

Expression Remix

Combine rational-coefficient expressions with care.

GRADE 7 • MA.7.AR.1.1

MA.7.AR.1.1 "Apply properties of operations to add and subtract linear expressions with rational coefficients."

NAME _____

DATE _____

COMBINE LIKE TERMS

Use the distributive property to remove parentheses. When you subtract a group, change the sign of every term in that group. Then combine x terms with x terms and constants with constants.

WORKED EXAMPLE

Simplify: $(23/29x - 31/37) + (41/29x + 47/37)$

1. Group the x terms and the constants:
 $(23/29x + 41/29x) + (-31/37 + 47/37)$.
2. Add the x coefficients: $23/29x + 41/29x = 64/29x$.
3. Add the constants: $-31/37 + 47/37 = 16/37$.

Answer: $64/29x + 16/37$

PRACTICE 6 problems

1 Simplify: $(3/8x + 5/9) + (1/6x - 1/4)$

ANSWER _____

2 Simplify: $(9/14x - 4/15) - (3/14x + 5/12)$

ANSWER _____

3 Simplify: $-4/9x + 3/10 + (5/9x - 1/6)$

ANSWER _____

4 Simplify: $(8/15x - 3/8) - (-1/15x + 5/6)$

ANSWER _____

5 Simplify: $1.6x - 0.45 + 0.8x + 1.25$

ANSWER _____

6 Simplify: $(-5/12x + 7/10) - (3/8x - 1/5)$

ANSWER _____

APPLY IT Show your work

- 1** In a game tournament, a player's score bonus after x completed quests is modeled by $(\frac{3}{5}x + \frac{7}{10})$ points. The game then subtracts an adjustment of $(\frac{1}{4}x - \frac{1}{5})$ points. Write a simplified expression for the player's final bonus.

WORK SPACE

ANSWER _____

- 2** A music club collects $(\frac{5}{6}x + \frac{3}{8})$ dollars from ticket sales and pays $(\frac{1}{3}x + \frac{1}{4})$ dollars for equipment. Write a simplified expression for the money left after paying for the equipment.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Simplify: $(\frac{7}{9}x - \frac{5}{12}) - [(-\frac{2}{3}x + \frac{1}{8}) - (\frac{1}{6}x - \frac{3}{4})]$

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Simplify: $(\frac{3}{8}x + \frac{5}{9}) + (\frac{1}{6}x - \frac{1}{4})$	$\frac{13}{24}x + \frac{11}{36}$
2	Simplify: $(\frac{9}{14}x - \frac{4}{15}) - (\frac{3}{14}x + \frac{5}{12})$	$\frac{3}{7}x - \frac{41}{60}$
3	Simplify: $-\frac{4}{9}x + \frac{3}{10} + (\frac{5}{9}x - \frac{1}{6})$	$\frac{1}{9}x + \frac{2}{15}$
4	Simplify: $(\frac{8}{15}x - \frac{3}{8}) - (-\frac{1}{15}x + \frac{5}{6})$	$\frac{3}{5}x - \frac{29}{24}$
5	Simplify: $1.6x - 0.45 + 0.8x + 1.25$	$2.4x + 0.8$
6	Simplify: $(-\frac{5}{12}x + \frac{7}{10}) - (\frac{3}{8}x - \frac{1}{5})$	$-\frac{19}{24}x + \frac{9}{10}$

PART 2 • APPLY IT

1. **$\frac{7}{20}x + \frac{9}{10}$** Subtract the second expression by changing the signs inside its parentheses. Combine $\frac{3}{5}x$ and $-\frac{1}{4}x$, then combine $\frac{7}{10}$ and $\frac{1}{5}$.
2. **$\frac{1}{2}x + \frac{1}{8}$** Subtract the equipment cost expression from the ticket-sales expression. Combine the x terms and then combine the constants.

CHALLENGE

 $\frac{29}{18}x - \frac{31}{24}$

Accept equivalent expressions with terms in a different order. For subtraction problems, check that students changed the sign of every term in the expression being subtracted.