Name _____ Date _____

Adding, Subtracting and Multiplying Polynomials: Find the Error

Directions: Each question shows a student's work adding, subtracting or multiplying polynomials. Each line should be equivalent to the line before it, but exactly one step is not. Find that step, then answer the question.

1. Mia added $(3x^2 + 5x - 2) + (4x^2 - 7x + 6)$. One step in her work is wrong.

1. $3x^2 + 4x^2 + 5x - 7x - 2 + 6$
2. $7x^4 + 5x - 7x - 2 + 6$
3. $7x^4 - 2x + 4$

Which step is wrong?

A. From $(3x^2 + 5x - 2) + (4x^2 - 7x + 6)$ to $3x^2 + 4x^2 + 5x - 7x - 2 + 6$

B. From $7x^4 + 5x - 7x - 2 + 6$ to $7x^4 - 2x + 4$

C. From $3x^2 + 4x^2 + 5x - 7x - 2 + 6$ to $7x^4 + 5x - 7x - 2 + 6$

2. Here is Jalen's work for $(5x^2 - 3x + 4) - (2x^2 + 6x - 1)$. Exactly one step is wrong.

1. $5x^2 - 3x + 4 - 2x^2 + 6x - 1$
2. $5x^2 - 2x^2 - 3x + 6x + 4 - 1$
3. $3x^2 + 3x + 3$

Where does his work first go wrong?

A. From $5x^2 - 2x^2 - 3x + 6x + 4 - 1$ to $3x^2 + 3x + 3$

B. From $(5x^2 - 3x + 4) - (2x^2 + 6x - 1)$ to $5x^2 - 3x + 4 - 2x^2 + 6x - 1$

C. From $5x^2 - 3x + 4 - 2x^2 + 6x - 1$ to $5x^2 - 2x^2 - 3x + 6x + 4 - 1$

3. Rosa found the product $3x^2(2x^2 - 5x + 1)$, but one step is wrong.

1. $3x^2(2x^2) + 3x^2(-5x) + 3x^2(1)$
2. $6x^4 - 15x^2 + 3x^2$
3. $6x^4 - 12x^2$

Which step is wrong?

A. From $6x^4 - 15x^2 + 3x^2$ to $6x^4 - 12x^2$

B. From $3x^2(2x^2 - 5x + 1)$ to $3x^2(2x^2) + 3x^2(-5x) + 3x^2(1)$

C. From $3x^2(2x^2) + 3x^2(-5x) + 3x^2(1)$ to $6x^4 - 15x^2 + 3x^2$

4. Ben's work on $(2x - 3)(x + 4)$ has one error.

1. $2x(x) + 2x(4) - 3(x) - 3(4)$
2. $2x^2 + 8x - 3x + 12$
3. $2x^2 + 5x + 12$

Which step contains the error?

A. From $(2x - 3)(x + 4)$ to $2x(x) + 2x(4) - 3(x) - 3(4)$

B. From $2x^2 + 8x - 3x + 12$ to $2x^2 + 5x + 12$

C. From $2x(x) + 2x(4) - 3(x) - 3(4)$ to $2x^2 + 8x - 3x + 12$

5. Ana simplified $(x + 4)^2 + 2(x - 5)$ in three steps, and one of them is wrong.

1. $x^2 + 16 + 2(x - 5)$
2. $x^2 + 16 + 2x - 10$
3. $x^2 + 2x + 6$

Find the wrong step.

A. From $(x + 4)^2 + 2(x - 5)$ to $x^2 + 16 + 2(x - 5)$

B. From $x^2 + 16 + 2(x - 5)$ to $x^2 + 16 + 2x - 10$

C. From $x^2 + 16 + 2x - 10$ to $x^2 + 2x + 6$

6. Kofi's work for the product $(x - 4)(x^2 + 2x - 3)$ has one wrong step.

1. $x(x^2 + 2x - 3) - 4(x^2 + 2x - 3)$
2. $x^3 + 2x^2 - 3x - 4x^2 - 8x - 3$
3. $x^3 - 2x^2 - 11x - 3$

Which step is wrong?

A. From $x(x^2 + 2x - 3) - 4(x^2 + 2x - 3)$ to $x^3 + 2x^2 - 3x - 4x^2 - 8x - 3$

B. From $(x - 4)(x^2 + 2x - 3)$ to $x(x^2 + 2x - 3) - 4(x^2 + 2x - 3)$

C. From $x^3 + 2x^2 - 3x - 4x^2 - 8x - 3$ to $x^3 - 2x^2 - 11x - 3$

7. Dana subtracted $(4x^2 + x - 7) - (x^2 - 5x - 3)$, and her work has one error.

1. $4x^2 + x - 7 - x^2 + 5x - 3$
2. $3x^2 + 6x - 10$

Which expression is equivalent to $(4x^2 + x - 7) - (x^2 - 5x - 3)$?

A. $3x^2 + 6x - 4$ B. $3x^2 + 6x - 10$ C. $5x^2 - 4x - 10$ D. $3x^2 - 4x - 10$

8. Eli worked out $(2x - 5)^2$, but one step is wrong.

1. $(2x - 5)(2x - 5)$
2. $4x^2 - 10x + 10x + 25$
3. $4x^2 + 25$

Correct the error. When $(2x - 5)^2$ is written correctly as a trinomial, what is the coefficient of its x term?