

keep scrolling to get a
sneak peak!

This set of guided
notes will walk Algebra
2 students
through graphing and
writing quadratic
equations. All you need to
do is print & make copies
for your students!

WRITING QUADRATIC EQUATIONS

Algebra 2 Guided Notes

WRITING QUADRATIC EQUATIONS

Standard Form	
Vertex Form	
Intercept Form	

When given a point and the _____, write a _____.

When given a point and the _____, write a _____.

When given _____, write a _____.

Write an equation of the parabola given a vertex and a point.

Directions: Write the equation of the parabola in vertex form.

Write an equation of the parabola that passes through the point (2, 5) and has x-intercepts of -2 and 4. $p = -2$ $q = 4$ $x = 2$ $y = 5$

$$y = a(x-p)(x-q)$$
$$5 = a(2+2)(2-4)$$
$$5 = a(4)(-2)$$
$$\frac{5}{-8} = \frac{-8a}{-8}$$
$$a = -\frac{5}{8}$$

Equation: $y = -\frac{5}{8}(x+2)(x-4)$

Write an equation of the parabola that passes through the point (1, 4) and has x-intercepts of 12 and -6. $p = 12$ $q = -6$ $x = 1$ $y = 4$

$$y = a(x-p)(x-q)$$
$$4 = a(1-12)(1-(-6))$$
$$4 = a(1-18)(1+6)$$
$$4 = a(-17)(7)$$
$$4 = -119a$$
$$\frac{4}{-119} = a$$
$$a = -\frac{4}{119}$$

Equation: $y = -\frac{4}{119}(x-12)(x+6)$

Writing an equation given 3 points

Directions: Write the equation of the parabola in vertex form.

Write an equation of the parabola that passes through the points (1, 4), (2, 5), and (3, 6).

① $4 = a$

Answer key included

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.

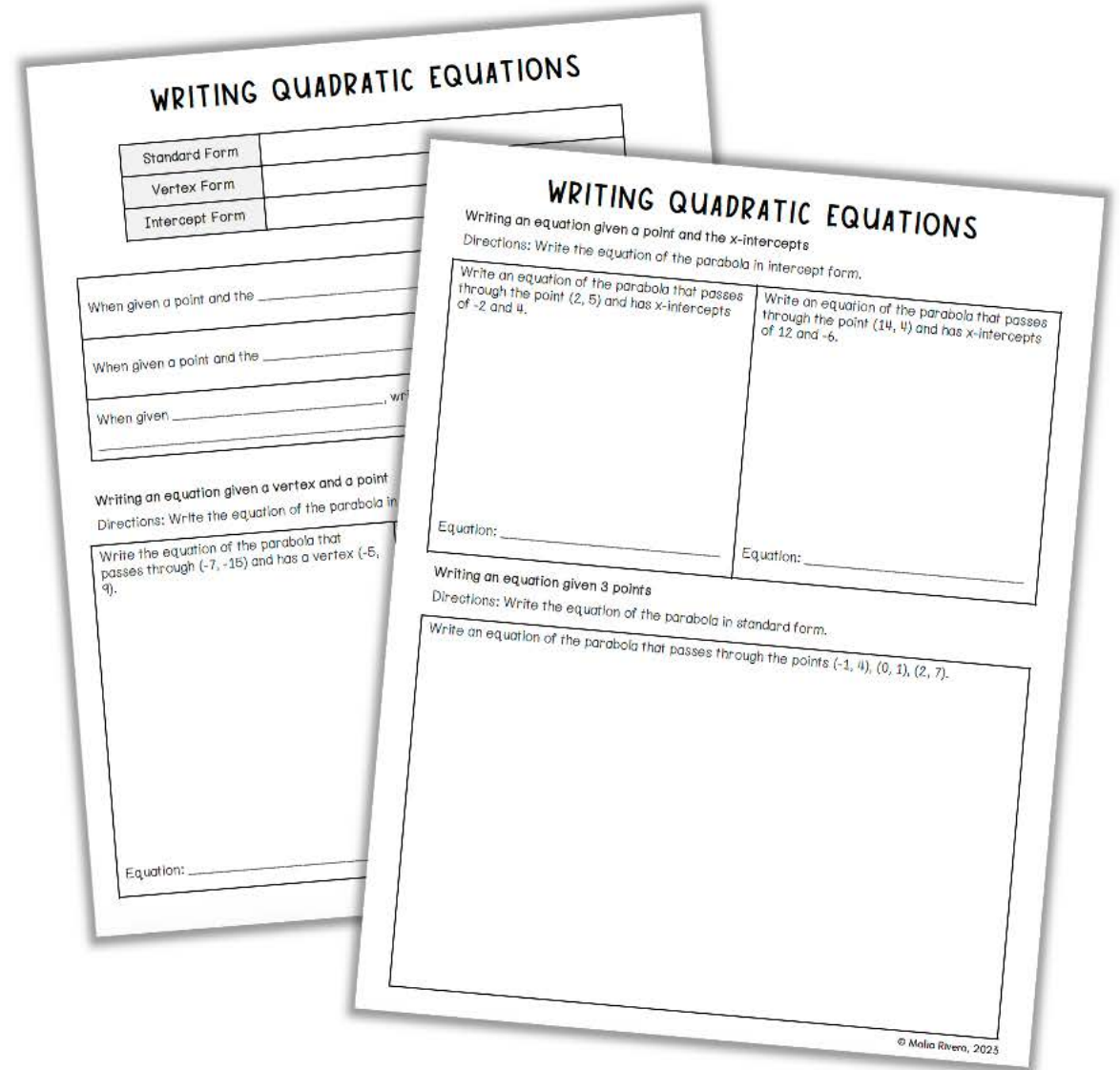


Aligns to CCSS and TEKs!

