

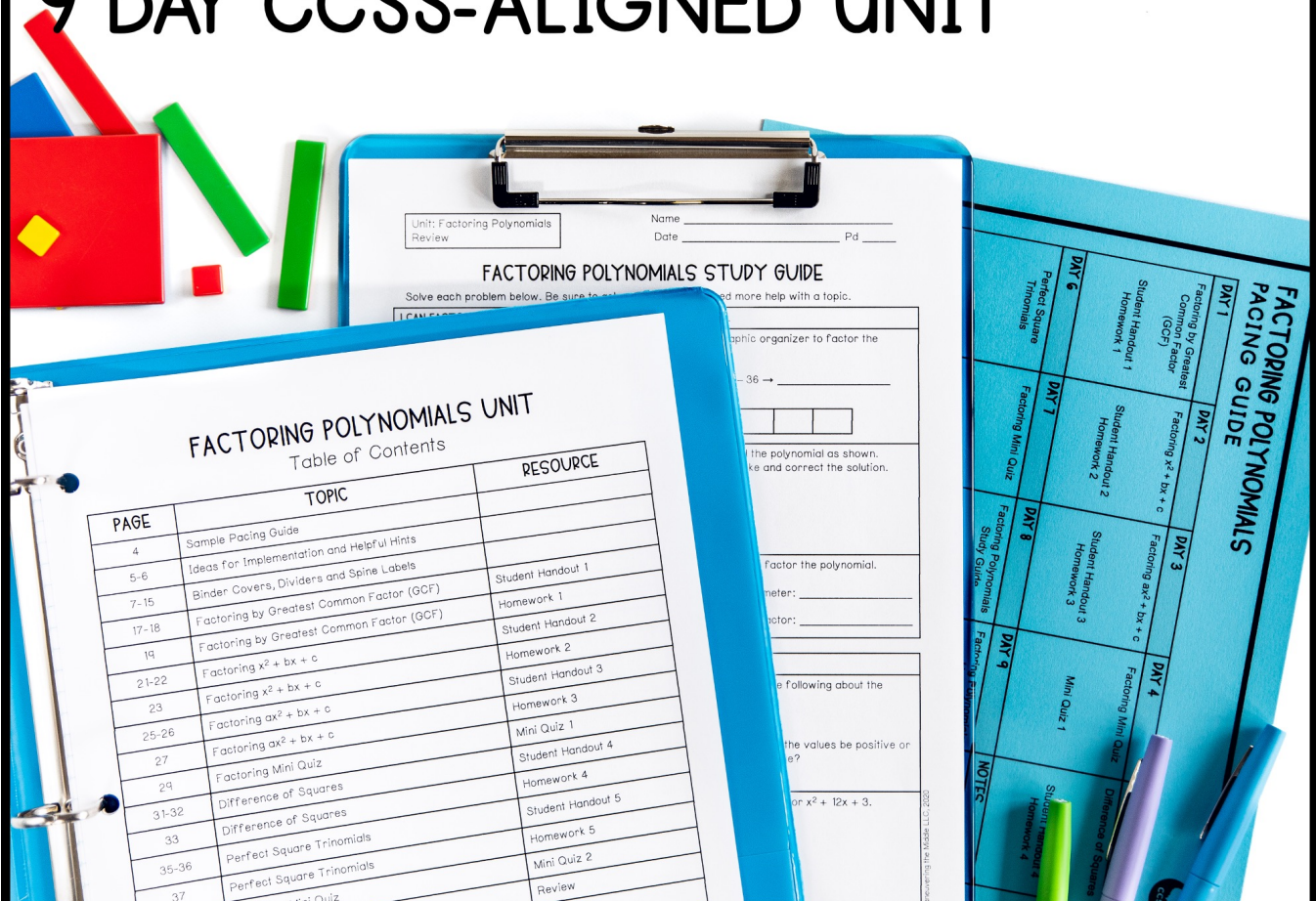
learning focus:

- ✓ factor trinomials by using a gcf
- ✓ factor trinomials in the form $x^2 + bx + c$ and $ax^2 + bx + c$
- ✓ factor difference of two squares and perfect square trinomials

