

Algebra 1
Polynomial Products, Identities & Area Models | Algebra 1 |
4-Topic Bundle

4-topic bundle | 384 problems | Four activity formats

- 01 Monomial Times Polynomial**
View individual product and its full preview
- 02 Multiplying Binomials and Larger Polynomials**
View individual product and its full preview
- 03 Special Binomial Products**
View individual product and its full preview
- 04 Polynomial Identities and Area Models**
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-

In every topic

Answer Bank Challenge	24 tasks
Grid Rounds	24 tasks
Match & Move	24 cards
Error Analysis & Strategy	24 tasks
Quick Answer Key and Full Worked Solutions	included
Teacher / Parent Use Guide and Terms of Use	included

Product previews

The following preview pages show the cover, all four activity formats, and worked examples for each included resource, in the listed order.

32 PDFs and 4 READMEs; 327 buyer PDF pages across the 4 products.

Preview pages are not included in the buyer page count. Check the list against resources you already own.

This is a fixed collection of the listed products. Purchase includes the existing individual resource files. To open a product's online preview, follow its title link and select View Preview.

Algebra 1
Monomial Times Polynomial

Monomial Times Polynomial | A1-U08-P04

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 Monomial Times Polynomial.
8 PDFs and a README; 68 buyer pages.

Algebra 1

Monomial Times Polynomial

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Form three exact products while keeping c and d exponent sums separate. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="152 537 797 569"> <tr> <td>Expression</td> <td>$7c^2d(-2c^3 + 3cd - d^2)$</td> </tr> </table> _____ Bank label: _____	Expression	$7c^2d(-2c^3 + 3cd - d^2)$	Apply the same r^2s^3 factor to every inside term. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="829 512 1471 543"> <tr> <td>Expression</td> <td>$3r^2s^3(2rs - 5s^2 + 4)$</td> </tr> </table> _____ Bank label: _____	Expression	$3r^2s^3(2rs - 5s^2 + 4)$
Expression	$7c^2d(-2c^3 + 3cd - d^2)$				
Expression	$3r^2s^3(2rs - 5s^2 + 4)$				
Expand, taking special care with the negative middle term. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="152 873 797 905"> <tr> <td>Expression</td> <td>$-2x^2y(3xy^2 - 4x^2 + y^3)$</td> </tr> </table> _____ Bank label: _____	Expression	$-2x^2y(3xy^2 - 4x^2 + y^3)$	Multiply the outside monomial by the two variable terms and the constant. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="829 873 1471 905"> <tr> <td>Expression</td> <td>$4ab^3(-a^2b + 2ab^2 - 3)$</td> </tr> </table> _____ Bank label: _____	Expression	$4ab^3(-a^2b + 2ab^2 - 3)$
Expression	$-2x^2y(3xy^2 - 4x^2 + y^3)$				
Expression	$4ab^3(-a^2b + 2ab^2 - 3)$				
Distribute $-8r^2s$ and simplify both fractional coefficient products. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="152 1209 797 1241"> <tr> <td>Expression</td> <td>$-8r^2s((\frac{1}{4})r^3s^2 - (\frac{1}{2})rs + 3)$</td> </tr> </table> _____ Bank label: _____	Expression	$-8r^2s((\frac{1}{4})r^3s^2 - (\frac{1}{2})rs + 3)$	Multiply each decimal coefficient and preserve the c-d exponent pattern. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="829 1209 1471 1241"> <tr> <td>Expression</td> <td>$2.5cd^2(4c^2 - 1.2cd + 0.8d^2)$</td> </tr> </table> _____ Bank label: _____	Expression	$2.5cd^2(4c^2 - 1.2cd + 0.8d^2)$
Expression	$-8r^2s((\frac{1}{4})r^3s^2 - (\frac{1}{2})rs + 3)$				
Expression	$2.5cd^2(4c^2 - 1.2cd + 0.8d^2)$				
Track four sign interactions produced by the negative outside factor. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="152 1545 797 1577"> <tr> <td>Expression</td> <td>$-7mn^2(-2m^3 + 3mn - 5n^2 + 1)$</td> </tr> </table> _____ Bank label: _____	Expression	$-7mn^2(-2m^3 + 3mn - 5n^2 + 1)$	Produce one exact product for each of the four sparse terms. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="829 1545 1471 1577"> <tr> <td>Expression</td> <td>$2p^2q^3(3p^4 - 2p^2q + q^2 - 6)$</td> </tr> </table> _____ Bank label: _____	Expression	$2p^2q^3(3p^4 - 2p^2q + q^2 - 6)$
Expression	$-7mn^2(-2m^3 + 3mn - 5n^2 + 1)$				
Expression	$2p^2q^3(3p^4 - 2p^2q + q^2 - 6)$				

