

Expression Remix

Expand, combine, and simplify linear expressions.

GRADE 8 • 8.PFA.1.b

8.PFA.1.b "Simplify and generate equivalent algebraic expressions in one variable by applying the order of operations and properties of real numbers..."

NAME _____

DATE _____

SIMPLIFY IN ORDER

Use the distributive property to multiply through parentheses first. Then combine like terms, which have the same variable part, and combine constant terms.

WORKED EXAMPLE

Simplify: $11(2x - 5) + 9x$

1. Distribute 11: $22x - 55 + 9x$

2. Combine the x-terms: $31x - 55$

Answer: $31x - 55$

PRACTICE 6 problems

1 Simplify: $4x + 8x - 6$

ANSWER _____

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

ANSWER _____

3 Simplify: $(\frac{3}{4})x + (\frac{1}{4})x - 8$

ANSWER _____

4 Simplify: $-8x + 3(6x - 4)$

ANSWER _____

5 Simplify: $12 - 4(x - 6) + 3x$

ANSWER _____

6 Simplify: $(\frac{1}{3})(15x + 12) - x$

ANSWER _____

APPLY IT Show your work

- 1** In a video game, you earn $4x$ coins for completing quests. A bonus feature adds $3(x + 8)$ coins. Write and simplify an expression for the total number of coins.

WORK SPACE

ANSWER _____

- 2** A student club earns $\$7x$ from selling custom keychains and receives $\$4x$ in sponsor funding. The club pays $\$3(x + 6)$ for materials. Write and simplify an expression for the club's profit.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Simplify: $(\frac{4}{7})(14x - 21) - 6(x - 8) + 4x$. Explain which step you must do before combining like terms.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Simplify: $4x + 8x - 6$	$12x - 6$
2	Simplify: $6(x + 4) - 3x$	$3x + 24$
3	Simplify: $(\frac{3}{4})x + (\frac{1}{4})x - 8$	$x - 8$
4	Simplify: $-8x + 3(6x - 4)$	$10x - 12$
5	Simplify: $12 - 4(x - 6) + 3x$	$36 - x$
6	Simplify: $(\frac{1}{3})(15x + 12) - x$	$4x + 4$

PART 2 • APPLY IT

1. **$7x + 24$** Add the quest coins and bonus coins: $4x + 3(x + 8)$. Distribute the 3, then combine like terms.
2. **$8x - 18$** Profit equals money earned minus material costs: $7x + 4x - 3(x + 6)$. Distribute the negative 3, then combine like terms.

CHALLENGE

$6x + 36$. You must distribute through both sets of parentheses before combining like terms.

Accept equivalent forms with terms in a different order, such as $-x + 36$ for problem 5. Check that students distribute a negative factor correctly in the word problem and challenge.