

keep scrolling to get a
sneak peak!

This set of guided
notes will walk Algebra
2 students through how to
solve quadratic equations
by factoring.
All you need to do is print
& make copies for your
students!

SOLVING QUADRATICS BY FACTORING

Algebra 2 Guided Notes

The image shows a preview of the guided notes. It includes a section titled "FACTORIZING QUADRATICS REVIEW" with seven steps: Step 1: Rewrite the equation into _____. Step 2: Identify the "a" coefficient and the constant "c". _____. Step 3: Determine the ____ coefficient. Step 4: Determine what ____ numbers multiply to ac and add _____. Step 5: Break apart the b-term in your quadratic to be the ____ determined in step 4. Step 6: Group the first ____ terms and the last ____ and find the ____ of each grouping. Step 7: Factor by pulling out the ____ of both terms. Below this is a section titled "SOLVING QUADRATIC EQUATIONS BY FACTORING" with a table for "Zeros of a Function" and "Zero Product Property". The table has columns for "Zeros of a Function" and "Zero Product Property" and rows for "Any x-value(s) for which ____ or ____" and "If the ____ is zero, then one or both of the ____ equal zero. If AB = 0, then ____". Below the table are two example problems: "Directions: Solve the quadratic equation by factoring." followed by $x^2 - 4x = 45$ and $-4x^2 - 30 = 34x$. A logo for "Math with Ms. Rivera" is visible in the bottom left corner of the preview.

Answer key included

© Malia Rivera, 2023

why do you need this?



It's simple and done-for-you! Just print and make copies!



Students can work on essential Algebra 2 skills.



Aligns to CCSS, TEKs, and VA SOLs!



Suggested and detailed answer keys are included for you!

Algebra 2 Guided Notes Solving Quadratic Equations By Factoring

FACTORIZING QUADRATICS REVIEW
Review: Let's recall how to factor a quadratic expression with the grouping method.

Step 1: Rewrite the equation into _____
Step 2: Identify the "a" coefficient and the constant "c", _____ them together.
Step 3: Determine the _____ coefficient.
Step 4: Determine what _____ numbers multiply to ac and add _____
Step 5: Break apart the b-term in your quadratic to be the _____ determined.
Step 6: Group _____ and find the _____
Step 7: Factor _____ your answer.

Directions: Factor each quadratic.
 $x^2 - 9x - 36$

SOLVING QUADRATIC EQUATIONS BY FACTORING

Zeros of a Function	Any x-value(s) for which _____ or _____
Zero Product Property	If the _____ is zero, then one or both of the _____ equal zero. If $AB = 0$, then _____

Directions: Solve the quadratic equation by factoring.

