Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Polynomial Structure & Basic Operations | Algebra 1 | 3-Topic Bundle

3-topic bundle | 288 problems | Four activity formats

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01 Classifying Polynomials

View individual product and its full preview

02 Adding and Subtracting Polynomials

View individual product and its full preview

03 Multiplying Monomials

View individual product and its full preview

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.

24 PDFs and 3 READMEs; 221 buyer PDF pages across the 3 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.

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Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Classifying Polynomials

Classifying Polynomials | A1-U08-P01

96 problems · Four activity formats

Topic focus

This topic is a focused set of 96 practice tasks on Classifying Polynomials.

8 PDFs and a README; 64 buyer pages.

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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Algebra 1

Classifying Polynomials

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.

List the signed terms, then classify the polynomial by its number of nonzero terms. Use all originally requested signed terms/classification or degree/leading-coefficient information as the matching response, including the simplified polynomial when requested. Retain the original explanation. Work with the variable x. Consider $5x^3 - 2x + 7$. Bank label: _____	Give both coefficients, including the implicit one, and name the term-count class. Use all originally requested signed terms/classification or degree/leading-coefficient information as the matching response, including the simplified polynomial when requested. Retain the original explanation. Work with the variable y. Consider $-y^4 + 6$. Bank label: _____
Identify the sole term and classify the whole polynomial. Use all originally requested signed terms/classification or degree/leading-coefficient information as the matching response, including the simplified polynomial when requested. Retain the original explanation. Work with the variable m. Consider $9m^2$. Bank label: _____	How many nonzero terms are present, and what are their coefficients in descending-power order? Use all originally requested signed terms/classification or degree/leading-coefficient information as the matching response, including the simplified polynomial when requested. Retain the original explanation. Work with the variable p. Consider $3p^5 - p^2 + 4p - 8$. Bank label: _____

Algebra 1

Classifying 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. Give the whole requested response, including any reasoning the question asks for.

Is the displayed expression a polynomial in x? Support the decision with its exponent structure. Work with the variable x. Consider $7x^4 - 3x^2 + x - 9$.	Classify the expression as a polynomial or a nonexample in t, and identify the decisive term. Work with the variable t. Consider $5t^3 - 2t^{-1}$.
Does this formula define a polynomial in z on the real numbers? Explain the role of the denominator. Work with the variable z. Consider $z^2 + \frac{6}{z}$.	A classmate rejects this expression because $\sqrt{2}$ is irrational. Decide whether the classmate is correct. Work with the variable x. Consider $\sqrt{2}x^3 - 4x + 1$.
When q is the stated variable, is -13 a polynomial? State the exponent interpretation that applies.	Determine whether fractional coefficients prevent this from being a polynomial in m. Work with the variable m. Consider $(\frac{3}{5})m^5 - (\frac{7}{2})m^2 + 8$.

Algebra 1

Classifying 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: It is the nonzero constant 3, so its degree is 0 and leading coefficient is 3.

Cancel the top-degree pair and combine the next degree before stating the leading information. Use all originally requested signed terms/classification or degree/leading-coefficient information as the matching response, including the simplified polynomial when requested. Retain the original explanation.

Work with the variable d.

Consider $4d^9 + 2d^4 - 6d - 4d^9 + 3d^4$.

Your response: _____

Incoming: The polynomial is $(\frac{1}{3})t^9 - 2t^4 + 1000$; degree 9, leading coefficient $\frac{1}{3}$.

Give the degree and leading coefficient, then write the complete coefficient vector down through the constant term. Use all originally requested signed terms/classification or degree/leading-coefficient information as the matching response, including the simplified polynomial when requested. Retain the original explanation.

Work with the variable w.

Consider $-4w^7 + 3w^4$-$w + 6$.

Your response: _____

Incoming: The leading coefficient is -2 and the degree is 8.

State the degree and leading coefficient, and identify the tempting but irrelevant large coefficient. Use all originally requested signed terms/classification or degree/leading-coefficient information as the matching response, including the simplified polynomial when requested. Retain the original explanation.

Work with the variable x.

Consider $x^{10} - 1000x^9 + 2$.

Your response: _____

Incoming: Degree 7, leading coefficient -4; vector $[-4, 0, 0, 3, 0, 0, -1, 6]$.

Use the nonzero-coefficient specification to write the leading term and determine the degree and leading coefficient.

