Equations with Rational Numbers: Fractions

TOPIC 4 / MATHEMATICS

Write. Represent. Explain.

45-minute lesson • Original classroom examples

What will we learn today?

- Represent and solve equations with fractional coefficients.
- 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

Three-fourths of a ribbon measures 9 meters. How long is the ribbon?

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

Represent the relationship

Three-fourths of a ribbon measures 9 meters. How long is the ribbon?

$$\frac{3}{4}x = 9$$

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

Worked example

Solve three-fourths of x equals 9.

$$x = 9 \div \frac{3}{4} = 12$$

Check: Does the result match the original relationship?

Independent practice

1. Solve (5/8)q = 10.

2. Solve x ÷ (3/5) = 15.

Check your reasoning

Question 1

$$q = 10 \div \frac{5}{8} = 16$$

Question 2

$$x = 15 \cdot \frac{3}{5} = 9$$

Group challenge

Explain why dividing by three-fourths is multiplying by four-thirds.

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

Group challenge • solution

$$9 \div \frac{3}{4} = 9 \cdot \frac{4}{3} = 12$$

Compare methods. Does the answer make sense in context?

Additional Practice — If Time Allows

Explain three-fourths of x equals 9.

Extension: Create a similar problem with different numbers.

2-minute exit ticket

Solve (2/3)y = 14.

Work independently. Show enough steps to explain your thinking.

Exit ticket • answer

$$y = 21$$

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