Algebra 1

Monomial Times Polynomial

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. A value without its unit is not a complete answer.

A one-row product table has row factor $3x$. Fill the missing cell under the column term $-x$. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px 10px;">$\times$</td> <td style="padding: 2px 10px;">$2x^2$</td> <td style="padding: 2px 10px;">$-x$</td> <td style="padding: 2px 10px;">4</td> </tr> <tr> <td style="padding: 2px 10px;">$3x$</td> <td style="padding: 2px 10px;">$6x^3$</td> <td style="padding: 2px 10px;">_____</td> <td style="padding: 2px 10px;">$12x$</td> </tr> </table>	$\times$	$2x^2$	$-x$	4	$3x$	$6x^3$	_____	$12x$	The diagram sends the common factor $-2a^2$ to each of three column terms. What belongs in the branch ending at b? <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px 10px;">$\times$</td> <td style="padding: 2px 10px;">$3a$</td> <td style="padding: 2px 10px;">-4</td> <td style="padding: 2px 10px;">b</td> </tr> <tr> <td style="padding: 2px 10px;">$-2a^2$</td> <td style="padding: 2px 10px;">$-6a^3$</td> <td style="padding: 2px 10px;">$8a^2$</td> <td style="padding: 2px 10px;">_____</td> </tr> </table>	$\times$	$3a$	-4	b	$-2a^2$	$-6a^3$	$8a^2$	_____
$\times$	$2x^2$	$-x$	4														
$3x$	$6x^3$	_____	$12x$														
$\times$	$3a$	-4	b														
$-2a^2$	$-6a^3$	$8a^2$	_____														
Use the labeled row factor and the middle product cell to recover the missing column term. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px 10px;">$\times$</td> <td style="padding: 2px 10px;">$2m^2$</td> <td style="padding: 2px 10px;">?</td> <td style="padding: 2px 10px;">4</td> </tr> <tr> <td style="padding: 2px 10px;">$5m$</td> <td style="padding: 2px 10px;">$10m^3$</td> <td style="padding: 2px 10px;">$-15m^2$</td> <td style="padding: 2px 10px;">$20m$</td> </tr> </table>	$\times$	$2m^2$	?	4	$5m$	$10m^3$	$-15m^2$	$20m$	Exactly one cell in the row does not equal its row factor times column term. Identify and repair it. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px 10px;">$\times$</td> <td style="padding: 2px 10px;">$2p$</td> <td style="padding: 2px 10px;">-3</td> <td style="padding: 2px 10px;">q</td> </tr> <tr> <td style="padding: 2px 10px;">$4p^2$</td> <td style="padding: 2px 10px;">$8p^3$</td> <td style="padding: 2px 10px;">$-12p$</td> <td style="padding: 2px 10px;">$4p^2q$</td> </tr> </table>	$\times$	$2p$	-3	q	$4p^2$	$8p^3$	$-12p$	$4p^2q$
$\times$	$2m^2$	?	4														
$5m$	$10m^3$	$-15m^2$	$20m$														
$\times$	$2p$	-3	q														
$4p^2$	$8p^3$	$-12p$	$4p^2q$														