FACTORING POLYNOMIALS UNIT

9 DAY CCSS-ALIGNED UNIT

**ALG
1**



A MANEUVERING THE MIDDLE® RESOURCE

FACTORING POLYNOMIALS

**ALG
1**

a 9 day CCSS-aligned unit

CCSS: A.APR.1, A.SSE.2

**ready-to-go, scaffolded
student materials**

FACTORING POLYNOMIALS UNIT

Table of Contents

PAGE	TOPIC	RESOURCE
4	Sample Pacing Guide	
5-6	Ideas for Implementation and Helpful Hints	
7-15	Binder Covers, Dividers and Spine Labels	
17-18	Factoring by Greatest Common Factor (GCF)	Student Handout 1
19	Factoring by Greatest Common Factor (GCF)	Homework 1
21-22	Factoring $x^2 + bx + c$	Student Handout 2
23	Factoring $x^2 + bx + c$	Homework 2
25-26	Factoring $ax^2 + bx + c$	Student Handout 3
27	Factoring $ax^2 + bx + c$	Homework 3
29	Factoring Mini Quiz	Mini Quiz 1
31-32	Difference of Squares	Student Handout 4
33	Difference of Squares	Homework 4
35-36	Perfect Square Trinomials	Student Handout 5
37	Perfect Square Trinomials	Homework 5
39	Factoring Mini Quiz	Mini Quiz 2
41-42	Factoring Polynomials Study Guide	Review
43-44	Factoring Polynomials Unit Test	Test

©Maneuvering the Middle LLC, 2020

FACTORING POLYNOMIALS

ALG
1

a 9 day CCSS-aligned unit
CCSS: A.APR.1, A.SSE.2

student friendly + real-world
application

Unit: Factoring Polynomials
Student Handout 3

Name _____
Date _____ Pd _____

FACTORING $AX^2 + BX + C$

The characteristics of a polynomial can change the method used to factor the polynomial. In this lesson we'll look at trinomials with leading coefficients, or values of _____, that are not equal to one. Use the checklist to help you factor the polynomial in example a.

✓ **FACTORING CHECKLIST:**

- Is there a GCF that can be factored?
- Is the polynomial of the form $x^2 + bx + c$?
- Is the polynomial of the form $ax^2 + bx + c$?

Next, complete step 1 and 2 of the checklist.

To factor a polynomial of the form $ax^2 + bx + c$, use the "AC" method to help. Follow the steps in the checklist.

a. $2x^2 + 14x + 20$

Factor the polynomials in 3-5 and then answer questions 6-9.

3. $6x^2 - 11x + 3$	4. $2k^2 - 5k - 12$	5. $3x^2 + 3x - 90$
---------------------	---------------------	---------------------

6. Is it possible to have a polynomial of the form $ax^2 + bx + c$ with your answer with an example. If no, explain why.

7. Trent factors $4x^2 + 13x + 3$. He determines that his integers must add to 13 and multiply to 3. He sets up his factors as shown below. Determine his mistake and correctly factor the polynomial.

b. $3x^2 + 8x + 5$

$3x^2$ _____ + 5

Follow the steps above to factor each trinomial.

1. $4x^2 + 12x + 5$	✓ CHECK:
---------------------	----------

Summarize today's lesson:

Unit: Factoring Polynomials
Homework 3

Name _____
Date _____ Pd _____

FACTORING $AX^2 + BX + C$

Factor each of the polynomials in 1-6 and use the answer bank to check your work. Not all choices will be used.

(2x - 5)	(6x - 1)	(x + 9)	(7x - 2)	(x + 2)	(3x - 1)	(6x + 1)
(x - 9)	(4x + 3)	(3x + 1)	(4x - 3)	(x - 1)	(2x + 3)	(7x + 2)

1. $7x^2 + 16x + 4$	2. $3x^2 + 26x - 9$	3. $12x^2 - 28x - 5$
4. $6x^2 - 55x + 9$	5. $4x^2 - x - 3$	6. $21x^2 + x - 2$

Use your knowledge of factoring to answer questions 7 and 8.

7. Fernando and Risa are factoring $5x^2 - x - 6$. They each made a chart below and selected a pair of integers. Which student is correct? Explain your reasoning.

FERNANDO	
FACTORS	SUM
1 · -6	-5
-1 · 6	5
2 · -3	-1

RISA	
FACTORS	SUM
-3 · 10	7
3 · -10	-7
5 · -6	-1

8. Lawson is pouring a rectangular concrete slab for his doghouse. The slab will cover an area of $5x^2 + 12x - 9$ square feet. Write expressions that represent possible dimensions for the length and width of the concrete slab.

