

Algebra 2 - Polynomial Operations and Identities

- Test Answer Key

Common Core A-APR.A.1, A-APR.C.4 · maths-pdf.fr/en/

Use this answer key and scoring guide to grade the test on polynomial operations and identities (A-APR.A.1). Each solution shows the full reasoning, and the scoring note explains how many points to award for correct setup, correct work, and a correct final answer. Partial credit rewards a sound method even when a small arithmetic slip changes the result.

Algebra 2 · Common Core State Standards: **A-APR.A.1, A-APR.C.4**

Question 1 - Add and subtract [2 pts]

a. $5x^2+2x+5$

b. $3x^2-8x+9$

(a) $5x^2+2x+5$; **(b)** $3x^2-8x+9$

Scoring: 1 point for each part.

Question 2 - Multiply [3 pts]

a. $x^2+5x-24$

b. $2x^3-8x^2+6x+x^2-4x+3$

$2x^3-7x^2+2x+3$

(a) $x^2+5x-24$; **(b)** $2x^3-7x^2+2x+3$

Scoring: Part (a): 1 point. Part (b): 1 point for a correct distribution, 1 point for combining like terms.

Question 3 - Special products [2 pts]

a. $16x^2 - 8x + 1$

b. $25x^2 - 36$

(a) $16x^2 - 8x + 1$; **(b)** $25x^2 - 36$

Scoring: 1 point for each part.

Question 4 - Area model [2 pts]

	2x	1
x	$2x^2$	x
6	12x	6

Cells $2x^2$, x, 12x, 6.

$$(x+6)(2x+1) = 2x^2 + x + 12x + 6.$$

$$2x^2 + 13x + 6$$

Scoring: 1 point for the four partial products, 1 point for the combined polynomial.

Question 5 - Mental math [2 pts]

$$98^2 = (100-2)^2 = 10000 - 400 + 4 = 9604.$$

$$61 \cdot 59 = (60+1)(60-1) = 3600 - 1 = 3599.$$

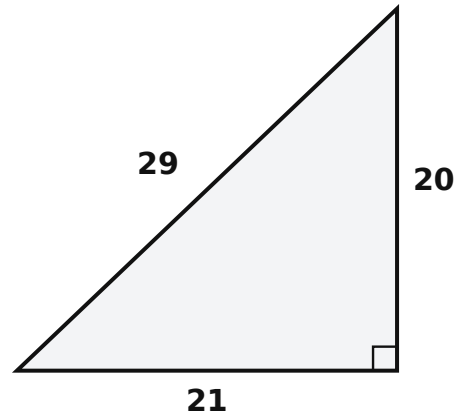
9,604 and 3,599

Scoring: 1 point for each computation.

Question 6 - Pythagorean triple [3 pts]

Legs: $x^2 - y^2 = 25 - 4 = 21$ and $2xy = 20$. Hypotenuse: $x^2 + y^2 = 29$.

Check: $21^2 + 20^2 = 441 + 400 = 841 = 29^2$.



Triangle with sides 21, 20, 29.

21, 20, 29

Scoring: 1 point for each of the three sides generated, 1 point for the verification (3 points total: sides 2, check 1).

Question 7 - Frame area [2 pts]

Outer: $(x+4)(x+7) = x^2 + 11x + 28$. Photo: $x(x+3) = x^2 + 3x$.

Subtract.

$8x + 28$ square inches

Scoring: 1 point for the outer and inner areas, 1 point for the difference.

Question 8 - Find the error [2 pts]

The middle term $2(3x)(-2) = -12x$ is missing, and the sign pattern for a square of a difference is $a^2 - 2ab + b^2$.

$9x^2 - 12x + 4$

Scoring: 1 point for the error, 1 point for the correct expansion.

Question 9 - Degree and closure [2 pts]

The degree is $2+3=5$. The leading coefficient is $3 \cdot 1 = 3$.

Degree 5, leading coefficient 3

Scoring: 1 point for the degree, 1 point for the leading coefficient.

Total
20 points