Algebra 1

Monomial Times Polynomial

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: $-6t^5 - 2.4t^3 + 12t$. Reduce the denominator 5 against each coefficient and combine powers. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="151 604 795 646"> <tr> <td>Expression</td> <td>$(\frac{3}{5})p^2q(10p^3 - 5pq^2 + 15q)$</td> </tr> </table> Your response: _____	Expression	$(\frac{3}{5})p^2q(10p^3 - 5pq^2 + 15q)$	Incoming: $-5x^6 + 2x^4 - x^3 + 9x^2$. Scale the three coefficients by 1.5 and combine matching bases. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="828 604 1469 646"> <tr> <td>Expression</td> <td>$1.5pq^2(2p^3 - 4pq + 6q^2)$</td> </tr> </table> Your response: _____	Expression	$1.5pq^2(2p^3 - 4pq + 6q^2)$
Expression	$(\frac{3}{5})p^2q(10p^3 - 5pq^2 + 15q)$				
Expression	$1.5pq^2(2p^3 - 4pq + 6q^2)$				
Incoming: $6m^7 - 12m^5 + 3m^3 - 18m^2$. State the expanded result and explain what happens to the four distinct terms. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="151 1039 795 1081"> <tr> <td>Expression</td> <td>$0(7x^6 - 3x^2y + 5y^4 - 11)$</td> </tr> </table> Your response: _____	Expression	$0(7x^6 - 3x^2y + 5y^4 - 11)$	Incoming: $-1.5y^2 + y$. Expand the three groups separately and then total each degree column. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="828 1039 1469 1081"> <tr> <td>Expression</td> <td>$2t(t^2 - t + 3) + 3t(-t^2 + 2t - 1) - t(t^2 + 4)$</td> </tr> </table> Your response: _____	Expression	$2t(t^2 - t + 3) + 3t(-t^2 + 2t - 1) - t(t^2 + 4)$
Expression	$0(7x^6 - 3x^2y + 5y^4 - 11)$				
Expression	$2t(t^2 - t + 3) + 3t(-t^2 + 2t - 1) - t(t^2 + 4)$				
Incoming: $3y^5 - 2y^3 + 4y^2$. Multiply the decimal factor across the sparse polynomial. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="151 1465 795 1507"> <tr> <td>Expression</td> <td>$-1.2t(5t^4 + 2t^2 - 10)$</td> </tr> </table> Your response: _____	Expression	$-1.2t(5t^4 + 2t^2 - 10)$	Incoming: $-2t^3 + 4t^2 - t$. After distributing, determine the single term left by cancellation. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements. <table border="1" data-bbox="828 1465 1469 1507"> <tr> <td>Expression</td> <td>$4c(c^2 - d) + 2c(-2c^2 + 3d)$</td> </tr> </table> Your response: _____	Expression	$4c(c^2 - d) + 2c(-2c^2 + 3d)$
Expression	$-1.2t(5t^4 + 2t^2 - 10)$				
Expression	$4c(c^2 - d) + 2c(-2c^2 + 3d)$				

Algebra 1

Monomial Times Polynomial

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.

Distribute the monomial to both terms. Choose a distribution organization: use a one-row partial-product table, or connect the outside monomial to each signed term directly in order. Explain your choice, use it, and retain every original sign and requested term order.

Expression	$2x(x + 3)$
------------	-------------

Apply the outside factor to the variable term and the constant. Choose a distribution organization: use a one-row partial-product table, or connect the outside monomial to each signed term directly in order. Explain your choice, use it, and retain every original sign and requested term order.

Expression	$3a(a - 4)$
------------	-------------

Track the negative multiplier across the entire binomial. Choose a distribution organization: use a one-row partial-product table, or connect the outside monomial to each signed term directly in order. Explain your choice, use it, and retain every original sign and requested term order.

Expression	$-2m(m + 5)$
------------	--------------

Find both partial products and give the expanded polynomial. Choose a distribution organization: use a one-row partial-product table, or connect the outside monomial to each signed term directly in order. Explain your choice, use it, and retain every original sign and requested term order.