Work with the variable n.

All other coefficients: 0

Power	Given coefficient
12	-2
5	700
0	-1

Your response: _____

Algebra 1

Classifying 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.

Combine like powers before determining the degree and leading coefficient. Choose a simplification method before naming the degree: collect coefficients in a descending-power list/table, or combine visible like-power groups directly. Explain your choice for this expression, use it, and then determine the requested degree and leading coefficient from the surviving terms.

Work with the variable x.

Consider $5x^4 - 3x^2 + 7x - 5x^4$.

Which term becomes leading after simplification, and what degree follows? Choose a simplification method before naming the degree: collect coefficients in a descending-power list/table, or combine visible like-power groups directly. Explain your choice for this expression, use it, and then determine the requested degree and leading coefficient from the surviving terms.

Work with the variable y.

Consider $2y^6 + y^3 - 4 - 2y^6 + 7y$.

Classifying Polynomials

Full Worked Solutions - excerpt

Worked example

Problem. When q is the stated variable, is -13 a polynomial? State the exponent interpretation that applies.

Answer. Yes. It is the constant polynomial $-13q^0$.

Explanation and check.

A nonzero constant is a polynomial of degree 0 because it can be viewed as a coefficient times q^0.

Worked example

Problem. Is the displayed expression a polynomial in x? Support the decision with its exponent structure.

Work with the variable x.

Consider $7x^4 - 3x^2 + x - 9$.

Answer. Yes. Every exponent of x is a nonnegative integer.

Explanation and check.

The powers are $4, 2, 1$, and 0, so the expression meets the polynomial exponent condition.

Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Adding and Subtracting Polynomials

Adding and Subtracting Polynomials | A1-U08-P02

96 problems · Four activity formats

Topic focus

This topic is a focused set of 96 practice tasks on Adding and Subtracting Polynomials.

8 PDFs and a README; 78 buyer pages.

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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Algebra 1

Adding and Subtracting 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.

Verify the three upper-degree cancellations and give the lower-degree sum. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	w
Addends	$w^{11} + 2w^{7}$-w, $-4w^{11} + w^{4} + 3$, $3w^{11} - 2w^{7}$-$w^{4} + 5w$

Bank label: _____

Create signed totals from power 9 down to power 0 and simplify the four-polynomial sum. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	x
Addends	$3x^{9} - 2x^{6} + x^{2}$, $-5x^{9} + x^{7} + 4x^{6}$, $2x^{9}$-$x^{7} - 2x^{6} + 3x$, -$x^{2} + 8$

Bank label: _____

Use sixths to test both high-degree columns, then finish the lower-degree sum. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	y
Addends	$(\frac{5}{6})y^{8} - (\frac{2}{3})y^{5} + y$, -$(\frac{1}{3})y^{8} + (\frac{7}{6})y^{5} - 2$, -$(\frac{1}{2})y^{8} - (\frac{1}{2})y^{5} - 3y + 5$

Bank label: _____

Interpret the three coefficient maps, combine matching powers, and write the polynomial they sum to. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	z
Addends	(**Power 7** 4; **Power 3** −2; **Power 0** 1), (**Power 7** −1; **Power 5** 6; **Power 3** 5), (**Power 7** −3; **Power 5** −6; **Power 1** 2; **Power 0** −4)

Bank label: _____

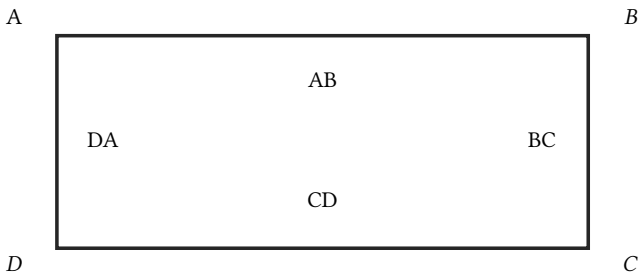
Algebra 1

Adding and Subtracting 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.

The diagram lists every side of rectangle ABCD. Combine the four labels to express its perimeter.



Boundary order only; not drawn to scale. Exact labels are in the table.

Shape	rectangle ABCD
Boundary order	AB, BC, CD, DA
Segment labels	AB: $3x + 2$; BC: $x + 5$; CD: $3x + 2$; DA: $x + 5$
Included segments	AB, BC, CD, DA
Units	meters

Algebra 1

Adding and Subtracting 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: $-d + 6$.