$x^2 - 4x = 45$	$-8x^2 - 30 = 38x$

Directions: Find the zeros of the function

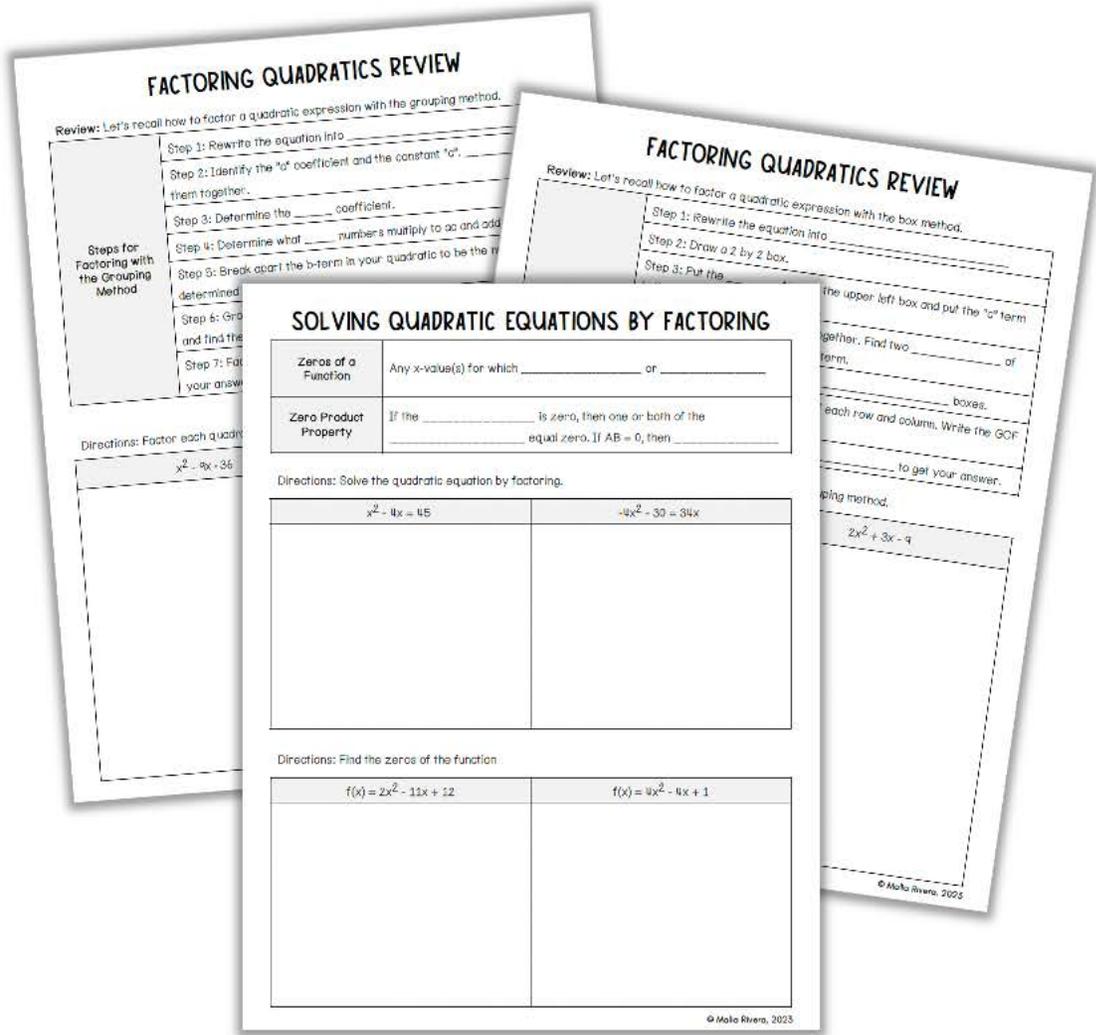
$f(x) = 2x^2 - 11x + 12$	$f(x) = 4x^2 - 4x + 1$

FACTORIZING QUADRATICS REVIEW
Review: Let's recall how to factor a quadratic expression with the box method.

Step 1: Rewrite the equation into _____
Step 2: Draw a 2 by 2 box.
Step 3: Put the _____
Step 4: _____ the upper left box and put the "a" term _____ together. Find two _____ of _____ boxes.
Step 5: _____ each row and column. Write the GCF _____ to get your answer.
Step 6: _____ the box method.
 $2x^2 + 3x - 9$

© Malia Rivera, 2023

Algebra 2 Guided Notes: Solving Quadratic Equations by Factoring *includes:*



- ✓ 3 page of guided notes
- ✓ Review Factoring Quadratics by Grouping and the Box Method
- ✓ Steps to Solve a Quadratic by Factoring

