

Algebra 1
Quadratic Zeros and Factored Form

Quadratic Zeros and Factored Form | A1-U09-P05

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
06	Full Worked Solutions	96 solutions
07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus
This topic is a focused set of 96 practice tasks on Quadratic Zeros and Factored Form.
8 PDFs and a README; 109 buyer pages.

Algebra 1

Quadratic Zeros and Factored Form

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

State the zero and its multiplicity. Match the complete original zero set, factored function, contact description, or parameter solution set. Preserve multiplicity and any required orientation or verification. <table border="1" data-bbox="151 577 795 613"> <tr> <td>Function</td> <td>$g(x) = (x - 4)^2$</td> </tr> </table> Bank label: _____	Function	$g(x) = (x - 4)^2$	Express the rule as repeated factors and state the zero data. Match the complete original zero set, factored function, contact description, or parameter solution set. Preserve multiplicity and any required orientation or verification. <table border="1" data-bbox="824 598 1469 634"> <tr> <td>Function</td> <td>$f(x) = 5x^2$</td> </tr> </table> Bank label: _____	Function	$f(x) = 5x^2$
Function	$g(x) = (x - 4)^2$				
Function	$f(x) = 5x^2$				
Give the zero and multiplicity. Match the complete original zero set, factored function, contact description, or parameter solution set. Preserve multiplicity and any required orientation or verification. <table border="1" data-bbox="151 913 795 949"> <tr> <td>Function</td> <td>$f(x) = (4x + 1)^2$</td> </tr> </table> Bank label: _____	Function	$f(x) = (4x + 1)^2$	State all zero information, including multiplicity. Match the complete original zero set, factored function, contact description, or parameter solution set. Preserve multiplicity and any required orientation or verification. <table border="1" data-bbox="824 934 1469 970"> <tr> <td>Function</td> <td>$f(x) = -9(2x - 5)(2x - 5)$</td> </tr> </table> Bank label: _____	Function	$f(x) = -9(2x - 5)(2x - 5)$
Function	$f(x) = (4x + 1)^2$				
Function	$f(x) = -9(2x - 5)(2x - 5)$				

Algebra 1

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Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

Identify the zeros and explain the role of 7. <table border="1" data-bbox="151 527 794 562"> <tr> <td>Function</td> <td>$f(x) = 7(x - 1)(x - 6)$</td> </tr> </table> 	Function	$f(x) = 7(x - 1)(x - 6)$	Give the x-intercepts from the factored rule. <table border="1" data-bbox="828 527 1471 562"> <tr> <td>Function</td> <td>$f(x) = -2(x + 1)(x - 8)$</td> </tr> </table> 	Function	$f(x) = -2(x + 1)(x - 8)$
Function	$f(x) = 7(x - 1)(x - 6)$				
Function	$f(x) = -2(x + 1)(x - 8)$				
Determine the x-intercepts. <table border="1" data-bbox="151 953 794 989"> <tr> <td>Function</td> <td>$f(x) = (5 - x)(3x + 6)$</td> </tr> </table> 	Function	$f(x) = (5 - x)(3x + 6)$	State where outputs are positive, negative, and zero. <table border="1" data-bbox="828 953 1471 989"> <tr> <td>Function</td> <td>$f(x) = (x + 2)(x - 5)$</td> </tr> </table> 	Function	$f(x) = (x + 2)(x - 5)$
Function	$f(x) = (5 - x)(3x + 6)$				
Function	$f(x) = (x + 2)(x - 5)$				
Give the sign pattern across the two zeros. <table border="1" data-bbox="151 1379 794 1415"> <tr> <td>Function</td> <td>$f(x) = -3(x - 1)(x - 4)$</td> </tr> </table> 	Function	$f(x) = -3(x - 1)(x - 4)$	Describe the sign on both sides of the double root. <table border="1" data-bbox="828 1379 1471 1415"> <tr> <td>Function</td> <td>$f(x) = 2(x + 3)^2$</td> </tr> </table> 	Function	$f(x) = 2(x + 3)^2$
Function	$f(x) = -3(x - 1)(x - 4)$				
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Algebra 1

