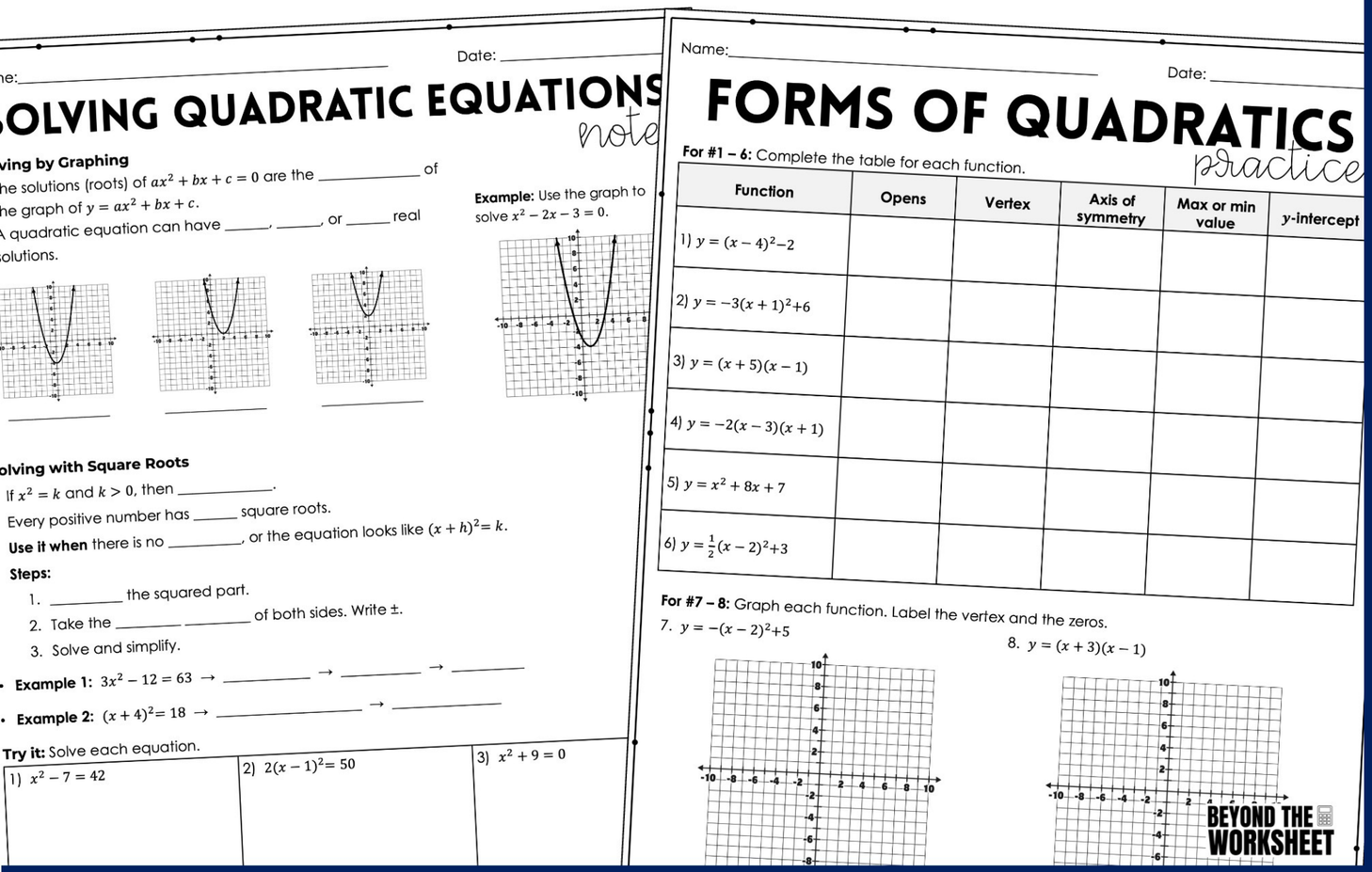
ALGEBRA 1 CURRICULUM – UNIT 9

QUADRATIC FUNCTIONS AND EQUATIONS



GUIDED NOTES, PRACTICE, ACTIVITIES, ASSESSMENTS AND MORE!