Expression	$4p(2p + 1)$
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Monomial Times Polynomial

Full Worked Solutions - excerpt

Worked example

Problem. Expand the product and verify whether every resulting term has the same total degree.

Expression	$5a^2b(-2a^3b^2 + 3ab^4 - 4b^5)$
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Answer. $-10a^5b^3 + 15a^3b^5 - 20a^2b^6$; every term has total degree 8.

Explanation and check.

Distribution gives the three monomials shown. Their exponent sums are $5 + 3$, $3 + 5$, and $2 + 6$, each equal to 8.

Worked example

Problem. State the expanded result and explain what happens to the four distinct terms. Use the complete expanded and simplified polynomial as the matching response, retaining the original distribution order and sign requirements.

Expression	$0(7x^6 - 3x^2y + 5y^4 - 11)$
------------	-------------------------------

Answer. 0.

Explanation and check.

Every partial product has factor 0, so all four terms become 0 and their sum is the zero polynomial.

Algebra 1
Multiplying Binomials and Larger Polynomials

Multiplying Binomials and Larger Polynomials | A1-U08-P05

96 problems · Four activity formats

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Topic focus
This topic is a focused set of 96 practice tasks on Multiplying Binomials and Larger Polynomials.
8 PDFs and a README; 56 buyer pages.

Algebra 1

Multiplying Binomials and Larger Polynomials

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Multiply all four term pairs and keep unlike x-y monomials separate. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(2x - 1)(x^2 + 3y)$ _____ Bank label: _____	Expand the four products and do not merge terms with different total degrees. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(3a + 2b^2)(a - b)$ _____ Bank label: _____
Generate every row-column pairing and order the resulting monomials by total degree. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(m^2 - 3n)(2m + n^2)$ _____ Bank label: _____	Expand the product, tracking the negative quadratic term through both columns. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(-2p^2 + q)(p + 4q^2)$ _____ Bank label: _____
Multiply all four term pairs and retain both rs and rs^2 as distinct terms. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(5r - 2s^2)(-r + 3s)$ _____ Bank label: _____	Create the complete four-product expansion for the two high-degree binomials. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(x^3 + 2y)(2x^2 - 3y^2)$ _____ Bank label: _____
Expand the product and explain which two partial products create the quadratic coefficient. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(-3x^2 + 2x)(4x - 5)$ _____ Bank label: _____	Expand and order the four monomials by total degree, breaking ties by the exponent of a. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(2a^3 - 3b)(-a^2 + 4b^2)$ _____ Bank label: _____

Algebra 1

Multiplying Binomials and Larger Polynomials

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. A value without its unit is not a complete answer.

Expand the product and report how the two mn contributions determine the final mixed coefficient. Expression: $(3m + 2n)(2m - 3n)$ _____ _____	Expand the product first, then evaluate the resulting polynomial at $r = -2$. Expression: $(2r^2 - 3)(r + 4)$ Evaluation: $r = -2$ _____ _____																		
Write the four-term expansion, then use it to find the value at $x = 1$ and $y = -1$. Expression: $(x^2 - 2y)(3x + 4y^2)$ Evaluation: $x = 1; y = -1$ _____ _____	Fill the lower-right product cell, then add all four cells to form the final polynomial. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 5px;">$\times$</td> <td style="padding: 5px;">x</td> <td style="padding: 5px;">3</td> </tr> <tr> <td style="padding: 5px;">x</td> <td style="padding: 5px;">x^2</td> <td style="padding: 5px;">$3x$</td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px;">$2x$</td> <td style="padding: 5px;">_____</td> </tr> </table> _____ _____	$\times$	x	3	x	x^2	$3x$	2	$2x$	_____									
$\times$	x	3																	
x	x^2	$3x$																	
2	$2x$	_____																	
Complete the branch from row term $2a$ to column term 4, then combine the grid. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 5px;">$\times$</td> <td style="padding: 5px;">a</td> <td style="padding: 5px;">4</td> </tr> <tr> <td style="padding: 5px;">$2a$</td> <td style="padding: 5px;">$2a^2$</td> <td style="padding: 5px;">_____</td> </tr> <tr> <td style="padding: 5px;">-1</td> <td style="padding: 5px;">$-a$</td> <td style="padding: 5px;">-4</td> </tr> </table> _____ _____	$\times$	a	4	$2a$	$2a^2$	_____	-1	$-a$	-4	Use both cells in the first row to recover its term label, then write the collected product. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 5px;">$\times$</td> <td style="padding: 5px;">m</td> <td style="padding: 5px;">2</td> </tr> <tr> <td style="padding: 5px;">_____</td> <td style="padding: 5px;">m^2</td> <td style="padding: 5px;">$2m$</td> </tr> <tr> <td style="padding: 5px;">-3</td> <td style="padding: 5px;">$-3m$</td> <td style="padding: 5px;">-6</td> </tr> </table> _____ _____	$\times$	m	2	_____	m^2	$2m$	-3	$-3m$	-6
$\times$	a	4																	
$2a$	$2a^2$	_____																	
-1	$-a$	-4																	
$\times$	m	2																	
_____	m^2	$2m$																	
-3	$-3m$	-6																	