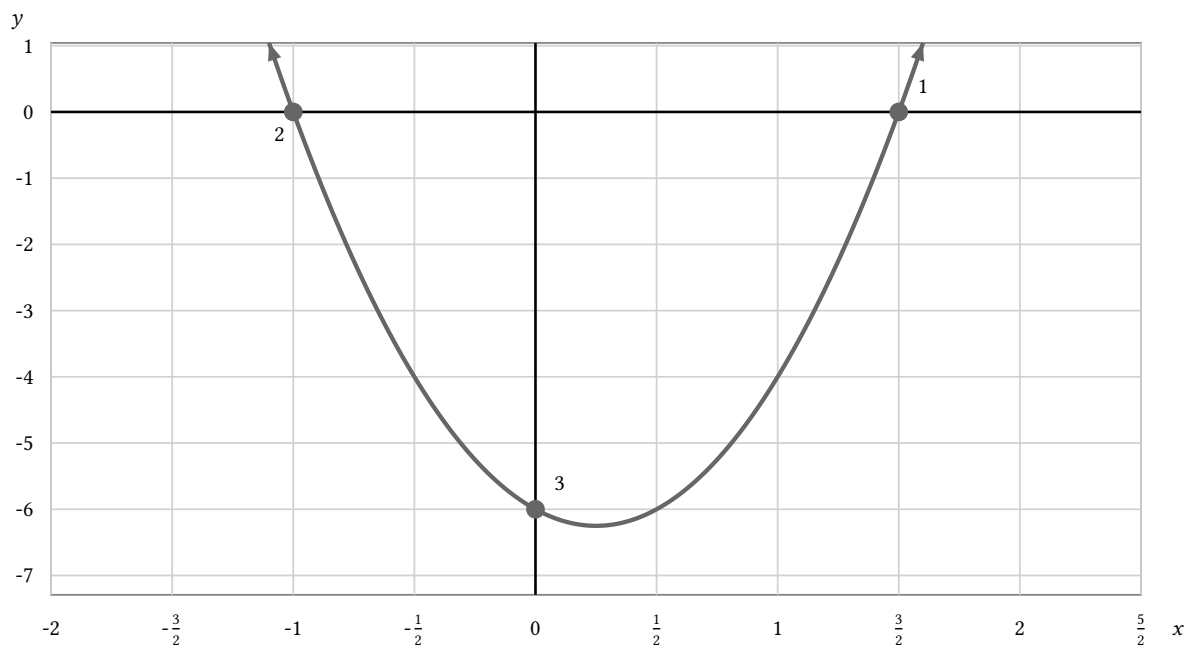
Quadratic Zeros and Factored Form

Name: _____ Date: _____ Class: _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: $f(x) = 6(x - \frac{1}{3})(x - 2)$

Give a factored rule using integer-coefficient linear factors. Match the complete original zero set, factored function, contact description, or parameter solution set. Preserve multiplicity and any required orientation or verification.



Marker	Exact coordinate	Boundary status
1	$(\frac{3}{2}, 0)$	included
2	$(-1, 0)$	included
3	$(0, -6)$	included

Graph	X intercepts	$\frac{3}{2}, 0, -1, 0$
	Exact point	$0, -6$
Scales	x	$\frac{1}{2}$
	y	1

Your response: _____

Algebra 1

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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Construct the quadratic in factored form. Choose between using the root factors with one unknown scale or solving for standard-form coefficients from the same data. Explain which setup is more economical, then give the originally requested factored rule and verify the point and roots.

Zeros	$-2, 3$
Point	$0, -6$

Use the two zero rows and the remaining row to find the rule. Choose between using the root factors with one unknown scale or solving for standard-form coefficients from the same data. Explain which setup is more economical, then give the originally requested factored rule and verify the point and roots.

Input	Output
1	0
5	0
0	10

Quadratic Zeros and Factored Form

Full Worked Solutions - excerpt

Worked example

Problem. Normalize the factors and give the complete sign chart.

Function	$f(x) = (4x + 8)(3x - 9)$
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Answer. negative: $(-2, 3)$; positive: $(-\infty, -2)$ union $(3, \infty)$; zero: $-2, 3$

Explanation and check.

The factors are $4(x + 2)$ and $3(x - 3)$; their scalar product is positive.

Worked example

Problem. State the sign without treating 4 as two interval boundaries.

Function	$f(x) = (2x - 8)(5x - 20)$
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Answer. negative: none; positive: $(-\infty, 4)$ union $(4, \infty)$; zero: 4

Explanation and check.

Both factors are positive multiples of $x - 4$, so their product is a positive square multiple.