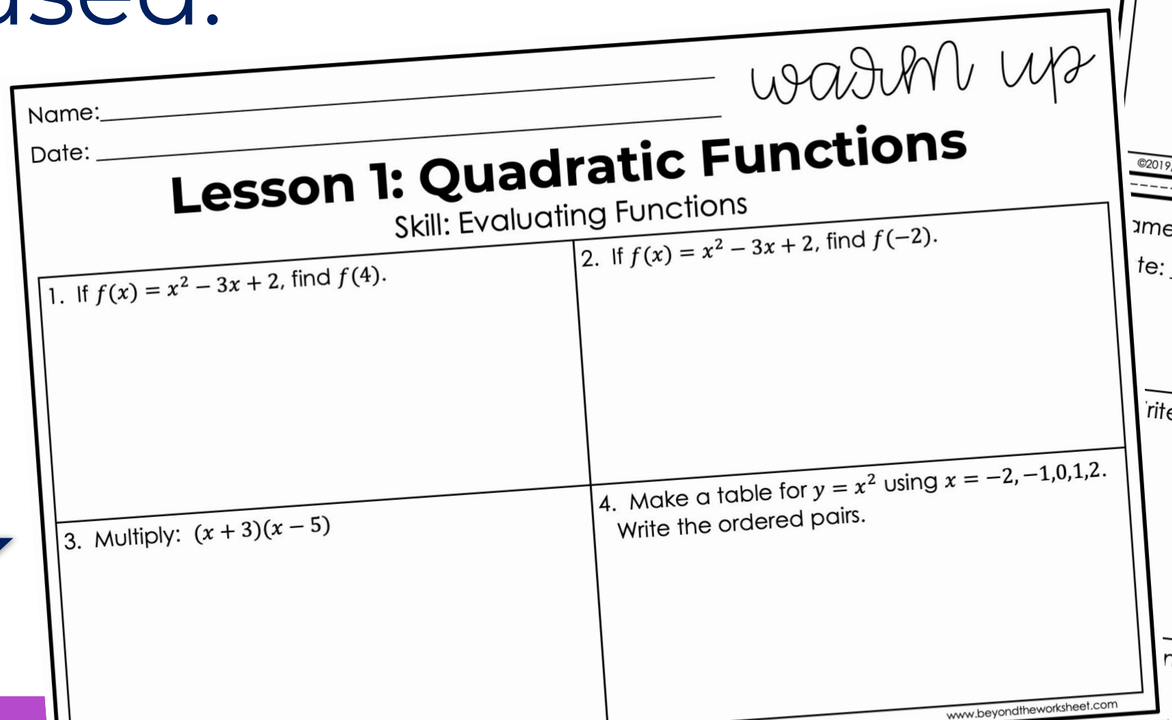
This **Algebra 1 Quadratic Functions and Equations Unit** includes guided notes, practice worksheets, warm-ups, exit tickets, quizzes, assessments, and supplemental activities to help students graph quadratic functions, solve quadratic equations, and apply quadratics to real-world situations.

learn more!

WARM-UPS & EXIT TICKETS

- Structured and spiraled daily warm-up exercises and exercises keep students engaged and focused.





Name:

Date:

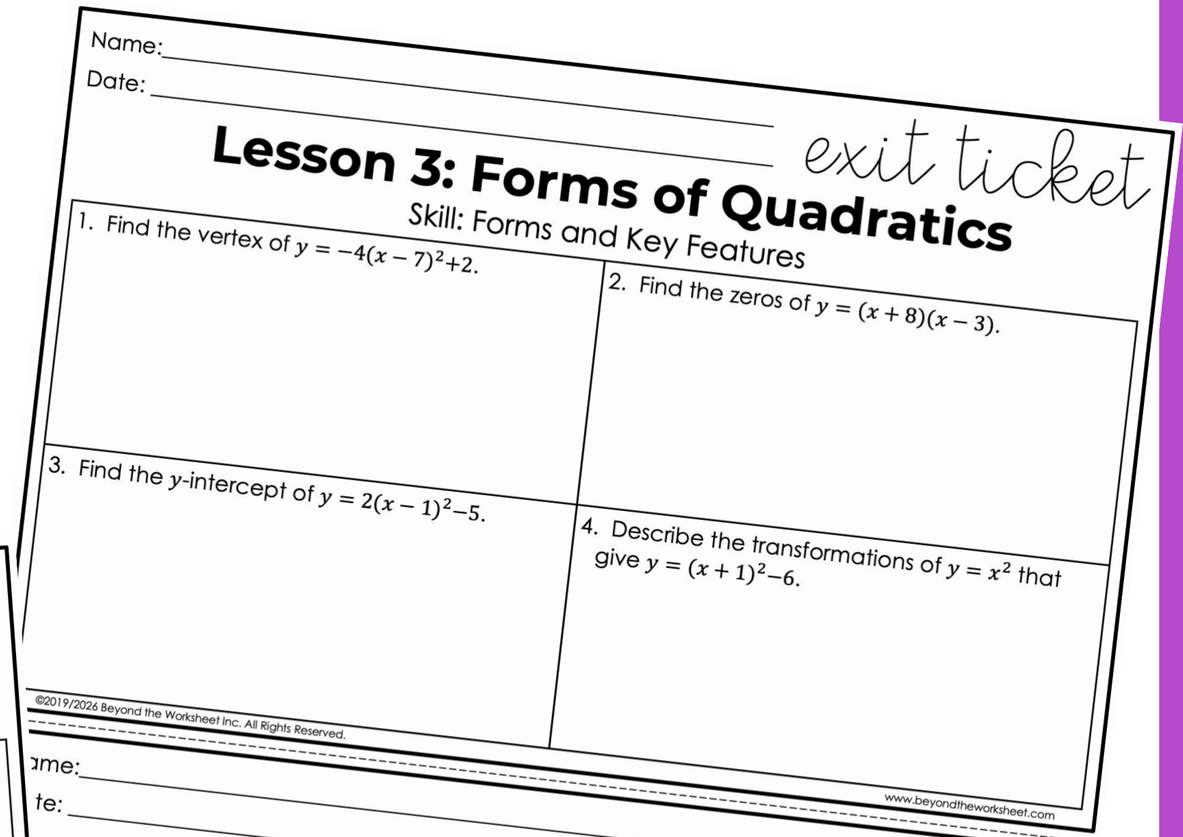
warm up

Lesson 1: Quadratic Functions

Skill: Evaluating Functions

1. If $f(x) = x^2 - 3x + 2$, find $f(4)$.
2. If $f(x) = x^2 - 3x + 2$, find $f(-2)$.
3. Multiply: $(x + 3)(x - 5)$
4. Make a table for $y = x^2$ using $x = -2, -1, 0, 1, 2$. Write the ordered pairs.