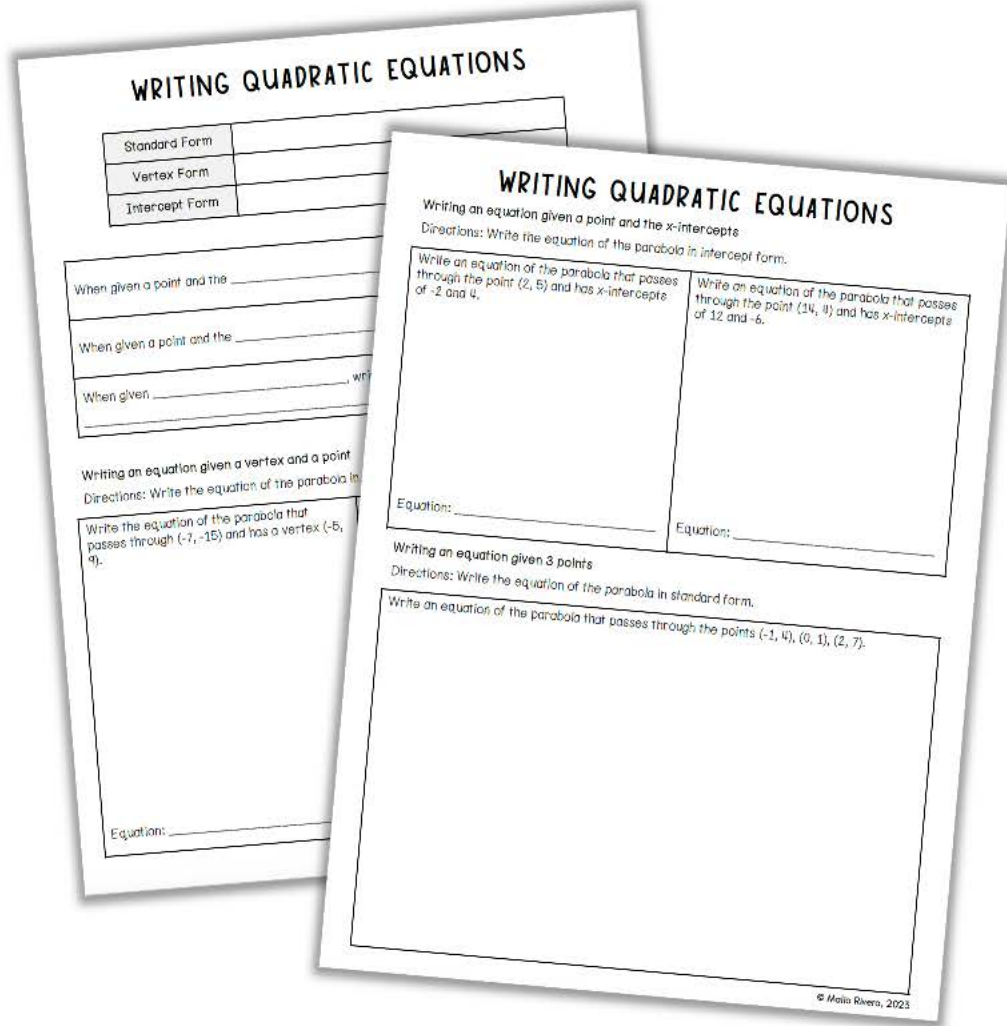


Suggested and detailed answer keys are included for you!

Algebra 2 Guided Notes Writing Quadratic Equations



Algebra 2 Guided Notes: Writing Quadratic Equations *includes:*



- ✓ 2 pages of guided notes
- ✓ Writing Quadratic Equations in Standard, Vertex, and Intercept Forms
- ✓ Writing Quadratic Equations Given a Point and a Vertex
- ✓ Writing Quadratic Equations Given a Point And the X-Intercepts
- ✓ Writing Quadratic Equations Given 3 Points

Algebra 2 Guided Notes: Writing Quadratic Equations *includes:*

 Detailed answer keys

CCSS: HSA-CED.A.2, HSF-BF.A.1

TEKS: A2.3.A, A2.4.AB

WRITING QUADRATIC EQUATIONS

Standard Form	$y = ax^2 + bx + c$
Vertex Form	$y = a(x-h)^2 + k$
Intercept Form	$y = a(x-p)(x-q)$

When given a point and the vertex

When given a point and the x-intercepts

When given 3 points, write and solve system of equations

Writing an equation given a vertex and a point
 Directions: Write the equation of the parabola in vertex form