Simplify the high powers and state the final standard form. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	u
Addends	$u^6 - 2u^3 + u$, $4u^3 - 5$, $-u^6 - 2u^3 + 3u + 1$

Your response: _____

Incoming: $5m^2+2m+5$.

Add without inserting unnecessary zero terms in the final standard form. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	p
Addends	$p^{10} + p$, $-4p^7 + 2$, $3p^7 - 5p + 6$

Your response: _____

Incoming: $3v^6 - 2v^2 + 7$.

Align the missing columns and write the total in standard form. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	x
Addends	$x^3 - 4x + 9$, $-2x^2 + 7x - 1$, $5x^2 - 3$

Your response: _____

Incoming: 2s-7.

Add the decimal coefficient pairs and express whole-number totals simply. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	t
Addends	$0.75t^4 - 0.5t + 2$, $0.25t^4 + 1.5t - 6$

Your response: _____

START

Combine the rational cubic coefficients and simplify every other column. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	z
Addends	$(\frac{1}{2})z^3 - 2z$, $(\frac{3}{4})z^3 + 5z - 1$

Your response: _____

Incoming: $(\frac{1}{2})r^5$-$r^2 + 5$.

Simplify the seventh-, fifth-, first-, and zero-power columns in turn. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	s
Addends	$s^7 - 3s+2$, $-2s^7+s^5 + s$, s^7-$s^5 + 4s$-9

Your response: _____

Algebra 1

Adding and Subtracting 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.

Add the two polynomials by matching equal powers. Choose an organization method: align equal powers in coefficient columns, or collect matching signed terms horizontally. Explain why your choice fits these polynomials, use it, and keep every missing-power position and sign correct.

Variable	x
Addends	$3x^2 + 2x - 5$, $4x^2$-$x + 7$

Find the standard-form sum of the displayed binomials. Choose an organization method: align equal powers in coefficient columns, or collect matching signed terms horizontally. Explain why your choice fits these polynomials, use it, and keep every missing-power position and sign correct.

Variable	y
Addends	$5y^3 - 2$, $-2y^3 + 6$

Adding and Subtracting Polynomials

Full Worked Solutions - excerpt

Worked example

Problem. Verify the three upper-degree cancellations and give the lower-degree sum. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	w
Addends	$w^{11} + 2w^{7}\text{-}w$, $-4w^{11} + w^{4} + 3$, $3w^{11} - 2w^{7}\text{-}w^{4} + 5w$

Answer. $4w + 3$.

Explanation and check.

Powers $11, 7$, and 4 all total zero; $\text{-}\,w + 5w = 4w$ and the constant is 3.

Worked example

Problem. Add each represented degree and report the sparse remainder. Use the complete simplified polynomial as the matching response and retain the original work and sign requirements.

Variable	d
Addends	$5d^{8}\text{-}d^{5} + 2d^{2}$, $-2d^{8} + 4d^{5}\text{-}d$, $-3d^{8} - 3d^{5} - 2d^{2} + 6$

Answer. $\text{-}\,d + 6$.

Explanation and check.

Powers $8, 5$, and 2 each total zero; the unmatched lower terms are $\text{-}\,d$ and 6.

Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Multiplying Monomials

Multiplying Monomials | A1-U08-P03

96 problems · Four activity formats

Topic focus

This topic is a focused set of 96 practice tasks on Multiplying Monomials.

8 PDFs and a README; 79 buyer pages.

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Algebra 1

Multiplying Monomials

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.

Resolve the zero exponent and the two coefficient signs before combining powers. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$-6m^2n^0p^3$, $-5mn^4p$

Bank label: _____

Determine the sign and simplify the three exponent sums. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$9q^2r^5s$, $-(\frac{1}{3})q^3rs^2$

Bank label: _____

Use the decimal coefficient exactly and merge the shared variable factors. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$-12x^4y$, $-0.25x^2y^2$

Bank label: _____

Reduce the signed rational coefficient and simplify both powers. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$(\frac{5}{8})a^3b^4$, $-(\frac{16}{15})ab^2$

Bank label: _____

Keep the coefficient in decimal form and combine the variables. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$0.6c^2d^3$, $-1.5c^5d$

Bank label: _____

Combine the repeated bases and retain the new w factor. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$7uv^6$, $-2u^3v^2w^4$

Bank label: _____

Reduce the coefficient before reporting the three-variable product. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$-10g^2h^3k$, $(\frac{3}{5})gh^2k^4$

Bank label: _____

Show the rational reduction and high-power consolidation in the product. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$-(\frac{3}{8})x^7y^2$, $-(\frac{16}{9})x^3y^5$

Bank label: _____

Algebra 1

Multiplying Monomials

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.