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Name:

Date:

exit ticket

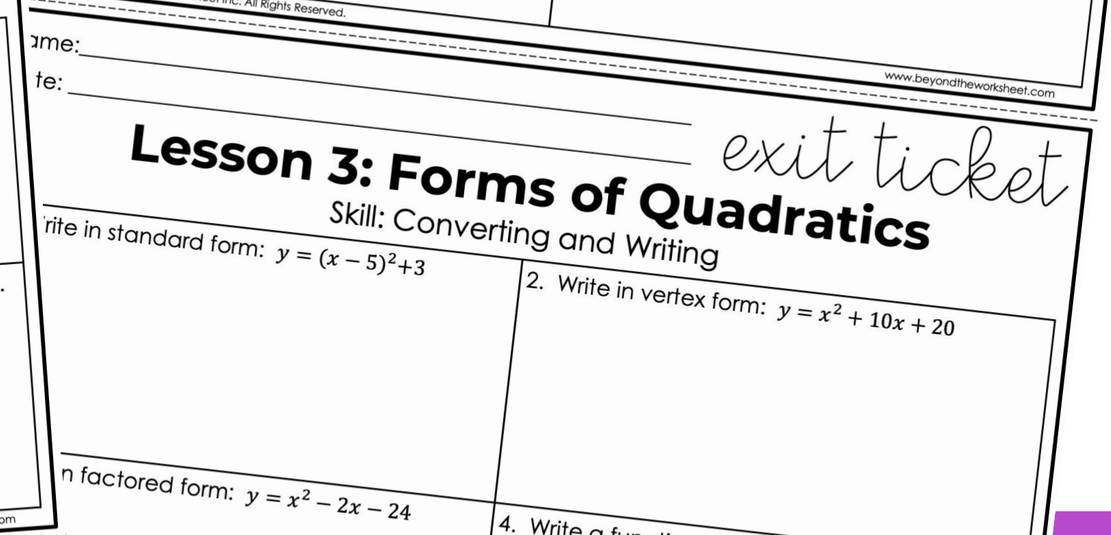
Lesson 3: Forms of Quadratics

Skill: Forms and Key Features

1. Find the vertex of $y = -4(x - 7)^2 + 2$.
2. Find the zeros of $y = (x + 8)(x - 3)$.
3. Find the y-intercept of $y = 2(x - 1)^2 - 5$.
4. Describe the transformations of $y = x^2$ that give $y = (x + 1)^2 - 6$.

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ame:

te:

exit ticket

Lesson 3: Forms of Quadratics

Skill: Converting and Writing

rite in standard form: $y = (x - 5)^2 + 3$

2. Write in vertex form: $y = x^2 + 10x + 20$

n factored form: $y = x^2 - 2x - 24$

4. Write a fu

STUDENT FRIENDLY NOTES

- The notes provide students with a place to review the proper steps for each operation as well as guided practice.

Name: _____ Date: _____

FORMS OF QUADRATICS *notes*

The Three Forms of a Quadratic Function

Form	Equation	What you can see quickly
Standard	$y = ax^2 + bx + c$	
Vertex	$y = a(x - h)^2 + k$	
Factored (intercept)	$y = a(x - p)(x - q)$	

In every form:

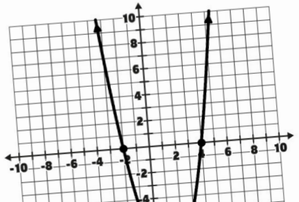
- a tells the direction and width.
  - $a > 0$: opens up
  - $a < 0$: opens down
  - $|a| > 1$: narrower than $y = x^2$.
  - $0 < |a| < 1$: wider.

Example: These three equations describe the same parabola.

Standard: $y = x^2 - 2x - 8$ → y-intercept _____

Vertex: $y = (x - 1)^2 - 9$ → vertex _____

Factored: $y = (x - 4)(x + 2)$ → zeros _____ and _____



Name: _____ Date: _____

QUADRATIC FUNCTION

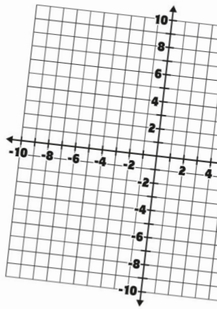
What Is a Quadratic Function?

- **Key Concept:** A _____ can be written in _____ $f(x) = ax^2 +$ where $a \neq 0$. The greatest exponent is ____.
- The graph of a quadratic function is a U-shaped curve called a _____.
- The parent function is _____.

Try it: Complete the table. Then graph $y = x^2$.

x	-3	-2	-1	0	1	2	3
y							

hat do you notice about the y-values on each side of $x = 0$?



r or Quadratic?

the x-values in a table go up by the same amount, look at the differences in the y-valu

ır: the _____ differences are the same.

'ratic: the _____ differences are the same.

Find the first and second differences.

	0	1	2	3	4
	1	4	9	16	25
ces					
ces					

The second differences are all ___ so the function is _____

function linear, quadratic, or neither? Explain.

