Combine Expressions with Two Variables

TOPIC 4 / MATHEMATICS

Write. Represent. Explain.

45-minute lesson • Original classroom examples

What will we learn today?

- Group terms by their variable parts and constants.
- Use an equation, inequality, table, or diagram to justify your reasoning.
- Explain your answer using mathematical vocabulary and units.

5-minute warm-up

Discuss with a partner: What previous algebra or number skill will help with today’s lesson?

Show one calculation or example in your notebook.

Why this lesson matters

A craft budget includes x-dollar parts and y-dollar labor costs.

What is known? What is unknown? Which quantities are related?

Represent the relationship

A craft budget includes x-dollar parts and y-dollar labor costs.

$$4x + 2y - x + 5y = 3x + 7y$$

Explain the meaning of the variable, numbers, and operations.

Worked example

Simplify 4a + 2b − a + 5b.

$$3a + 7b$$

Check: Does the result match the original relationship?

Independent practice

1. Simplify $3x - 2y + 5x + y + 4$.

2. Simplify $-1.5p + 2q + 0.5p - 3q$.

Check your reasoning

Question 1

$$8x - y + 4$$

Question 2

$$-p - q$$

Group challenge

Why are 2x and 2y unlike terms even though both have coefficient 2?

Each group member must explain one step or defend one claim.

Group challenge • solution

$x \neq y$ in general

Compare methods. Does the answer make sense in context?

Additional Practice — If Time Allows

Simplify $-1.5p + 2q + 0.5p - 3q$.

Extension: Create a similar problem with different numbers.

2-minute exit ticket

Simplify $6a - 4b - 2a + 5b$.

Work independently. Show enough steps to explain your thinking.

Exit ticket • answer

$$4a + b$$

Reflect: What would you check before moving to the next lesson?