

Algebra 1
Solving Quadratics by Factoring

Solving Quadratics by Factoring | A1-U09-P07

96 problems · Four activity formats

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Topic focus
This topic is a focused set of 96 practice tasks on Solving Quadratics by Factoring.
8 PDFs and a README; 49 buyer pages.

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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.

Solve the product equation and list both roots. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $(x - 2)(x + 5) = 0$ _____ Bank label: _____	Find the complete solution set without dividing by x. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $x(x - 7) = 0$ _____ Bank label: _____
Solve each linear factor equation. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $(2x - 3)(x + 1) = 0$ _____ Bank label: _____	Explain whether the outside -3 changes the roots. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $-3(x + 2)(x - 6) = 0$ _____ Bank label: _____
Solve by separating the two factor equations. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $(x - 9)(x + 9) = 0$ _____ Bank label: _____	Keep every root of the product. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $4x(3x + 2) = 0$ _____ Bank label: _____
Solve the nonmonic factor equations exactly. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $(3x + 4)(2x - 5) = 0$ _____ Bank label: _____	Account for the reversed second factor. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $7(x - 3)(5 - x) = 0$ _____ Bank label: _____

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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: factorization: $(-\frac{x}{7})(5 - 3x)$; solutions: $0, \frac{5}{3}$ Factor the nonmonic trinomial and solve exactly. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $2x^2 + 7x + 3 = 0$ Your response: _____	Incoming: factorization: $(3x + 1)(x - 2)$; solutions: $-\frac{1}{3}, 2$ Use nonmonic linear factors to solve. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $6x^2 + x - 2 = 0$ Your response: _____
Incoming: cross terms: $-15x + 8x = -7x$; factorization: $(3x + 4)(2x - 5) = 0$; solutions: $-\frac{4}{3}, \frac{5}{2}$ Factor with product -120 and solve. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $20x^2 + 7x - 6 = 0$ Your response: _____	Incoming: factorization: $2(2x - 1)(2x + 1)$; solutions: $-\frac{1}{2}, \frac{1}{2}$ Factor by coordinating the cross terms. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $10x^2 - 17x + 3 = 0$ Your response: _____
Incoming: factorization: $(x + 8)(x + 3)$; solutions: $-8, -3$ Use two factors with leading term $2x$. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $4x^2 + 4x - 15 = 0$ Your response: _____	Incoming: factorization: $5(x - 3)(x + 3)$; solutions: $-3, 3$ Factor completely before solving. Match the complete solution set while showing the original required normalized equation, factorization and zero-product branches. Equation: $3x^2 + 12x + 9 = 0$ Your response: _____

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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.

Factor the trinomial and solve. Choose a factoring setup: test integer binomial factor pairs directly, or split the middle term using a product-sum pair. Explain which is efficient for this equation, then finish the original factor-and-solve task with every zero-product branch.

Equation: $x^2 + 5x + 6 = 0$

Use a factor pair with product -12 . Choose a factoring setup: test integer binomial factor pairs directly, or split the middle term using a product-sum pair. Explain which is efficient for this equation, then finish the original factor-and-solve task with every zero-product branch.

Equation: $x^2 - x - 12 = 0$

Recognize the difference of squares and solve. Choose a factoring setup: test integer binomial factor pairs directly, or split the middle term using a product-sum pair. Explain which is efficient for this equation, then finish the original factor-and-solve task with every zero-product branch.

Equation: $x^2 - 9 = 0$

Factor and report distinct roots. Choose a factoring setup: test integer binomial factor pairs directly, or split the middle term using a product-sum pair. Explain which is efficient for this equation, then finish the original factor-and-solve task with every zero-product branch.

Equation: $x^2 + 8x + 16 = 0$

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Full Worked Solutions - excerpt

Worked example

Problem. A student factors correctly as $(2x + 1)(x + 3)$ but solves only $2x + 1 = 0$. Complete the reasoning.

Answer. factorization: $(2x + 1)(x + 3) = 0$; first error: the factor $x + 3$ was never set to zero; solutions: $-3, -\frac{1}{2}$

Explanation and check.

Zero-product reasoning is a union of both factor equations, so -3 must be added to $-\frac{1}{2}$.

Worked example

Problem. A student claims $(x + 4)(x + 3) = 0$. Find the first mismatch and repair the solution.

Equation: $x^2 + x - 12 = 0$ Student Factorization: $(x + 4)(x + 3) = 0$

Answer. correct factorization: $(x + 4)(x - 3) = 0$; first error: the claimed factors expand to $x^2 + 7x + 12$; solutions: $-4, 3$

Explanation and check.

The constant must be -12 and the linear coefficient $+1$; constants 4 and -3 meet both conditions.