Algebra 1

Multiplying Binomials and Larger Polynomials

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: $3x^2 + 5xy - 2y^2$. Expand and group terms by a^2, ab, and b^2. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(2a-b)(a+4b)$ Your response: _____	Incoming: $2r^3 - 7r^2 - 15r$. Multiply all x-y term pairs and combine the xy products. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(x+2y)(3x-y)$ Your response: _____
Incoming: $8m^2-10m-3$. Track the negative leading coefficient through both terms of the second factor. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(-2r+3)(r+7)$ Your response: _____	Incoming: $3m^3+5m^2-2m$. Create the four products and combine the two quadratic terms. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(2r^2+3r)(r-5)$ Your response: _____
Incoming: $3a^3 + a^2b - 6ab - 2b^2$. Keep the linear coefficient exact while combining the two cross products. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $((\frac{1}{2})x+3)(4x-5)$ Your response: _____	Incoming: $2x^2 + 13x + 15$. Multiply all term pairs and collect the linear contributions. Use the complete expanded polynomial as the matching response and preserve every originally required partial product and explanation. Expression: $(4m+1)(2m-3)$ Your response: _____

Algebra 1

Multiplying Binomials and Larger Polynomials

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.

Expand exactly and verify that the quadratic contributions cancel despite unequal coefficients.

Expression: $(3a - 4)(2a^2 + (\frac{8}{3})a - 5)$

Expand the product, then verify from the standard form that $x = 1$ makes its value zero.

Expression: $(x + 1)(2x^2 - 5x + 3)$ Check Value: $x = 1$

Choose a so the expanded product has no x^2 term, then give the complete resulting polynomial.

Expression: $(2x + a)(3x^2 - 4x + 5)$

Choose an initial pair, record its quadratic product, and then expand by the remaining factor. Explain why your chosen initial pair is useful for keeping the intermediate terms organized, then retain the original requirement to record that intermediate product and multiply by the remaining factor.

Expression: $(x + 1)(x + 2)(x + 3)$

Multiplying Binomials and Larger Polynomials

Full Worked Solutions - excerpt

Worked example

Problem. Form the linear-pair quadratic, multiply by the sparse third factor, and order by descending x exponent.

Expression: $(x - y)(x + 2y)(x^2 + y^2)$

Answer. $x^4 + x^3y - x^2y^2 + xy^3 - 2y^4$.

Explanation and check.

The linear pair is $x^2 + xy - 2y^2$. Multiplication by $x^2 + y^2$ yields the five-term result after the x^2y^2 contributions combine.

Worked example

Problem. Multiply two bivariate factors, then distribute the third and collect degree-three exponent pairs.

Expression: $(x + y)(x + 2y)(2x - y)$

Answer. $2x^3 + 5x^2y + xy^2 - 2y^3$.

Explanation and check.

The first pair is $x^2 + 3xy + 2y^2$. Multiplying by $2x - y$ and collecting gives the homogeneous cubic.