2) $y = 3x(x - 4)$

linear
quadratic
neither

3) $y = (x + 2)^2 - x^2$

linear
quadratic
neither

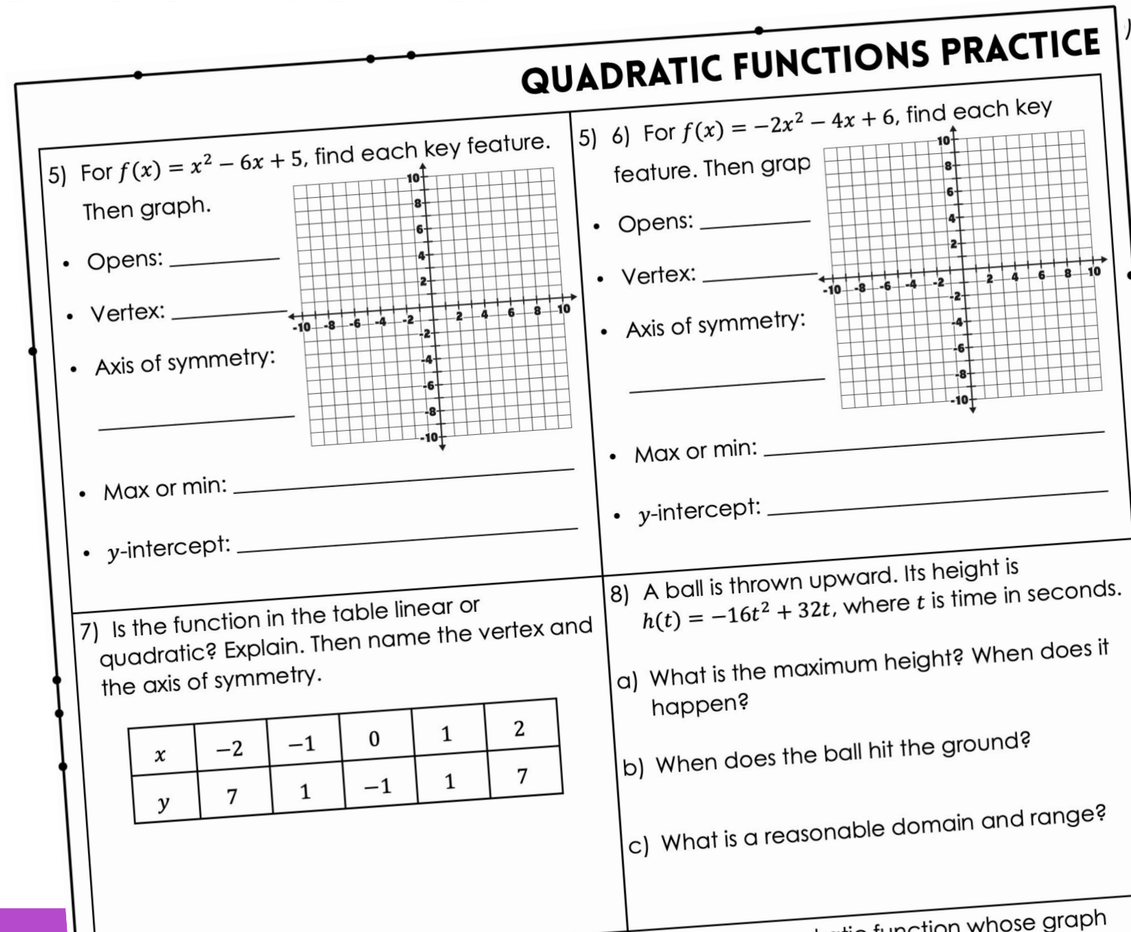
4)