Write the equation of the parabola that passes through $(-7, -15)$ and has a vertex $(-5, 9)$.

vertex: (h, k) point: (x, y)
 $(-5, 9)$ point: $(-7, -15)$

$$y = a(x-h)^2 + k$$

$$-15 = a(-7 - (-5))^2 + 9$$

$$-15 = a(-7+5)^2 + 9$$

$$-15 = a(-2)^2 + 9$$

$$-9 = a(4) + 9$$

$$-24 = 4a$$

$$\frac{-24}{4} = \frac{4a}{4}$$

$$-6 = a$$

$$y = -6(x+5)^2 + 9$$

WRITING QUADRATIC EQUATIONS

Writing an equation given a point and the x-intercepts
 Directions: Write the equation of the parabola in intercept form.

Write an equation of the parabola that passes through the point $(2, 5)$ and has x-intercepts of -2 and 4 . $p = -2$ $q = 4$ $x = 2$ $y = 5$

$$y = a(x-p)(x-q)$$

$$5 = a(2+2)(2-4)$$

$$5 = a(4)(-2)$$

$$\frac{5}{-8} = \frac{-8a}{-8}$$

$$a = -\frac{5}{8}$$

Equation: $y = -\frac{5}{8}(x+2)(x-4)$

Write an equation of the parabola that passes through the point $(14, 4)$ and has x-intercepts of 12 and -6 . $p = 12$ $q = -6$ $x = 14$ $y = 4$

$$y = a(x-p)(x-q)$$

$$4 = a(14-12)(14+6)$$

$$4 = a(2)(20)$$

$$\frac{4}{40} = \frac{40a}{40}$$

$$\frac{1}{10} = a$$

Equation: $y = \frac{1}{10}(x-12)(x+6)$

Writing an equation given 3 points
 Directions: Write the equation of the parabola in standard form.

Write an equation of the parabola that passes through the points $(-1, 4)$, $(0, 1)$, $(2, 7)$.

$$y = ax^2 + bx + c$$

- $4 = a(-1)^2 + b(-1) + c$
 $4 = a - b + c$
- $1 = c$
- $7 = a(2)^2 + b(2) + c$
 $7 = 4a + 2b + c$

$$4 = a - b + 1$$

$$3 = a - b$$

$$2(3 = a - b)$$

$$6 = 4a - 2b$$

$$+ 6 = 2a - 7b$$

$$12 = 6a - 9b$$

Check out what *other teachers* are saying:



"Once again these notes are very well put together and easy for the students us to complete the assignment."

- Nancy Beach (TPT Seller)



"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 ...

QUADRATIC REGRESSION

Algebra 2 Guided Notes

QUADRATIC REGRESSION

Step 1: Create a table of values. STAT > EDIT

Step 2: Run the quadratic regression. STAT > CALC > 5: QuadReg

Step 3: Write down the quadratic regression equation in $y = ax^2 + b$

The table below shows the fuel efficiencies of a vehicle at different speeds. Write a function that models the data. Use the model to approximate the optimal driving speed. Round to the nearest hundredth place, if necessary.

Speed (mi/hr)	Fuel Efficiency (mi/gal)
25	14.5
29	17.5
30	21.2
36	23.7
40	25.2
45	25.8
50	25.8
55	25.1
60	24.0

Quadratic Regression Model: $y = -0.01x^2 + 1.37x - 7.14$

2. The table below shows Gustavo's science project data. Write a function that models the data. Round to the nearest thousandth place, if necessary.

Time (min)	Speed (ft/sec)
3	31.5
4	37.8
5	36.4
6	32.7
7	32.8

Answer key included

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SOLVING QUADRATIC EQUATIONS BY GRAPHING

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SOLVING QUADRATIC EQUATIONS BY GRAPHING

Directions: Solve the equation by graphing. Check with your graphing calculator.

1. $-x^2 + 2x + 3 = 0$

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

Solution(s): $x = -1, 3$

Solution(s): $x = 1$

3. $-8 = -x^2 - 4$

4. $3x = \frac{1}{2}x^2 + 5$

Answer key included

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SOLVING QUADRATICS BY SQUARE ROOTS

Algebra 2 Guided Notes

SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS

1: Rewrite the equation in the form $\sqrt{\text{something}} = \text{something}$

2: Solve by taking the \pm of both sides

3: Put the solution into simplest radical form.

1. $(x - 4)^2 = 49$

$x - 4 = \pm 7$

$x = 4 + 7$ $x = 4 - 7$

$x = 11$ $x = -3$

2. $(x + 13)^2 = 0$

$x + 13 = 0$

$x = -13$

$x = 0$

3. $2(x + 2)^2 - 5 = 8$

$2(x + 2)^2 = 13$

4. $\frac{1}{5}x^2 + 2 = \frac{3}{2}x$

Answer key included

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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 also _____

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

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

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

Multiplicities	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: $1. (y^{1/2} \cdot y^{1/3})^2$

ANSWER KEY INCLUDED



Math with Ms. Rivera



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 Writing Quadratic Equations guided notes for Algebra 2 that can be used all year long!

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