LESSON MAKER PRO

Expression Remix

Subtract, expand, and factor expressions.

GRADE 7 · 7.AT.B.5

7.AT.B.5 "subtract, factor, and expand linear expressions with rational coefficients."

NAME _____ DATE _____

THREE CONNECTED MOVES

To expand, multiply the number outside parentheses by each term inside. To subtract expressions, change the sign of each term in the expression you subtract, then combine like terms. To factor, reverse expansion by taking out a common factor.

WORKED EXAMPLE

Expand 7/10(x - 5/21).

1. Multiply 7/10 by each term: 7/10(x) - 7/10(5/21).
2. Multiply the fractions: 7/10x - 35/210.
3. Simplify the fraction: 7/10x - 1/6.

Answer: 7/10x - 1/6

PRACTICE 6 problems

1 Simplify (3/2x + 1/4) - (1/2x - 3/8).

ANSWER _____

2 Simplify (-2/3x + 7/4) - (1/3x + 1/2).

ANSWER _____

3 Expand 2/5(10x - 15/4).

ANSWER _____

4 Expand -3/5(10x + 5/3).

ANSWER _____

5 Factor 4/9x + 8/3 so the numbers inside the parentheses are integers with no common factor.

ANSWER _____

6 Factor 5/12x + 5/8 so the numbers inside the parentheses are integers with no common factor.

ANSWER _____

APPLY IT Show your work

1 Two online shops sell the same stickers. Shop A charges $3/4 per sticker plus $5/2 for shipping. Shop B charges $1/2 per sticker plus $1 for shipping. Write and simplify an expression for how much more Shop A costs than Shop B for x stickers.

WORK SPACE

ANSWER _____

2 A craft shop charges $3/4 per bead plus $3/2 for shipping. Write the total cost of x beads in factored form, with integers inside the parentheses. What does the number added to x tell you about the shipping cost?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student says (2/3x - 1/4) - (1/3x + 3/4) = 1/3x + 1/2. Explain the mistake and give the correct simplified expression.

WORK SPACE AND ANSWER

ANSWER KEY # Expression Remix

GRADE 7 · 7.AT.B.5

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Simplify (3/2x + 1/4) - (1/2x - 3/8).	**x + 5/8**
2	Simplify (-2/3x + 7/4) - (1/3x + 1/2).	**-x + 5/4**
3	Expand 2/5(10x - 15/4).	**4x - 3/2**
4	Expand -3/5(10x + 5/3).	**-6x - 1**
5	Factor 4/9x + 8/3 so the numbers inside the parentheses are integers with no common factor.	**4/9(x + 6)**
6	Factor 5/12x + 5/8 so the numbers inside the parentheses are integers with no common factor.	**5/24(2x + 3)**

PART 2 · APPLY IT

1. **1/4x + 3/2 dollars** Subtract Shop B's cost from Shop A's cost: (3/4x + 5/2) - (1/2x + 1) = 1/4x + 3/2.
2. **3/4(x + 2) dollars. Shipping costs the same as 2 beads.** The total is 3/4x + 3/2 = 3/4(x + 2). Since 3/2 ÷ 3/4 = 2, shipping costs as much as 2 beads.

CHALLENGE

The student did not change the sign of 3/4 when subtracting the second expression. The correct result is 1/3x - 1.

For the factored problems, accept equivalent forms with integer terms inside the parentheses and no common factor between those terms. In the challenge, the explanation should identify the sign error.