LESSON MAKER PRO

Expression Remix

Simplify expressions, then find their value.

GRADE 8 · PA.A.3

PA.A.3 "Generate equivalent numerical and algebraic expressions and use algebraic properties to evaluate expressions. Use substitution to simplify and evaluate algebraic expressions..."

NAME _____ DATE _____

DISTRIBUTE, COMBINE, SUBSTITUTE

Use the distributive property to multiply each term inside parentheses. Combine like terms to make an equivalent expression. To find its value, substitute for x and follow the order of operations.

WORKED EXAMPLE

Simplify 11(x + 7) - 9x. Then find its value when x = 13.

1. Distribute: 11x + 77 - 9x
2. Combine like terms: 2x + 77
3. Substitute and evaluate: 2(13) + 77 = 103

Answer: 2x + 77; 103

PRACTICE 6 problems

1 Simplify 4(x + 6) + 6x.

ANSWER _____

2 Simplify 8(x - 3) - 5x.

ANSWER _____

3 Simplify 6(3x - 5) - 4x.

ANSWER _____

4 Find the value of 5(x + 8) - 6x when x = 4.

ANSWER _____

5 Simplify 3(x + 10) + 5(x - 4). Name the property you use to remove the parentheses.

ANSWER _____

6 Simplify 12x + 4 + 6x + 8. Name the properties that let you rearrange and regroup the terms to put like terms together.

ANSWER _____

APPLY IT Show your work

1 An art club buys 4 marker packs and 4 sketchbooks. Each marker pack costs x dollars, and each sketchbook costs $6. The club uses an $8 coupon on the purchase. Write and simplify an expression for the total cost. Then find the cost when x = 5.

WORK SPACE

ANSWER _____

2 At a gaming tournament, each team member pays an $8 entry fee and buys a $4 snack. The team also pays a $30 table fee. Write and simplify an expression for the team's total cost with x members. Then find the cost for 6 members.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Simplify 3(x + 8) + 5x - (4x + 6), then find its value when x = 6. Explain why both terms in the last parentheses change signs.

WORK SPACE AND ANSWER

ANSWER KEY # Expression Remix

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Simplify 4(x + 6) + 6x.	**10x + 24**
2	Simplify 8(x - 3) - 5x.	**3x - 24**
3	Simplify 6(3x - 5) - 4x.	**14x - 30**
4	Find the value of 5(x + 8) - 6x when x = 4.	**36**
5	Simplify 3(x + 10) + 5(x - 4). Name the property you use to remove the parentheses.	**8x + 10; distributive property**
6	Simplify 12x + 4 + 6x + 8. Name the properties that let you rearrange and regroup the terms to put like terms together.	**18x + 12; commutative and associative properties of addition**

PART 2 · APPLY IT

1. **4(x + 6) - 8 = 4x + 16; $36** Distribute 4 and subtract the coupon. Substitute 5 for x: 4(5) + 16 = 36.
2. **30 + x(8 + 4) = 30 + 12x; $102** Each member costs $12, in addition to the $30 team fee. Substitute 6 for x: 30 + 12(6) = 102.

CHALLENGE

4x + 18; 42 when x = 6. Subtracting (4x + 6) means distributing -1, which gives -4x - 6.

Accept equivalent simplified forms with terms in a different order. For the challenge explanation, accept reasoning that correctly applies the subtraction to both terms in the parentheses.