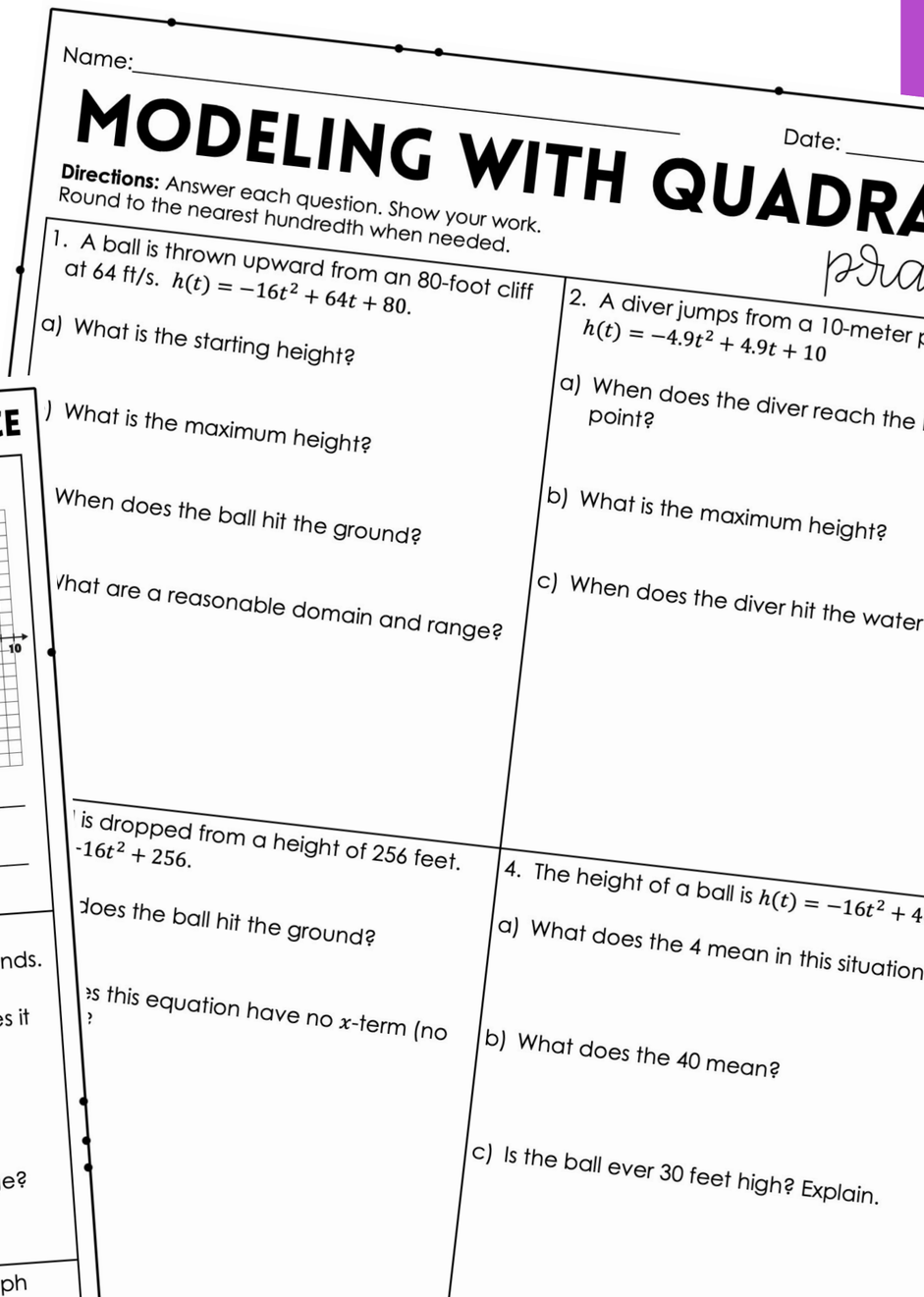
linear
quadratic
neither

x	y
0	2
1	

PRACTICE WORKSHEETS

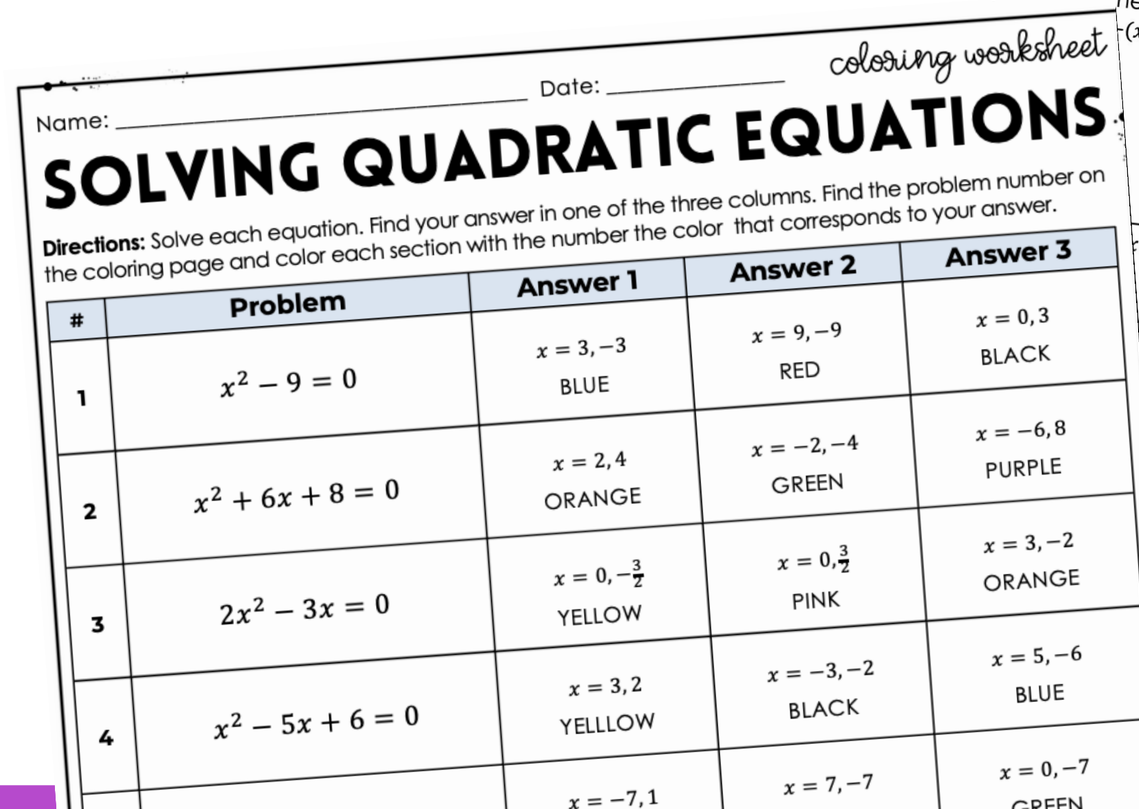
- Each skill includes a worksheet for independent practice and skill reinforcement.





ACTIVITIES AND ASSESSMENTS

- Stations and a coloring page are included.
- Pre and Post-Assessments are included along with quizzes.