Algebra 1
Special Binomial Products

Special Binomial Products | A1-U08-P06

96 problems · Four activity formats

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Topic focus
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8 PDFs and a README; 50 buyer pages.

Algebra 1

Special Binomial Products

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Determine the square when both degree-three monomial terms are negative. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(-2a^2b - 3bc^2)^2$ _____ Bank label: _____	Square each bivariate monomial and calculate their cross term. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(m^2n + 2mn^2)^2$ _____ Bank label: _____
Square the two full monomial terms and combine their exponents correctly. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(2p^2q - 5pq^2)^2$ _____ Bank label: _____	Expand the square of the bilinear monomial and constant. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(4mn + 5)^2$ _____ Bank label: _____
Turn the given square into a collected polynomial. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(7a^2b - 2)^2$ _____ Bank label: _____	Expand without factoring away the requested square structure. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(5uv^2 + 2u^2)^2$ _____ Bank label: _____
Expand the square before distributing the negative outer multiplier. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $-2(2y + 3)^2$ _____ Bank label: _____	Treat $y - 2$ as the second whole term, apply the square identity, and then remove the remaining parentheses. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(x + (y - 2))^2$ _____ Bank label: _____

Algebra 1

Special Binomial Products

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. A value without its unit is not a complete answer.

Expand the square and verify that every resulting term has the same total degree. Expression: $(x^2 + 2xy)^2$ _____ _____	Give the exact product of the fractional conjugates. Expression: $((\frac{1}{2})x + 4)((\frac{1}{2})x - 4)$ _____ _____
Simplify the product with rational leading coefficient. Expression: $((\frac{2}{3})y - 3)((\frac{2}{3})y + 3)$ _____ _____	Treat ab as the common monomial and calculate the product. Expression: $(ab + 5)(ab - 5)$ _____ _____
Find the two monomials that survive this three-variable product. Expression: $(2xy - 3z)(2xy + 3z)$ _____ _____	Apply the identity to the two full bivariate monomials. Expression: $(m^2n + 2mn^2)(m^2n - 2mn^2)$ _____ _____

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Special Binomial Products

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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: $9y^4 - 6y^2z^3 + z^6$. Find the exact difference of monomial squares in this product. Expression: $(a^2b^3 + bc)(a^2b^3 - bc)$ Your response: _____	START Expand the square and include its doubled cross term. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(x + 3)^2$ Your response: _____
Incoming: $x^2 + 6x + 9$. Write this squared difference as a trinomial. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(y - 5)^2$ Your response: _____	Incoming: $25a^2 + 10ab + b^2$. Convert the square into a homogeneous quadratic in m and n. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(2m - 7n)^2$ Your response: _____
Incoming: $m^2 + 8mn + 16n^2$. Find the exact coefficients in the bivariate trinomial. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $((\frac{1}{4})x - 2y)^2$ Your response: _____	Incoming: $36a^2 + 4ab + (\frac{1}{9})b^2$. Expand and order the result by descending degree in x. Use the complete expanded polynomial as the matching response and retain the original identity explanation, including any cross term or cancellation. Expression: $(2 - x^2)^2$ Your response: _____

Algebra 1**Special Binomial Products****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.

Which listed method matches the expression's factor structure?

Expression: $(z + 8)^2$

binomial square

conjugate product

general distribution

Select the special-product pattern shown by these factors.

Expression: $(w + 10)(w - 10)$

binomial square

conjugate product

general distribution

Decide whether a special identity applies or ordinary distribution is required.

Expression: $(a + 2)(a + 5)$

binomial square

conjugate product

general distribution

Explain whether the opposite-looking constants justify a conjugate shortcut.

Expression: $(x + 5)(x - 4)$

Special Binomial Products

Full Worked Solutions - excerpt

Worked example

Problem. Find the exact difference of monomial squares in this product.

Expression: $(a^2b^3 + bc)(a^2b^3 - bc)$

Answer. $a^4b^6 - b^2c^2$.

Explanation and check.

