LESSON MAKER PRO

Expression Power Moves

Simplify, combine, and evaluate expressions.

GRADE 7 · 7.PFA.2

7.PFA.2 "The student will simplify numerical expressions, simplify and generate equivalent algebraic expressions in one variable, and evaluate algebraic expressions for given replacement values of the variables..."

NAME _____ DATE _____

BUILD EXPRESSIONS CAREFULLY

Use the order of operations: simplify inside grouping symbols, then exponents and roots, then multiply or divide, and finally add or subtract. To simplify an algebraic expression, combine only like terms, which have the same variable part. Replace x with its value before you evaluate an expression.

WORKED EXAMPLE

Use the value of x marked on the number line. Evaluate 7x - 19.



1. The number line shows x = 12.
2. Replace x: 7(12) - 19.
3. Multiply: 84 - 19 = 65.

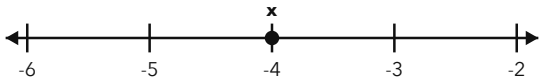
Answer: 65

PRACTICE 6 problems

1 Simplify $[18 / 3 + 2^3] - \sqrt{49}$.

ANSWER _____

2 Use the value of x marked on the number line. Evaluate 5x + 9.



ANSWER _____

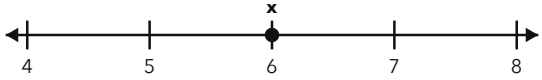
3 Simplify -3/4x + 5x - 2.

ANSWER _____

4 Simplify $|-15| - [4^2 / 2]$.

ANSWER _____

5 Use the value of x marked on the number line. Evaluate $3x + 2^3$.



ANSWER _____

6 Simplify 4(2x - 3) + x.

ANSWER _____

APPLY IT Show your work

1 At a school esports event, a team earns x points for each of 3 wins and earns 2x bonus points for a strategy challenge. The team loses 8 points for a penalty. Write and simplify an expression for the team's score. Then find the score when x = 7.

WORK SPACE

ANSWER _____

2 Jada is editing a highlight video. She keeps 1/2x minutes from one match and 3/2x minutes from other clips, then removes 4 minutes of repeated footage. Write and simplify an expression for the finished video length. Then find the length when x = 10.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Explain why 3(2x - 5) + 4x and 10x - 15 are equivalent. Then evaluate both expressions when x = -1/2.

WORK SPACE AND ANSWER

ANSWER KEY

Expression Power Moves

GRADE 7 · 7.PFA.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Simplify [18 / 3 + 2^3] - √49.	**7**
2	Use the value of x marked on the number line. Evaluate 5x + 9.	**-11**
3	Simplify -3/4x + 5x - 2.	**17/4x - 2**
4	Simplify |-15| - [4^2 / 2].	**7**
5	Use the value of x marked on the number line. Evaluate 3x + 2^3.	**26**
6	Simplify 4(2x - 3) + x.	**9x - 12**

PART 2 · APPLY IT

1. **5x - 8; 27 points** Write 3x + 2x - 8, then combine like terms to get 5x - 8. Replace x with 7 to get 35 - 8 = 27.
2. **2x - 4; 16 minutes** Combine 1/2x and 3/2x to get 2x, so the expression is 2x - 4. Replace x with 10 to get 20 - 4 = 16.

CHALLENGE

3(2x - 5) + 4x = 6x - 15 + 4x = 10x - 15. When x = -1/2, both expressions equal -20.

Accept equivalent forms with terms in a different order, such as -2 + 17/4x for problem 3. For the challenge, accept a correct distributive-property explanation and the value -20.