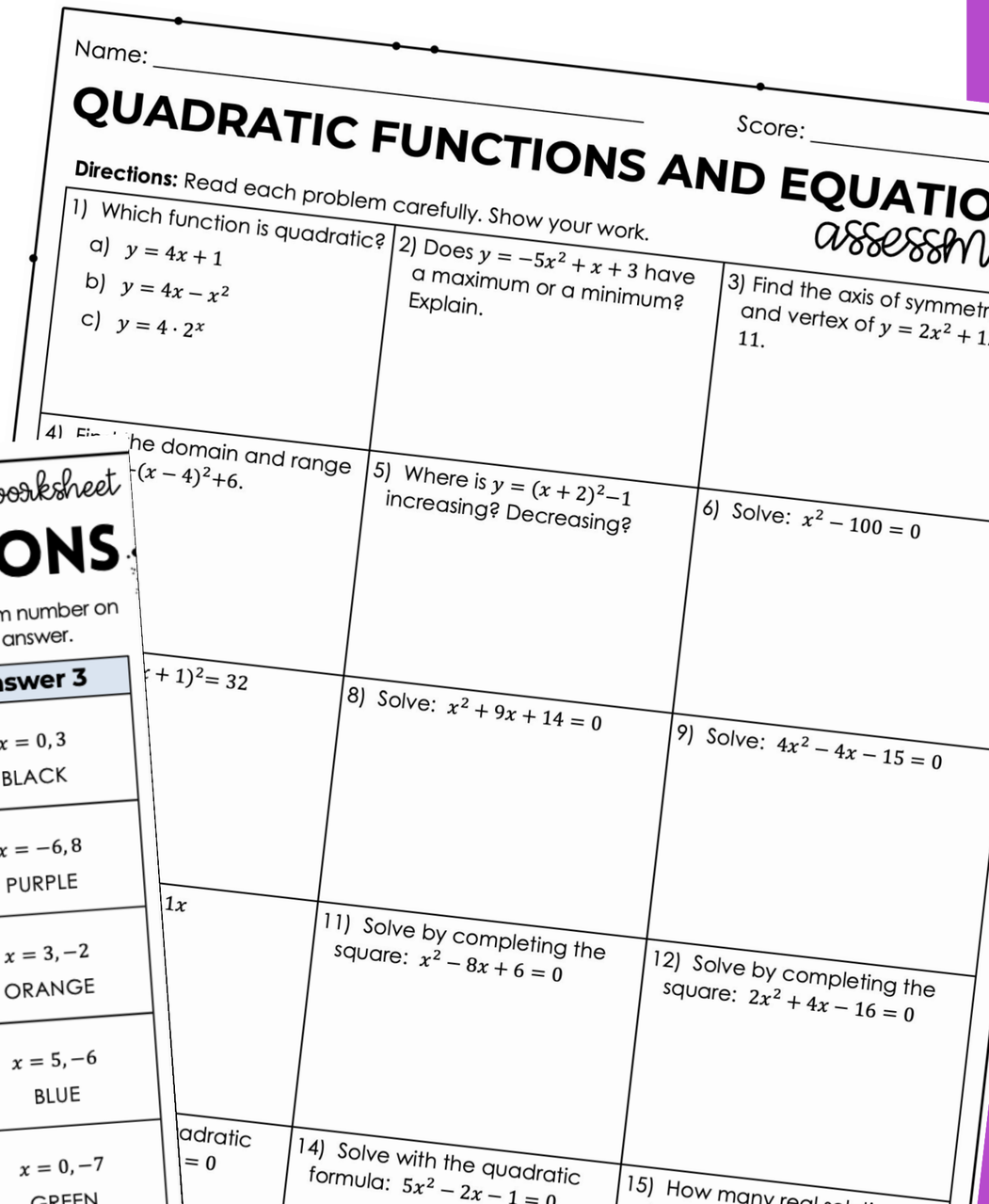


Name: _____ Date: _____ coloring worksheet

SOLVING QUADRATIC EQUATIONS

Directions: Solve each equation. Find your answer in one of the three columns. Find the problem number on the coloring page and color each section with the number the color that corresponds to your answer.

#	Problem	Answer 1	Answer 2	Answer 3
1	$x^2 - 9 = 0$	$x = 3, -3$ BLUE	$x = 9, -9$ RED	$x = 0, 3$ BLACK
2	$x^2 + 6x + 8 = 0$	$x = 2, 4$ ORANGE	$x = -2, -4$ GREEN	$x = -6, 8$ PURPLE
3	$2x^2 - 3x = 0$	$x = 0, -\frac{3}{2}$ YELLOW	$x = 0, \frac{3}{2}$ PINK	$x = 3, -2$ ORANGE
4	$x^2 - 5x + 6 = 0$	$x = 3, 2$ YELLLOW	$x = -3, -2$ BLACK	$x = 5, -6$ BLUE
		$x = -7, 1$	$x = 7, -7$	$x = 0, -7$ GREEN



Name: _____ Score: _____

QUADRATIC FUNCTIONS AND EQUATIO

assessm

Directions: Read each problem carefully. Show your work.

1) Which function is quadratic?
   a) $y = 4x + 1$
   b) $y = 4x - x^2$
   c) $y = 4 \cdot 2^x$

2) Does $y = -5x^2 + x + 3$ have a maximum or a minimum? Explain.

3) Find the axis of symmetr and vertex of $y = 2x^2 + 1$ 11.

4) Fi he domain and range $-(x-4)^2+6$.

5) Where is $y = (x+2)^2 - 1$ increasing? Decreasing?

