

Combining and Multiplying Polynomials

Grade 9 – Algebra 1 math · Test Answer Key · Standards: A-APR.A.1, A-SSE.A.2

Use this answer key to score the test out of 20 points. Each answer lists where the points are earned. Give partial credit when the setup is correct but one sign or coefficient is wrong.

Standards: A-APR.A.1, A-SSE.A.2 · **Level:** Grade 9 Algebra 1

Question 1 Standard Form (2 points)

Standard form: $-2x^3 + 9x^2 + 5x - 4$. Degree **3**, leading coefficient **-2**.

Scoring: 1 point for the correct order, 1 point for degree and leading coefficient.

Question 2 Add Polynomials (2 points)

$6 - 2 = 4$, $-4 + 9 = 5$, $7 - 3 = 4$.

$4x^2 + 5x + 4$

Scoring: 1 point for the x^2 term, 1 point for the other two terms.

Question 3 Subtract Polynomials (2 points)

$8x^2 + 3x - 5 - 5x^2 + 6x - 2 = 3x^2 + 9x - 7$.

$3x^2 + 9x - 7$

Scoring: 1 point for distributing the minus sign, 1 point for the result.

Question 4 Area of a Rectangle (2 points)

$(7x + 2)(4x - 5) = 28x^2 - 35x + 8x - 10 = 28x^2 - 27x - 10$.

$28x^2 - 27x - 10$

Scoring: 1 point for the four products, 1 point for combining like terms.

Question 5 Trinomial Times Binomial (3 points)

$x \cdot (x^2 + 5x - 2) = x^3 + 5x^2 - 2x$. $-3 \cdot (x^2 + 5x - 2) = -3x^2 - 15x + 6$.

Combine: $x^3 + 2x^2 - 17x + 6$.

$$x^3 + 2x^2 - 17x + 6$$

Scoring: 1 point for each row of products, 1 point for the final combination.

Question 6 Special Products (2 points)

a. $16x^2 - 24x + 9$.

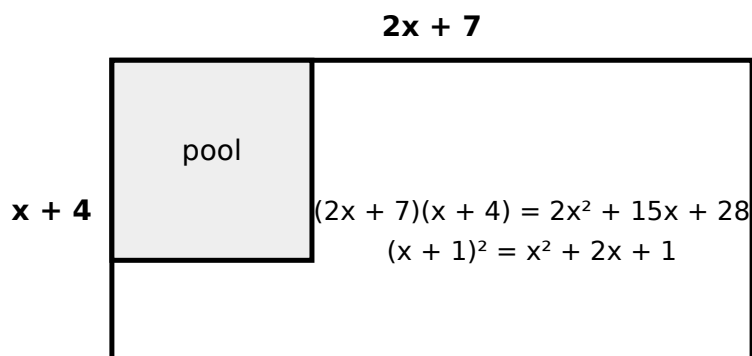
b. $4x^2 - 49$.

Scoring: 1 point per part.

Question 7 Grass Around the Pool (3 points)

a. $(2x + 7)(x + 4) - (x + 1)^2 = 2x^2 + 15x + 28 - (x^2 + 2x + 1) = x^2 + 13x + 27$.

b. $25 + 65 + 27 = 117$ square feet. Check: yard $17 \times 9 = 153$, pool $6^2 = 36$, and $153 - 36 = 117$.



Grass = yard area – pool area.

Scoring: (a) 1 point for the two areas, 1 point for the simplified result. (b) 1 point.

Question 8 Mental Math with Algebra (2 points)

a. $(40 - 2)(40 + 2) = 1600 - 4 = 1,596$.

b. $(70 + 1)^2 = 4900 + 140 + 1 = 5,041$.

Scoring: 1 point per part for a correct structure and value.

Question 9 Explain the Error (2 points)

Dev squared each term but skipped the cross products. $(x + 5)^2$ means $(x + 5)(x + 5) = x^2 + 5x + 5x + 25$.

Correct: $x^2 + 10x + 25$

Scoring: 1 point for the explanation, 1 point for the expansion.