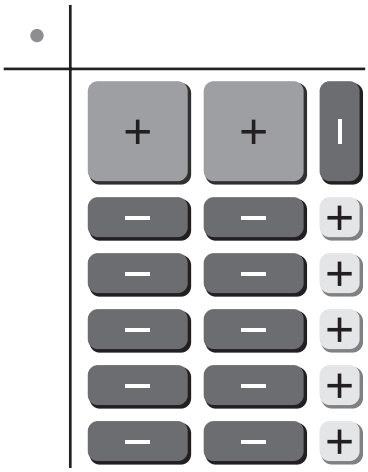
2 ACTIVITY: Finding Binomial Factors

Work with a partner. Use algebra tiles to write each polynomial as the product of two polynomials. Check your answer by multiplying.

a.



b.



3 ACTIVITY: Finding Binomial Factors

Work with a partner. Write each polynomial as the product of two binomials. Check your answer by multiplying.

a. $2x^2 + 5x - 3$ **b.** $3x^2 + 10x - 8$ **c.** $4x^2 + 4x - 3$

Name _____ Date _____

7.8 Factoring $ax^2 + bx + c$ (continued)

d. $2x^2 + 11x + 15$ **e.** $9x^2 - 6x + 1$ **f.** $4x^2 + 11x - 3$

What Is Your Answer?

4. IN YOUR OWN WORDS How can you factor the trinomial $ax^2 + bx + c$ into the product of two binomials?

5. Use your strategy to factor each polynomial.

a. $4x^2 + 4x + 1$ **b.** $3x^2 + 5x - 2$ **c.** $2x^2 - 13x + 15$

Name _____ Date _____

7.8 Practice

For use after Lesson 7.8

Factor the polynomial.

1. $5n^2 + 15n + 10$

2. $4h^2 - 20h - 56$

3. $2j^2 + 13j - 45$

4. $9p^2 + 6p - 8$

5. $6b^2 - 7b - 24$

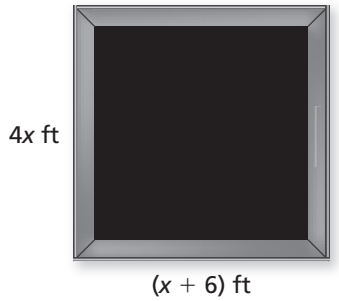
6. $12x^2 - 33x + 18$

Solve the equation.

7. $4y^2 + 8y + 3 = 0$

8. $8d^2 - 4d = 60$

9. The area of the surface of the trampoline is equal to twice its perimeter. Find the dimensions of the trampoline.



Name_____ Date _____

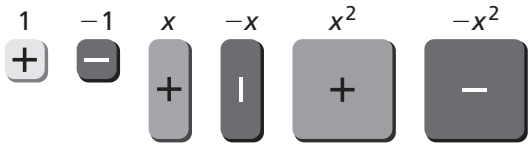
7.9 Factoring Special Products

For use with Activity 7.9

Essential Question How can you recognize and factor special products?

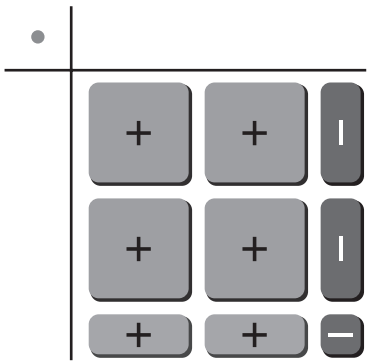
1 ACTIVITY: Factoring Special Products

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

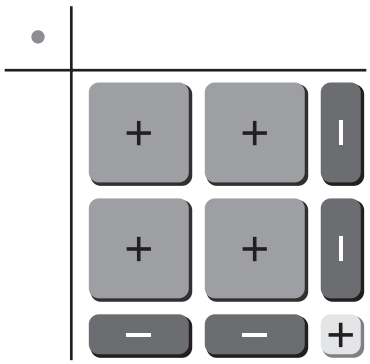


Use algebra tiles to write each polynomial as the product of two binomials. Check your answer by multiplying. State whether the product is a "special product" that you studied in Lesson 7.4.

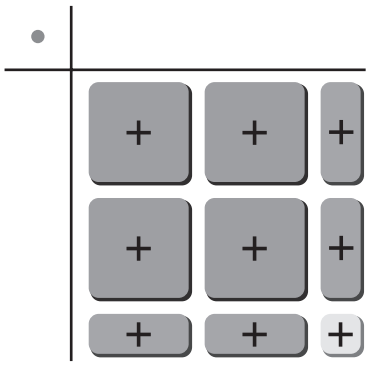
a.



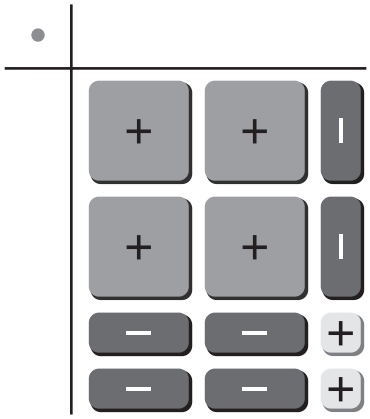
b.



c.



d.