6) Solve: $x^2 - 100 = 0$

$+1)^2 = 32$

8) Solve: $x^2 + 9x + 14 = 0$

9) Solve: $4x^2 - 4x - 15 = 0$

$1x$

11) Solve by completing the square: $x^2 - 8x + 6 = 0$

12) Solve by completing the square: $2x^2 + 4x - 16 = 0$

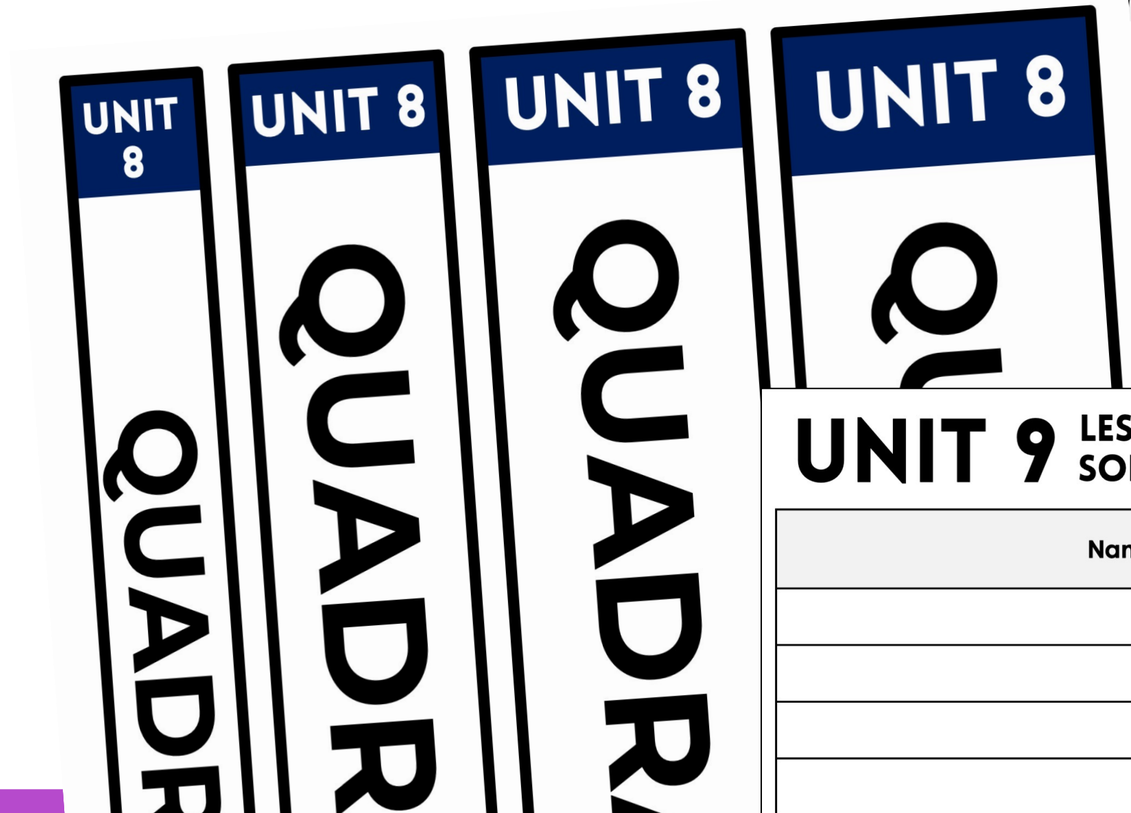
adratic $= 0$

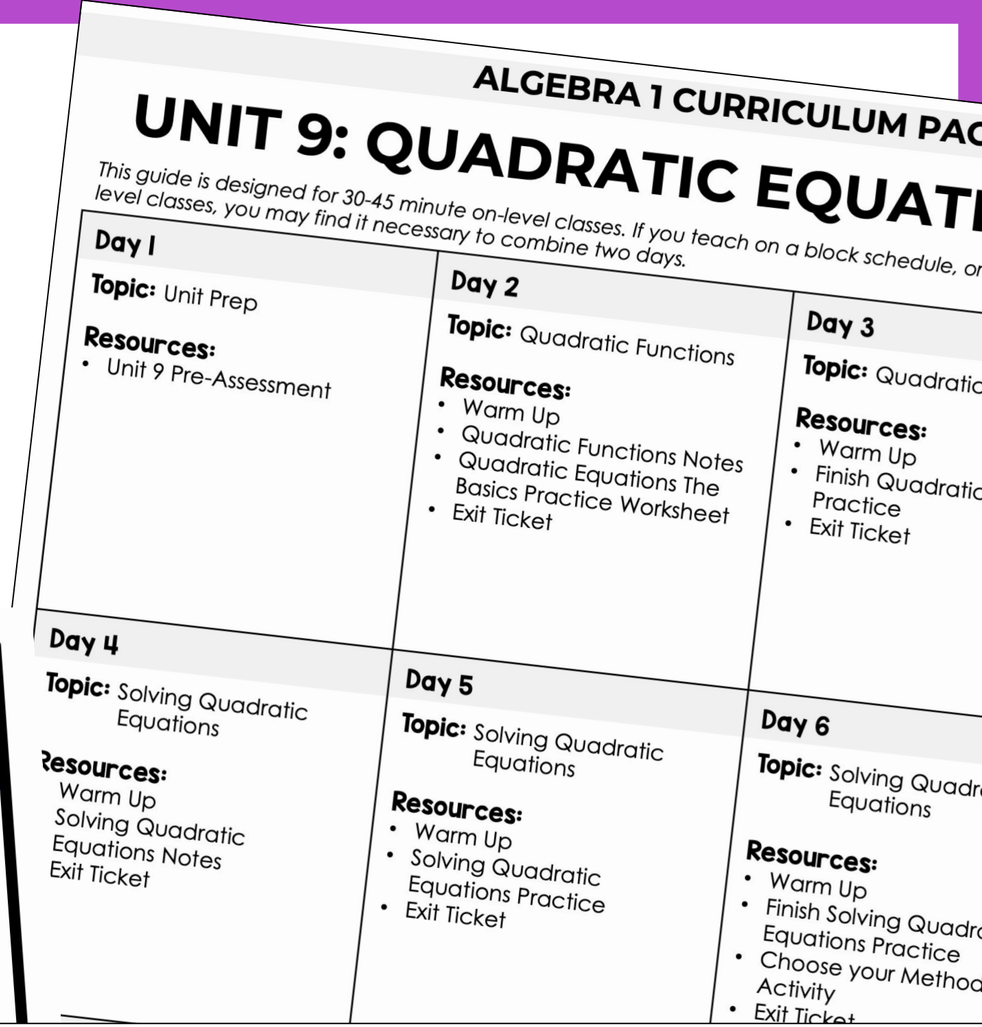
14) Solve with the quadratic formula: $5x^2 - 2x - 1 = 0$

