LESSON MAKER PRO

Expression Remix

Expand, combine, and factor expressions with fractions.

GRADE 7 · MT.7.EE.1

MT.7.EE.1 "Use properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients and generate equivalent expressions."

NAME _____ DATE _____

THE BIG IDEA

To expand, multiply the number outside parentheses by every term inside. To simplify, add or subtract the coefficients of like terms. To factor, reverse the distributive property.

WORKED EXAMPLE

Simplify 5/6(18x - 12) + 4x.

1. 5/6(18x) + 5/6(-12) + 4x
2. 15x - 10 + 4x
3. 19x - 10

Answer: 19x - 10

PRACTICE 6 problems

1 Simplify (1/2)x + (3/2)x - 1/3.

ANSWER _____

2 Expand 3/8(8x + 16).

ANSWER _____

3 Simplify (7/3)x - 2/3 - ((1/3)x + 1/3).

ANSWER _____

4 Factor (3/2)x + 9/2.

ANSWER _____

5 Simplify 2/3(3x - 9) + (1/2)x.

ANSWER _____

6 Simplify (7/8)x - 1/8(x - 8).

ANSWER _____

APPLY IT Show your work

1 A music app charges $3/2 per song plus a $7 account fee. A coupon takes $1/2 off each song and $2 off the fee. Write and simplify an expression for the cost of x songs with the coupon.

WORK SPACE

ANSWER _____

2 Three friends each earn 1/2 point for every round they play, plus 2 bonus points. Each friend plays x rounds. Write a factored expression and an expanded expression for their total points.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student claims 3/2(2x - 8) - 1/3(9x + 3) simplifies to -11. Is the claim correct? Show the steps and explain the error.

WORK SPACE AND ANSWER

ANSWER KEY # Expression Remix

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Simplify (1/2)x + (3/2)x - 1/3.	**2x - 1/3**
2	Expand 3/8(8x + 16).	**3x + 6**
3	Simplify (7/3)x - 2/3 - ((1/3)x + 1/3).	**2x - 1**
4	Factor (3/2)x + 9/2.	**(3/2)(x + 3)**
5	Simplify 2/3(3x - 9) + (1/2)x.	**(5/2)x - 6**
6	Simplify (7/8)x - 1/8(x - 8).	**(3/4)x + 1**

PART 2 · APPLY IT

1. **$x + $5** Subtract the coupon amounts from the original cost: ((3/2)x + 7) - ((1/2)x + 2) = x + 5 dollars.
2. **Factored: 3((1/2)x + 2). Expanded: (3/2)x + 6.** Each friend earns (1/2)x + 2 points. Multiply by 3 friends, then distribute.

CHALLENGE

No. 3/2(2x - 8) - 1/3(9x + 3) = 3x - 12 - (3x + 1) = 3x - 12 - 3x - 1 = -13. The claim does not subtract the 1 from the second group.

Accept equivalent forms of each expression. In the challenge, look for subtraction of both terms in the second group.