Decide whether exponent work is needed before giving the product.

Factors	$0z^{7}w^{2}$, $-3zw$

Find the product and state why adding the displayed exponents does not give its degree.

Factors	$0m^{6}n$, $-17m^{2}n^{8}$

Compute the exact monomial product and its total degree.

Factors	$(\frac{7}{12})s^{4}t^{3}$, $-(\frac{18}{35})s^{2}t^{5}u$

First simplify the monomial product; then evaluate it at $x = -1$ and $y = 2$.

Factors	$-3x^{4}y$, $2x^{2}y^{3}$
Evaluation	x = -1 y = 2

After applying the given parameter value, decide which part of the four-factor product controls the result.

Factors	$-5z^{2}w$, cz^{3}, $7w^{5}$, $-z$
Parameter value	c = 0

Simplify the five factors and report the total degree of the resulting monomial.

Factors	$2x^{2}y$, $-3xy^{2}$, $(\frac{1}{2})z^{3}$, $-4xz$, y

Algebra 1

Multiplying Monomials

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: $-14r^4s^4$.

Interpret the unit coefficient and zero power, then simplify the product. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$-x^5y^2$, $6x^0y^3$

Your response: _____

Incoming: $6c^7d^3$.

Cancel within the numerical product, then combine the literal factors. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$14k^2l$, $(\frac{3}{7})kl^4$

Your response: _____

Incoming: $-15a^3b^5c^4$.

Determine the positive product created by the two signed factors. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$-4mn^3p^2$, $-2m^4np$

Your response: _____

Incoming: $2p^3q^6$.

Give the exact product without a decimal coefficient. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$-(\frac{2}{3})r^3s^2$, $9rs$

Your response: _____

START

Multiply the two monomials and write one simplified term. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$3x$, $4y$

Your response: _____

Incoming: $10cd^2$.

Multiply and combine each repeated variable base. Use the complete simplified monomial as the matching response and retain the original coefficient, sign and exponent justification.

Factors	$4x^2y$, $3xy^3$

Your response: _____

Algebra 1

Multiplying Monomials

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.

Multiply the three factors and collect matching variables. Choose an organization route: multiply the signed coefficients and collect each variable group separately, or multiply the monomial factors successively. Explain why the route is useful for these factors, use it, and preserve every exponent and sign.

Factors	$2x$, $3y$, $4xy$

Use the number of negative factors to determine the sign, then simplify. Choose an organization route: multiply the signed coefficients and collect each variable group separately, or multiply the monomial factors successively. Explain why the route is useful for these factors, use it, and preserve every exponent and sign.

Factors	$-a^2$, $5ab$, $-2b^3$

Group coefficient, m, and n factors before multiplying. Choose an organization route: multiply the signed coefficients and collect each variable group separately, or multiply the monomial factors successively. Explain why the route is useful for these factors, use it, and preserve every exponent and sign.

Factors	$3m^2n$, $-2mn^3$, 5m

Simplify and explain why the final sign is negative. Choose an organization route: multiply the signed coefficients and collect each variable group separately, or multiply the monomial factors successively. Explain why the route is useful for these factors, use it, and preserve every exponent and sign.

Factors	$-4p$, $-q^2$, $-3pq$

Multiplying Monomials

Full Worked Solutions - excerpt

Worked example

Problem. Decide whether exponent work is needed before giving the product.

Factors	$0z^7w^2$, $-3zw$

Answer. The product is zero.

Explanation and check.

A coefficient of zero makes the first factor zero. The zero-product property settles the result before any exponents are combined.

Worked example

Problem. Write the signed product as a single monomial.

Factors	$7pq$, $-q$

Answer. $-7pq^2$.

Explanation and check.

The coefficient becomes -7. The two q factors combine to q^2, while p appears once.