©Maneuvering the Middle LLC, 2020

error analysis

FACTORING POLYNOMIALS

ALG
1

a 9 day CCSS-aligned unit
CCSS: A.APR.1, A.SSE.2

streamline your planning
process with unit overviews

FACTORING POLYNOMIALS OVERVIEW



STANDARDS

A.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

A.SSE.2 Use the structure of an expression to identify ways to rewrite it.

BIG IDEAS

- Factoring a polynomial helps us discover terms that were multiplied together to result in the polynomial.
- Trinomials can be factored by factoring out a greatest common factor.
- Trinomials can often be factored and written as a product of two binomials.
- Certain forms of binomials:

ESSENTIAL QUESTION

- How are multiplying polynomials related to factoring?
- What helps you determine if a polynomial is factorable?
- What is the factoring pattern?
- What is the factoring pattern?



key vocabulary



vertical alignment



sample
pacing
calendar

FACTORING POLYNOMIALS PACING GUIDE



DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Factoring by Greatest Common Factor (GCF)	Factoring $x^2 + bx + c$	Factoring $ax^2 + bx + c$	Factoring Mini Quiz	Difference of Squares
Student Handout 1 Homework 1	Student Handout 2 Homework 2	Student Handout 3 Homework 3	Mini Quiz 1	Student Handout 4 Homework 4
DAY 6	DAY 7			
Perfect Square Trinomials	Factoring Mini Quiz			
Student Handout 5 Homework 5	Mini Quiz 2			

FACTORING POLYNOMIALS OVERVIEW



TOPIC	TEACHING TIPS
Factoring $x^2 + bx + c$	<ul style="list-style-type: none">Algebra tiles are a very helpful way to introduce this concept. Factoring is brand new for students at this point, so beginning with something hands-on and tangible can help the concept seem less abstract.Students may benefit from seeing this type of factoring demonstrated with the "box method". Practicing on dry erase boards is a great way to allow students to more easily erase and adjust their solutions as they are solving.
Factoring $ax^2 + bx + c$	<ul style="list-style-type: none">Guessing and checking on polynomials where "a" is not equal to 1 can be very time consuming and overwhelming for some students. Teaching students a method, such as the "AC method", helps give them a starting point and an effective strategy.While our student handouts focus on the "AC Method", feel free to search for "Bottoms Up" and the box method if you need another approach for your students.
Factoring Special cases	<ul style="list-style-type: none">Consider having students create a reference chart of perfect squares. This will help them quickly identify differences of squares as well as perfect square trinomials.

teaching
ideas



FACTORING POLYNOMIALS

ALG
1

a 9 day CCSS-aligned unit
CCSS: A.APR.1, A.SSE.2

unit study guide + assessments

✓ quizzes

✓ editable unit test

Unit: Factoring Polynomials
Mini Quiz 1

Name _____
Date _____ Pd _____

FACTORING MINI-QUIZ

Factor each polynomial. Be sure to show all work.

1. $-9x^2 - 30x$	2. $x^2 - 2x - 35$	5. Mae is considering two different rectangular rugs for her living room. The area of each rug is shown below, and she needs the width of the rug to be $2x + 9$ feet.
3. $2x^2 + 18x + 36$	4. Which of the following is a factor of $x^2 - 5x + 6$? a. $3x + 5$ b. $3x - 4$ c. $x + 4$ d. $x - 4$	

Unit: Factoring Polynomials
Review

Name _____
Date _____ Pd _____

FACTORING POLYNOMIALS STUDY GUIDE

Solve each problem below. Be sure to ask questions if you need more help with a topic.

I CAN FACTOR TRINOMIALS USING A GREATEST COMMON FACTOR.

1. For each expression, identify the greatest common factor if one exists. a. $15c^2 - 65c$ b. $16x^2 - 64x + 64$ c. $8m^2 + 14m - 7$	2. Use the graphic organizer to factor the polynomial.
--	--

3. Factor each polynomial.
a. $14p^2 - 70p$ _____
b. $54x^2 - 12x + 24$ _____

5. Write an expression to represent the area of the rectangle below.

 $8x + 16$

I CAN FACTOR TRINOMIALS IN THE FORM $x^2 + bx + c$.

6. Kit needs to fill in the blanks below with missing values:
a. The sum should be _____. b. The product should be _____.

7. Factor $x^2 - 10x - 24$.
8. Factor $x^2 - 10x - 24$.

ALGEBRA 1 CURRICULUM

FACTORING POLYNOMIALS

UNIT SEVEN: ANSWER KEY

©MANEUVERING THE MIDDLE, 2020

answer keys
included