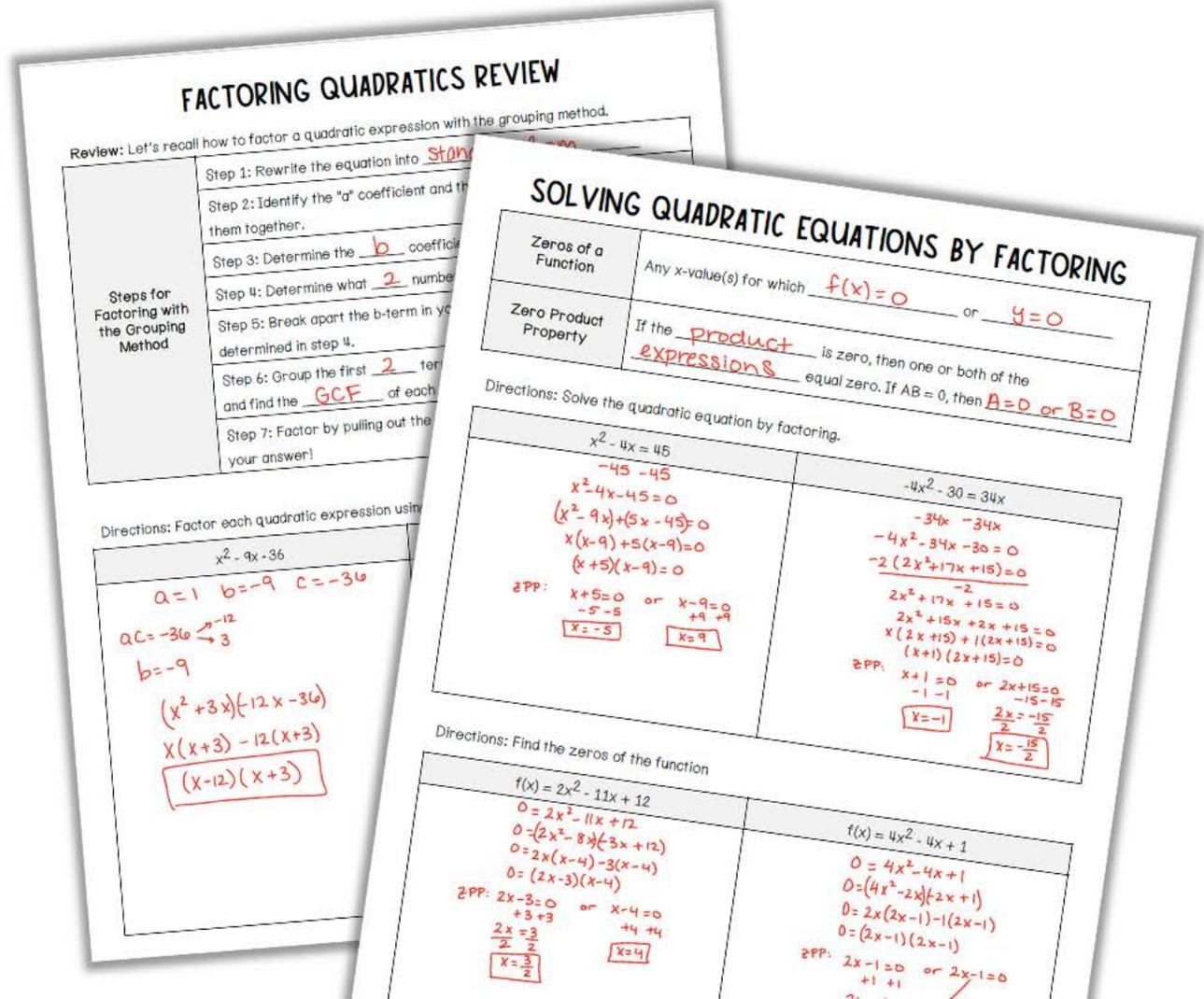
Algebra 2 Guided Notes: Solving Quadratic Equations by Factoring *includes:*

 Detailed answer keys

CCSS: HSA-REI.B.4, HSA-SSE.B.3a

TEKS: A2.4.F

VA SOLs: EI.AII.3.b



FACTORIZING QUADRATICS REVIEW

Review: Let's recall how to factor a quadratic expression with the grouping method.

Steps for Factoring with the Grouping Method

- Step 1: Rewrite the equation into standard form.
- Step 2: Identify the "a" coefficient and the "c" coefficient and find their product.
- Step 3: Determine the b coefficient and find two numbers that multiply to the product from step 2 and add to the b coefficient.
- Step 4: Determine what 2 numbers that multiply to the product from step 2 and add to the b coefficient.
- Step 5: Break apart the b-term in your equation using the numbers determined in step 4.
- Step 6: Group the first 2 terms and the last 2 terms and find the GCF of each group.
- Step 7: Factor by pulling out the common factor from each group and your answer!

Directions: Factor each quadratic expression using the grouping method.

