

Algebra 1
Factoring Trinomials

Factoring Trinomials | A1-U08-P08
96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
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Topic focus
This topic is a focused set of 96 practice tasks on Factoring Trinomials.
8 PDFs and a README; 64 buyer pages.

Algebra 1

Factoring Trinomials

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.

Factor into binomials whose leading coefficients are both greater than one. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response.

Expression	$6x^2 + 17x + 5$
Coefficient domain	integers

Bank label: _____

Factor the trinomial whose middle coefficient is negative one. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response.

Expression	$6x^2 - x - 15$
Coefficient domain	integers

Bank label: _____

Test the possible constant placements and report the one that matches the middle term. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response.

Expression	$6x^2 + 5x - 4$
Coefficient domain	integers

Bank label: _____

Among the possible leading-coefficient splits, find one that also matches the linear term. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response.

Expression	$12x^2 + 11x + 2$
Coefficient domain	integers

Bank label: _____

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Name: _____ Date: _____ Class: _____

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.

State the signed pair you use and the resulting factorization. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Expression</td> <td>$x^2 + 4x - 45$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> _____ _____	Expression	$x^2 + 4x - 45$	Coefficient domain	integers	Factor over the integers if possible; otherwise state that no such factorization exists. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Expression</td> <td>$x^2 + 6x + 11$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> _____ _____	Expression	$x^2 + 6x + 11$	Coefficient domain	integers		
Expression	$x^2 + 4x - 45$										
Coefficient domain	integers										
Expression	$x^2 + 6x + 11$										
Coefficient domain	integers										
Decide whether the trinomial has integer binomial factors and support the decision with a pair check. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Expression</td> <td>$x^2 - 5x + 8$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> _____ _____	Expression	$x^2 - 5x + 8$	Coefficient domain	integers	Test the integer-pair condition and report the resulting factored form or its absence. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Expression</td> <td>$x^2 + 7x + 13$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> _____ _____	Expression	$x^2 + 7x + 13$	Coefficient domain	integers		
Expression	$x^2 - 5x + 8$										
Coefficient domain	integers										
Expression	$x^2 + 7x + 13$										
Coefficient domain	integers										
Check whether the negative prime constant permits the required integer factorization. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Expression</td> <td>$x^2 - 2x - 17$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> _____ _____	Expression	$x^2 - 2x - 17$	Coefficient domain	integers	Select the one listed pair that meets the linear-coefficient condition and write the factors. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Expression</td> <td>$x^2 - 19x + 84$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> <tr> <td>Candidate pairs</td> <td>-1, -84, -2, -42, -3, -28, -4, -21, -6, -14, -7, -12</td> </tr> </table> _____ _____	Expression	$x^2 - 19x + 84$	Coefficient domain	integers	Candidate pairs	-1, -84, -2, -42, -3, -28, -4, -21, -6, -14, -7, -12
Expression	$x^2 - 2x - 17$										
Coefficient domain	integers										
Expression	$x^2 - 19x + 84$										
Coefficient domain	integers										
Candidate pairs	-1, -84, -2, -42, -3, -28, -4, -21, -6, -14, -7, -12										

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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.

START Factor the displayed monic trinomial over the integers. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Expression</td> <td style="width: 50%; text-align: center;">$x^2 + 5x + 6$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> Your response: _____	Expression	$x^2 + 5x + 6$	Coefficient domain	integers	Incoming: $(x - 2)(x - 7)$. Factor, paying attention to the signs forced by the constant term. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Expression</td> <td style="width: 50%; text-align: center;">$x^2 + 2x - 15$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> Your response: _____	Expression	$x^2 + 2x - 15$	Coefficient domain	integers
Expression	$x^2 + 5x + 6$								
Coefficient domain	integers								
Expression	$x^2 + 2x - 15$								
Coefficient domain	integers								
Incoming: $(x + 4)(x + 9)$. Factor the expression with a positive constant and a negative linear coefficient. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Expression</td> <td style="width: 50%; text-align: center;">$x^2 - 13x + 36$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> Your response: _____	Expression	$x^2 - 13x + 36$	Coefficient domain	integers	Incoming: $(x - 9)(x + 4)$. Identify which pair for the constant also matches the x-coefficient, then factor. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Expression</td> <td style="width: 50%; text-align: center;">$x^2 + 15x + 44$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> Your response: _____	Expression	$x^2 + 15x + 44$	Coefficient domain	integers
Expression	$x^2 - 13x + 36$								
Coefficient domain	integers								
Expression	$x^2 + 15x + 44$								
Coefficient domain	integers								
Incoming: $(x - 4)(x - 11)$. Match an integer pair to the two required conditions and give the product form. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Expression</td> <td style="width: 50%; text-align: center;">$x^2 + 6x - 55$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> Your response: _____	Expression	$x^2 + 6x - 55$	Coefficient domain	integers	Incoming: $(x + 5)(x - 3)$. Find an integer factorization and check its middle term. Match the complete requested integer factorization, including any repeated-factor form; keep the original verification. An expanded trinomial alone is not the requested response. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Expression</td> <td style="width: 50%; text-align: center;">$x^2 - 4x - 21$</td> </tr> <tr> <td>Coefficient domain</td> <td>integers</td> </tr> </table> Your response: _____	Expression	$x^2 - 4x - 21$	Coefficient domain	integers
Expression	$x^2 + 6x - 55$								
Coefficient domain	integers								
Expression	$x^2 - 4x - 21$								
Coefficient domain	integers								

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Name: _____ Date: _____ Class: _____

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 primitive trinomial over the integers. Choose a method before factoring: split the middle term using a product-sum pair, or test integer binomial factors directly. Explain which structure makes your choice efficient, then carry out the original factorization and verify all coefficients.

Expression	$2x^2 + 7x + 3$
Coefficient domain	integers

Write the displayed expression as two integer binomial factors. Choose a method before factoring: split the middle term using a product-sum pair, or test integer binomial factors directly. Explain which structure makes your choice efficient, then carry out the original factorization and verify all coefficients.

Expression	$3x^2 + 14x + 8$
Coefficient domain	integers

Find factors whose mixed-sign cross terms give the required middle coefficient. Choose a method before factoring: split the middle term using a product-sum pair, or test integer binomial factors directly. Explain which structure makes your choice efficient, then carry out the original factorization and verify all coefficients.

Expression	$2x^2 + 7x - 15$
Coefficient domain	integers

Match the cross terms and give the complete integer factorization. Choose a method before factoring: split the middle term using a product-sum pair, or test integer binomial factors directly. Explain which structure makes your choice efficient, then carry out the original factorization and verify all coefficients.

Expression	$2x^2 - 5x - 12$
Coefficient domain	integers

Factoring Trinomials

Full Worked Solutions - excerpt

Worked example

Problem. Test the integer-pair condition and report the resulting factored form or its absence.

Expression	$x^2 + 7x + 13$
Coefficient domain	integers

Answer. No integer factorization is available.

Explanation and check.

Since 13 is prime, only 1 and 13 can be positive factor constants, and their sum 14 does not match 7.

Worked example

Problem. Factor over the integers if possible; otherwise state that no such factorization exists.

Expression	$x^2 + 6x + 11$
Coefficient domain	integers

Answer. No factorization into monic integer binomials exists.

Explanation and check.

The positive pairs for 11 are 1, 11, with sum 12; changing both signs gives -12 . Neither sum is 6.