

Expression Remix

Expand, combine, and simplify expressions.

GRADE 8 • 8.PFA.1

8.PFA.1 "The student will represent, simplify, and generate equivalent algebraic expressions in one variable. Represent algebraic expressions using concrete manipulatives or pictorial representations (e.g., colored chips, algebra tiles)..."

NAME _____

DATE _____

BUILD EQUIVALENT EXPRESSIONS

Use the distributive property to multiply the number outside parentheses by every term inside. Then combine like terms, x-terms with x-terms and constants with constants, using the order of operations.

WORKED EXAMPLE

Simplify: $12(x - 5) + 7x$

1. Distribute 12: $12x - 60 + 7x$

2. Combine the x-terms: $19x - 60$

Answer: $19x - 60$

PRACTICE 6 problems

1 A tile mat has 2 positive x-tiles, 8 negative x-tiles, and 4 positive unit tiles. Write and simplify the expression.

ANSWER _____

2 Simplify: $2(3x + 4)$

ANSWER _____

3 Simplify: $8x + 4 - 2x + 6$

ANSWER _____

4 Simplify: $6(x + 3) - 4x$

ANSWER _____

5 Simplify: $8 - 3(2x - 4)$

ANSWER _____

6 Simplify: $1/2(8x + 6) - 3x$

ANSWER _____

APPLY IT Show your work

- 1** At the school esports event, a snack combo costs x dollars. Nia buys 3 combos, uses a \$4 discount on each combo, and pays a \$6 entry fee. Write and simplify an expression for her total cost.

WORK SPACE

ANSWER _____

- 2** In a coding app, a regular level is worth x points. Leo completes 6 bonus levels that each give $x + 3$ points, then spends $2x$ points to unlock a design pack. Write and simplify an expression for his final number of points.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Simplify and show your steps: $3(4x - 6) - 2(3x + 8) + 9$

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A tile mat has 2 positive x-tiles, 8 negative x-tiles, and 4 positive unit tiles. Write and simplify the expression.	$-6x + 4$
2	Simplify: $2(3x + 4)$	$6x + 8$
3	Simplify: $8x + 4 - 2x + 6$	$6x + 10$
4	Simplify: $6(x + 3) - 4x$	$2x + 18$
5	Simplify: $8 - 3(2x - 4)$	$-6x + 20$
6	Simplify: $1/2(8x + 6) - 3x$	$x + 3$

PART 2 • APPLY IT

1. **$3x - 6$** Model the cost with $3(x - 4) + 6$. Distribute 3, then combine the constants.
2. **$4x + 18$** Model the points with $6(x + 3) - 2x$. Distribute 6 and combine the x-terms.

CHALLENGE

 $6x - 25$

Accept equivalent expressions with terms in a different order, such as $20 - 6x$ for problem 5. For the tile problem, accept $4 - 6x$ as equivalent to $-6x + 4$.