$x^2 - 9x - 36$

$a=1 \quad b=-9 \quad c=-36$
 $ac=-36 \rightarrow -12 \quad 3$
 $b=-9$
 $(x^2 + 3x)(x - 12)$
 $x(x+3) - 12(x+3)$
 $(x-12)(x+3)$

SOLVING QUADRATIC EQUATIONS BY FACTORING

Zeros of a Function: Any x-value(s) for which $f(x)=0$ or $y=0$

Zero Product Property: If the product of expressions is zero, then one or both of the expressions equal zero. If $AB=0$, then $A=0$ or $B=0$

Directions: Solve the quadratic equation by factoring.

$x^2 - 4x = 45$

$-45 - 45$
 $x^2 - 4x - 45 = 0$
 $(x^2 - 9x) + (5x - 45) = 0$
 $x(x-9) + 5(x-9) = 0$
 $(x+5)(x-9) = 0$

zPP: $x+5=0$ or $x-9=0$
 $-5-5$ $-9-9$
 $x=-5$ $x=9$

$-4x^2 - 30 = 34x$

$-34x - 34x$
 $-4x^2 - 34x - 30 = 0$
 $-2(2x^2 + 17x + 15) = 0$
 -2
 $2x^2 + 17x + 15 = 0$
 $2x^2 + 15x + 2x + 15 = 0$
 $x(2x+15) + 1(2x+15) = 0$
 $(x+1)(2x+15) = 0$

zPP: $x+1=0$ or $2x+15=0$
 $-1-1$ $-15-15$
 $x=-1$ $\frac{2x}{2} = \frac{-15}{2}$
 $x = -\frac{15}{2}$

Directions: Find the zeros of the function

$f(x) = 2x^2 - 11x + 12$

$0 = 2x^2 - 11x + 12$
 $0 = (2x^2 - 8x) - (3x + 12)$
 $0 = 2x(x-4) - 3(x+4)$
 $0 = (2x-3)(x-4)$

zPP: $2x-3=0$ or $x-4=0$
 $+3+3$ $+4+4$
 $\frac{2x}{2} = \frac{3}{2}$ $x=4$
 $x = \frac{3}{2}$

$f(x) = 4x^2 - 4x + 1$

$0 = 4x^2 - 4x + 1$
 $0 = (4x^2 - 2x) - (2x + 1)$
 $0 = 2x(2x-1) - 1(2x+1)$
 $0 = (2x-1)(2x+1)$

zPP: $2x-1=0$ or $2x+1=0$
 $+1+1$
 $x = \frac{1}{2}$ $x = -\frac{1}{2}$

Check out what *other teachers* are saying:



"This was great practice for my Algebra II students after I presented the lesson. Next Year, I may use them as notes."

- Vonda B.



"Great resource for what we were currently covering in precalc!"

- Megan M.



"I used this in conjunction with another document, but this would have worked fine on its own. The students found it much easier to understand the concept using these guided notes."

- Cheryl W.

You may also enjoy ...

COMPLETING THE SQUARE

Algebra 2 Guided Notes

COMPLETING THE SQUARE

Visual Model

Find the value of c that makes $x^2 + 14x + c$ a perfect square trinomial as the expression of the square of binomials.

Find half of the coefficient of x .

Square the result from step 1.

Use the result from step 2 to create a perfect square trinomial to be a square.

COMPLETING THE SQUARE - Algebraically

Steps for Completing the Square

- Step 1: Rewrite the equation into Standard form on one side set equal to 0.
- Step 2: Identify the a , b , and c terms. Move the c term to the other side of the equation.
- Step 3: Complete the square by adding $(\frac{b}{2})^2$ to both sides of the equation.
- Step 4: Factor the perfect square trinomial into the square of binomials.
- Step 5: Solve for x using the square roots method.

*If a is not 1, you need to factor out the GCF to make $a = 1$ *

Directions: Solve by completing the square.

$x^2 + 10x - 7 = 0$	$2x(x - 2) = 200$
$x^2 + 16x + 7 = 0$	$2x^2 - 4x = 200$

Answer key included

© Malia Rivera, 2023

QUADRATIC FORMULA

Algebra 2 Guided Notes

THE QUADRATIC FORMULA

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

THE QUADRATIC FORMULA

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Steps for Using the Quadratic Formula

- Step 1: Rewrite the quadratic equation in Standard form on one side equal to 0.
- Step 2: Identify the values for a , b , and c and plug into the quadratic formula.
- Step 3: Evaluate the quadratic formula to solve for x . Read the directions carefully for how you should leave your answer.