15) How many real

TEACHER RESOURCES

- Pacing guide
- Tracking pages
- Lesson info sheets
- Binder covers and spine labels




ALGEBRA 1 CURRICULUM PAC

UNIT 9: QUADRATIC EQUATI

This guide is designed for 30-45 minute on-level classes. If you teach on a block schedule, or level classes, you may find it necessary to combine two days.

Day 1

Topic: Unit Prep

Resources:
- Unit 9 Pre-Assessment

Day 2

Topic: Quadratic Functions

Resources:
- Warm Up
- Quadratic Functions Notes
- Quadratic Equations The Basics Practice Worksheet
- Exit Ticket

Day 3

Topic: Quadratic

Resources:
- Warm Up
- Finish Quadratic Practice
- Exit Ticket

Day 4

Topic: Solving Quadratic Equations

Resources:
- Warm Up
- Solving Quadratic Equations Notes
- Exit Ticket

Day 5

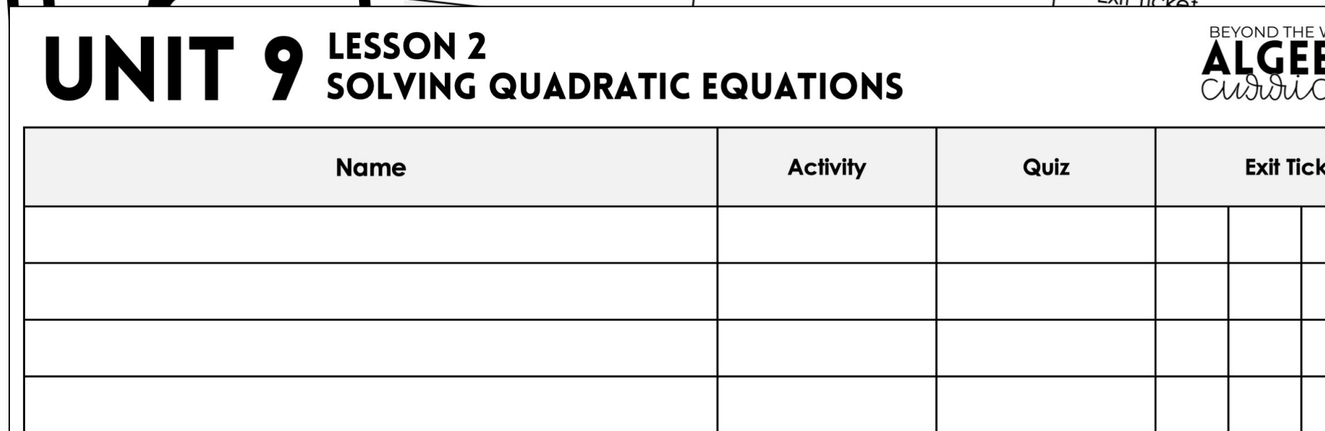
Topic: Solving Quadratic Equations

Resources:
- Warm Up
- Solving Quadratic Equations Practice
- Exit Ticket

Day 6

Topic: Solving Quadra Equations

Resources:
- Warm Up
- Finish Solving Quadra Equations Practice
- Choose your Metho Activity
- Exit Ticket


UNIT 9 LESSON 2
SOLVING QUADRATIC EQUATIONS

BEYOND THE W
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Name	Activity	Quiz	Exit Tick

EVERYTHING INCLUDED:

- Lessons are designed for 30-45 minute on-level classes and may need to be adjusted for longer classes or varied levels.
- Also includes an answer key and editable version.

UNIT 9

ALGEBRA 1 curriculum
BEYOND THE WORKSHEET

Quadratic Functions and Equations

Lesson	Resources	
Unit Prep (pgs. 3 – 10)	• Weekly Warm Up Sheet • Exit Tickets • Lesson Plan Template	• Vocabulary Sheets • Pre-Assessment
Quadratic Functions (pgs. 11 – 18)	• Two Warm Ups • Quadratic Functions Notes	• Quadratic Functions Practice Worksheet • Two Exit Tickets
Solving Quadratic Equations (pgs. 19 – 32)	• Four Warm Ups • Solving Quadratic Equations Notes • Solving Quadratic Equations Practice Worksheet	• Choose Your Method Activity • Solving Quadratic Equations Quiz • Four Exit Tickets
Forms of Quadratic Functions (pgs. 33 – 41)	• Two Warm Ups • Forms of Quadratic Functions Notes	• Forms of Quadratic Functions Practice Worksheet • Two Exit Tickets
Modeling with Quadratics (pgs. 42 – 49)	• Two Warm Ups • Modeling with Quadratics Notes • Modeling with Quadratics Practice Worksheet	• Quadratic Functions Quiz • Two Exit Tickets
End of Unit (pgs. 50 – 54)	• Study Guide • BINGO Review Game • Review Cube • Unit Exam / Post-Assessment	

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Have questions?

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