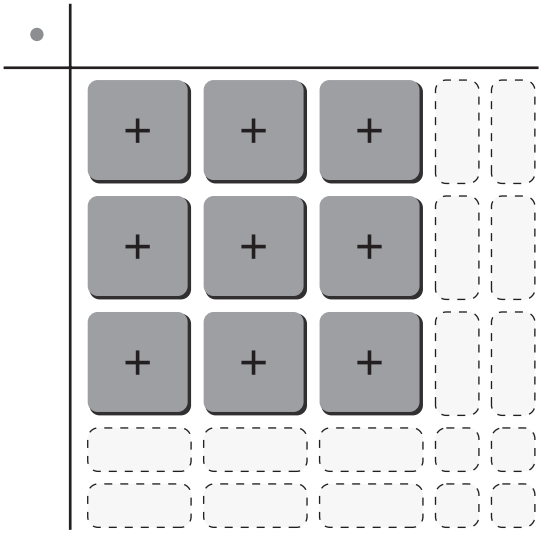


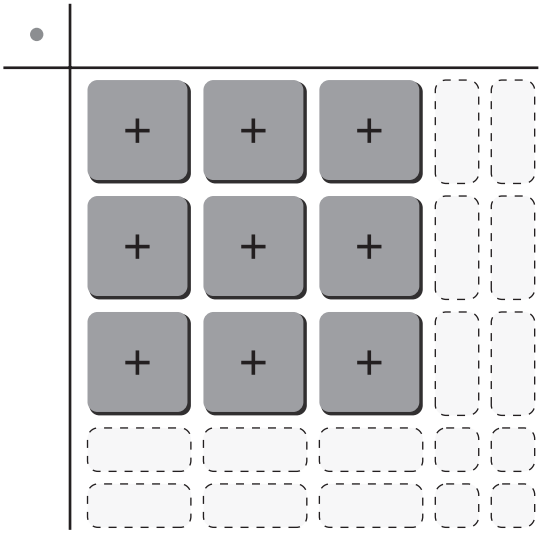
Name _____ Date _____

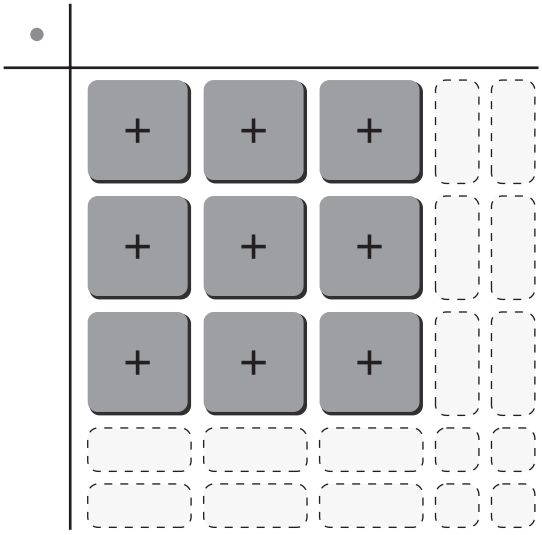
7.9 Factoring Special Products (continued)

2 ACTIVITY: Factoring Special Products

Work with a partner. Use algebra tiles to complete the rectangular array in three different ways, so that each way represents a different special product. Write each special product in polynomial form and also in factored form.







Name _____ Date _____

7.9 Factoring Special Products (continued)

3 ACTIVITY: Finding Binomial Factors

Work with a partner. Write each polynomial as the product of two binomials. Check your answer by multiplying.

a. $4x^2 - 12x + 9$ **b.** $4x^2 - 9$ **c.** $4x^2 + 12x + 9$

What Is Your Answer?

4. IN YOUR OWN WORDS How can you recognize and factor special products? Describe a strategy for recognizing which polynomials can be factored as special products.

5. Use your strategy to factor each polynomial.

a. $25x^2 + 10x + 1$ **b.** $25x^2 - 10x + 1$ **c.** $25x^2 - 1$

Name _____ Date _____

7.9 Practice

For use after Lesson 7.9

Factor the polynomial.

1. $b^2 - 81$

2. $16z^2 - 36$

3. $k^2 - 14k + 49$

4. $f^2 + 22f + 121$

Solve the equation.

5. $x^2 - 100 = 0$

6. $r^2 + 8r + 16 = 0$

7. $25a^2 = 4$

8. $p^2 + 169 = 26p$

9. A pinecone falls from a tree. The pinecone's height y (in feet) after t seconds can be modeled by $64 - 16t^2$. After how many seconds does the pinecone hit the ground?

Name_____ Date _____

Extension 7.9

Practice

For use after Extension 7.9

Factor the polynomial by grouping.

1. $c^3 - 5c^2 + 4c - 20$

2. $3k^3 + k^2 + 9k + 3$

3. $8p^3 - 28p^2 + 2p - 7$

4. $24t^3 - 18t^2 - 8t + 6$

5. $ab + b^2 + 8a + 8b$

6. $3xy + 4y - 18x - 24$

Factor the polynomial completely, if possible.

7. $4d^3 - 32d^2 - 36d$

8. $12n^3 - 48n$

Name _____ Date _____

Extension 7.9 **Practice (continued)**

9. $h^2 + 4h - 11$

10. $6w^3 + 48w^2 + 96w$

Solve the equation.

11. $q^3 - 6q^2 + 8q = 0$

12. $6r^3 - 54r = 0$

13. $3a^3 + 21a^2 - 90a = 0$

14. $2f^3 - 28f^2 + 98f = 0$

15. A high school soccer field has length x and width y. The field must be resized to comply with new regulations. The new area (in square yards) can be represented by $xy + 8x - 10y - 80$.

a. Write binomials that represent the length and width of the resized field.

b. Evaluate the expressions in part (a) when $x = 120$ and $y = 62$.