Directions: Solve each quadratic equation using the quadratic formula. Leave your answer in simplest radical or fraction form.

$x^2 + 3x = 5$	$27x^2 - 8x = 32x - 8$
$x^2 - 5 = 0$	$-12x + 4 = 12x + 4$
$x^2 + 5x - 5 = 0$	
$a = 1$ $b = 5$ $c = -5$	

Answer key included

© Malia Rivera, 2023

THE DISCRIMINANT

Algebra 2 Guided Notes

THE DISCRIMINANT

The discriminant is used to determine the number and types of solutions of a quadratic equation.

	$b^2 - 4ac > 0$	$b^2 - 4ac = 0$	$b^2 - 4ac < 0$
Number of Solutions	2 real solutions	1 real solution	no real solutions
Graph of $y = ax^2 + bx + c$			
Number of x-intercepts	2 x-intercepts	1 x-intercept	no x-intercepts

Answer key included

© Malia Rivera, 2023

Check out the *year-long bundle!*

ALGEBRA 2 GUIDED NOTES Year-Long Bundle

TRANSFORMATIONS OF FUNCTIONS

Type of Transformation	$f(x)$ Notation
Reflection	$-f(x)$
Vertical Dilation	$af(x)$ $0 < a < 1$ $ a > 1$
Horizontal Dilation	$f(bx)$ $0 < b < 1$ $ b > 1$
Vertical Translation	$f(x) + k$

LINEAR REGRESSION

SCATTER PLOT
Definition: A graph of _____ points that are _____

SCATTER PLOT RELATIONSHIPS

LINE OF BEST FIT
Definition: A line that _____ as close as possible to all _____

LINEAR REGRESSION
Definition: A linear model that is used to _____ between two variables.

LINEAR INTERSECTIONS
Estimating Slope: _____
Slope: _____
Y-intercept: _____

GRAPHING QUADRATIC TRANSFORMS

Reflection over the x-axis: _____

COMPOSITION OF FUNCTIONS

Definition: To make the _____ another function.

Things to remember:

- Always start with the _____ the function on the _____
- Tag does not always equal _____

$(f \circ g)(x) = \dots$ is _____

$g(x) = 2x + 3$ and $f(x) = x^2$, find $(f \circ g)(x)$

COMPOUND INEQUALITIES

Compound inequality has two separate inequalities joined by _____

Graph of a compound inequality with "and" is the _____ of the graphs of the inequalities.

$x > 3$

POLYNOMIAL FUNCTION CHARACTERISTICS

Characteristics	Graph
Intercepts	
Touch	
Inflection	

RELATIVE EXTREMA (Minimum or Maximum)
Points on the graph that help to describe the _____ of a function. They are also called _____ or _____.

INCREASING INTERVALS
The interval between _____ y-values as the x-value _____.

DECREASING INTERVALS
The interval between _____ y-values as the x-value _____.

POSITIVE INTERVALS
Intervals where _____

PROPERTIES OF RATIONAL EXPONENTS & RADICALS

Property	Properties of Rational Exponents
Product of Powers	Definition
Power of a Power	
Power of a Product	
Negative Exponent	
Zero Exponent	
Quotient of Powers	
Power of a Quotient	

Directions: Use the properties of rational exponents to simplify: $1. (y^{1/2} \cdot y^{1/3})^2$

Math with Ms. Rivera

ANSWER KEY INCLUDED



hey there!

My name is Malia and I'm passionate about making learning and practicing math fun. I love creating engaging math resources for my students and I hope your students enjoy these Solving Quadratic Equations by Factoring guided notes for Algebra 2 that can be used all year long!

Did you know you could get **FREE** money from TPT??

All you need to do is leave feedback on the product after you purchase. [Click here](#) to leave reviews and earn credits towards your next TPT purchase!

let's connect!



Follow my TPT store



Follow my Instagram



Join my FB group