Squaring the common term gives a^4b^6 and squaring the opposite term gives b^2c^2 .

Worked example

Problem. Explain whether the opposite-looking constants justify a conjugate shortcut.

Expression: $(x + 5)(x - 4)$

Answer. No; use general distribution.

Explanation and check.

Conjugates require exactly $+V$ and $-V$. Here $+5$ and -4 have different magnitudes, so their cross terms do not cancel.

Algebra 1
Polynomial Identities and Area Models

Polynomial Identities and Area Models | A1-U08-P11

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 Polynomial Identities and Area Models.
8 PDFs and a README; 153 buyer pages.

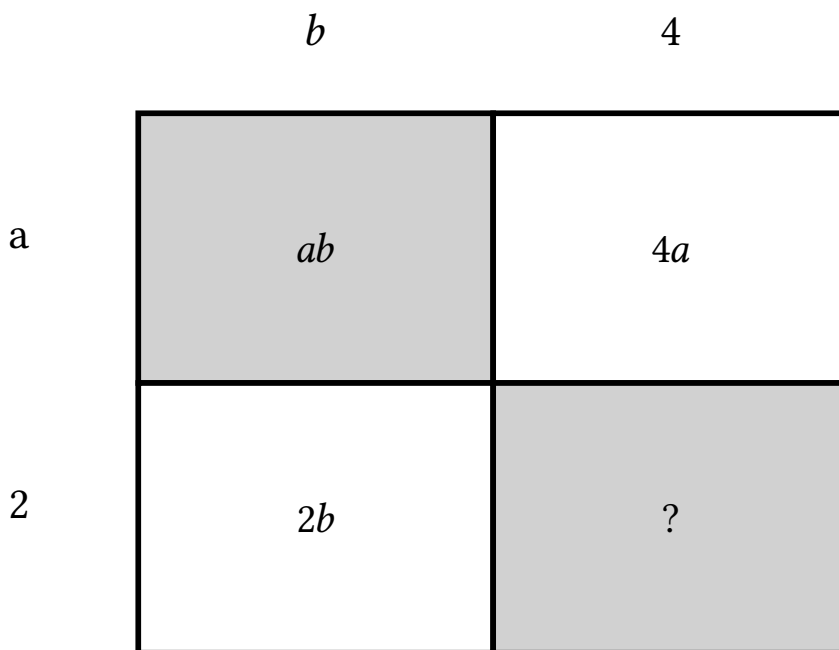
Algebra 1

Polynomial Identities and Area Models

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.

Three subareas of the 2-by-2 partition are labeled and the lower-right label is missing. Find that area and use the complete partition to write the area identity. Match the complete requested identity or exact value, and supply the original area or structural justification. Retain all original dimensions and conditions.



Bank label: _____

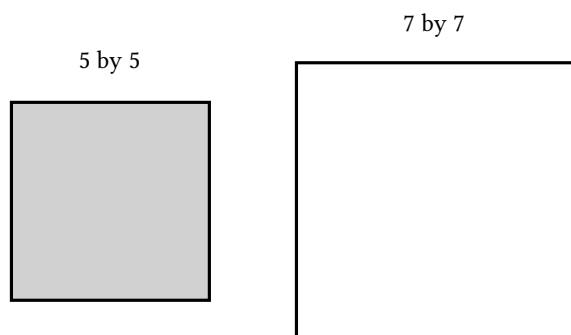
Algebra 1

Polynomial Identities and Area Models

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.

Decide whether the proposed cutout is a valid area proof, and separately evaluate whether the algebraic difference-of-squares equality is true.



Determine whether any real value of c makes the equality an identity. Check the independent coefficient requirements.

Determine whether any c makes $(x + 2)(x + c) = x^2 + 7x + 8$ hold for all real x .

Describe a labeled rectangle construction whose nonoverlapping regions prove the supplied identity. Include the outer dimensions and the cut location.

Use $a(b + c) = ab + ac$ with $a > 0$, $b > 0$, and $c > 0$. Use 2 pieces.

