# Math Moments that Matter
# FIFTH GRADE

Operations with Fractions

In 5th grade, students build on what they already know about fractions to add, subtract, multiply, and divide them in ways that make sense. They use visuals like number lines, area models (pictures of parts of a rectangle), and fraction strips (rectangular visual models divided into equal parts that help students see, compare, and understand fractions by length) to see what's happening when fractions are combined or split apart. By connecting these ideas to the whole-number strategies they already understand, students begin to notice patterns that help them make sense of real-world fraction situations—like sharing food, measuring ingredients, or comparing portions.

Students learn how fraction operations work by using models that show what the math looks like. In the first image, fraction strips help students see what it means to multiply a fraction by a whole number by adding the same fraction repeatedly. In the second image, the area model shows 1/5 × 1/3 by overlapping fifths and thirds. The shaded part represents "a part of a part," helping students see why the product is smaller." These tools help students understand how the math works, rather than memorizing steps without meaning.

EXAMPLE: *Fraction strips showing repeated fractional parts*

$$4 \times \tfrac{2}{3} \qquad 4 \times (2 \div 3)$$
$$\tfrac{2}{3} \times 4 \qquad 2 \times (4 \div 3)$$
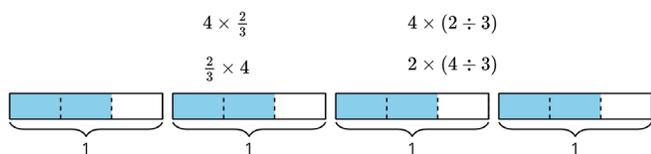
EXAMPLE: *Area model showing fraction × fraction*
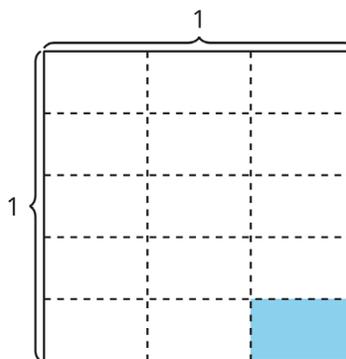
Communicating Reasoning in Math

When students explain their thinking about fractions, they're learning how parts fit together to make a whole. Talking about what happens when fractions are added, subtracted, multiplied, or divided helps them connect visual models, equations, and everyday examples. Students practice communicating their reasoning when they:

- Explain how they solved a problem using models or drawings
- Listen to classmates' strategies and share what makes sense to them
- Use fraction strips, area models, or number lines to show their thinking
- Use math words, such as "numerator," "denominator," "equal parts," "whole," "naturally."
- Justify their reasoning: "I know ½ × ⅔ = ⅓ because half of two-thirds is one out of three equal parts."

Explaining their thinking helps students see patterns, make connections, and feel confident solving fraction problems in different ways.

What You Might See in the Classroom

Students using fraction strips, drawings, number lines, or area models to show fraction operations.

Teachers asking:
- "How do you know your model matches your equation?"
- "What happens to the size of the amount when you multiply by a fraction less than one?
- "Why does your answer make sense for this situation?"

Students comparing multiple strategies to solve the same problem.

Students using estimation to check whether answers are reasonable.

Students connecting fraction operations to what they know about whole numbers.

What You Can Do at Home

Use everyday examples: "We used ¾ cup of flour and ½ cup of flour. How much more sugar did we use?"

Ask: "How do you know your answer makes sense?" or "Can you show me how you pictured that?"

Try it: "What's an easy way to estimate (find about how much) ⅔+ ¾? Is the answer closer to 1, 1½, or 2?"

Connect ideas: "How is multiplying by ½ similar to dividing by 2?"

Talk it out: "If you share 3 pizzas among 4 friends, would each person get more or less than one whole pizza?"

Make it a Math Moment!

Math is talk! When students explain how they combine or compare fractions, they're showing how the pieces fit together to make a whole and building confidence in making sense of fraction ideas.

Tap or Scan for Interactive Tools and More Resources!

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