LESSON MAKER PRO

Polynomial Mix-Up

Combine like terms to find sums and differences.

HIGH SCHOOL · FA.A.32

FA.A.32 "Add and subtract polynomials using appropriate strategies (e.g.,by using Algebra Tiles)."

NAME _____ DATE _____

COMBINE LIKE TERMS

To add polynomials, group terms with the same variable and exponent, then add their coefficients. To subtract, change the sign of every term in the polynomial being subtracted before you combine like terms.

WORKED EXAMPLE

Simplify $(11x^2 + 14x - 17) - (19x^2 - 22x + 23)$.

1. Change the signs in the second polynomial: $11x^2 + 14x - 17 - 19x^2 + 22x - 23$.
2. Group like terms: $(11 - 19)x^2 + (14 + 22)x + (-17 - 23)$.

Answer: $-8x^2 + 36x - 40$

PRACTICE 6 problems

1 Simplify $(2x^2 + 5x + 4) + (3x^2 + 7x + 6)$.

ANSWER _____

2 Simplify $(8x^3 - 4x + 9) + (-3x^3 + 6x^2 + 2x - 5)$.

ANSWER _____

3 Simplify $(9x^2 + 8x + 3) - (4x^2 + 2x + 7)$.

ANSWER _____

4 Simplify $(6x^3 - 5x^2 + 2) - (2x^3 + 4x^2 - 7x - 8)$.

ANSWER _____

5 Simplify $(3/4x^2 + 2x - 6) + (1/4x^2 - 5x + 8)$.

ANSWER _____

6 Simplify $-(3x^2 - 6x + 5) + (8x^2 + 2x - 9)$.

ANSWER _____

APPLY IT Show your work

1 You edit x short videos with x clips in each video. Each clip uses 2 MB of storage. Title cards use $3x + 5$ MB in total, and music files use $x^2 + 4x + 7$ MB. Write a polynomial for the total storage used by the clips, title cards, and music.

WORK SPACE

ANSWER _____

2 A school gaming club runs a tournament. Ticket sales bring in $(4x^2 + 9x + 42)$ dollars, and equipment and prizes cost $(2x^2 + 13x + 26)$ dollars. Write a polynomial for the money left after costs.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Simplify $(5x^3 - 2x^2 + 8x - 6) - [(2x^3 + 4x^2 - 3x + 7) - (x^3 - 5x^2 + 6x - 4)]$. In one sentence, explain how you handled the subtraction.

WORK SPACE AND ANSWER

ANSWER KEY # Polynomial Mix-Up

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Simplify $(2x^2 + 5x + 4) + (3x^2 + 7x + 6)$.	**$5x^2 + 12x + 10$**
2	Simplify $(8x^3 - 4x + 9) + (-3x^3 + 6x^2 + 2x - 5)$.	**$5x^3 + 6x^2 - 2x + 4$**
3	Simplify $(9x^2 + 8x + 3) - (4x^2 + 2x + 7)$.	**$5x^2 + 6x - 4$**
4	Simplify $(6x^3 - 5x^2 + 2) - (2x^3 + 4x^2 - 7x - 8)$.	**$4x^3 - 9x^2 + 7x + 10$**
5	Simplify $(3/4x^2 + 2x - 6) + (1/4x^2 - 5x + 8)$.	**$x^2 - 3x + 2$**
6	Simplify $-(3x^2 - 6x + 5) + (8x^2 + 2x - 9)$.	**$5x^2 + 8x - 14$**

PART 2 · APPLY IT

1. **$3x^2 + 7x + 12$ MB** The clips use $2x^2$ MB. Add that to the title-card and music expressions, then combine like terms.
2. **$2x^2 - 4x + 16$ dollars** Subtract the cost polynomial from the ticket-sales polynomial. Change the sign of each cost term, then combine like terms.

CHALLENGE

$4x^3 - 11x^2 + 17x - 17$. I simplified the difference in brackets, then changed the sign of each term in that difference before combining like terms.

Accept equivalent polynomials with terms in a different order. In the challenge, accept any accurate one-sentence explanation of how both subtractions affect the signs.