Prove the divisibility claim using the neighboring factors in the supplied identity.

Let n be an odd integer. Use $n^2 - 1 = (n - 1)(n + 1)$ to show that $n^2 - 1$ is divisible by 8.

Algebra 1

Polynomial Identities and Area Models

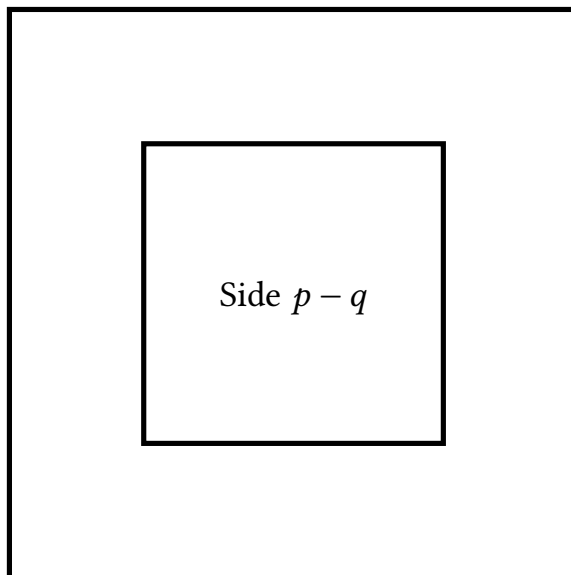
Name: _____ Date: _____ Class: _____

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: $(z + \frac{1}{3})^2 = z^2 + (\frac{2}{3})z + \frac{1}{9}$

Express the frame as a rectangle product. Match the complete requested identity or exact value, and supply the original area or structural justification. Retain all original dimensions and conditions.

Side $p + q$



Your response: _____

Algebra 1

Polynomial Identities and Area Models

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.

Determine whether the equality is an identity. Give algebraic evidence that applies to every real input. Choose an algebraic verification route: simplify the difference of the two sides, or transform one side using distributive structure or a known identity. Explain which route suits the displayed expressions, then fulfill every original parameter, counterexample, and all-input requirement.

Compare $3(x + 2)^2 - 3x^2$ with $12x + 12$ for all real x .

The two sides agree at $x = 0$. Decide whether that observation proves the claim, and supply decisive evidence. Choose an algebraic verification route: simplify the difference of the two sides, or transform one side using distributive structure or a known identity. Explain which route suits the displayed expressions, then fulfill every original parameter, counterexample, and all-input requirement.

Compare $(x + 2)(x + 5)$ with $x^2 + 6x + 10$ for all real x . The expressions match at $x = 0$.

Find the value of k that makes the equality an identity, then verify the result for all x . Choose an algebraic verification route: simplify the difference of the two sides, or transform one side using distributive structure or a known identity. Explain which route suits the displayed expressions, then fulfill every original parameter, counterexample, and all-input requirement.

Compare $(x + 3)^2 - x^2$ with $kx + 9$ for all real x , where k is a parameter.

Prove or refute the claim without checking a list of sample inputs. A common structural factor may be useful. Choose an algebraic verification route: simplify the difference of the two sides, or transform one side using distributive structure or a known identity. Explain which route suits the displayed expressions, then fulfill every original parameter, counterexample, and all-input requirement.

Compare $2x(x - 4) + (x - 4)^2$ with $(x - 4)(3x - 4)$ for all real x .

Polynomial Identities and Area Models

Full Worked Solutions - excerpt

Worked example

Problem. Identify the incorrect coefficient.

Compare $4(x + 2)^2$ with $4x^2 + 8x + 16$.

Answer. not an identity; the middle coefficient should be 16

Explanation and check.

Four times $x^2 + 4x + 4$ is $4x^2 + 16x + 16$.

Worked example

Problem. Give structural evidence about the claim.

Compare $(x - 3)(x + 3)$ with $x^2 + 9$ for all real x .

Answer. not an identity; the product is $x^2 - 9$

Explanation and check.

Cross terms cancel, while the constants multiply to -9 , not 9 .