

# Math Moments that Matter

## SIXTH GRADE

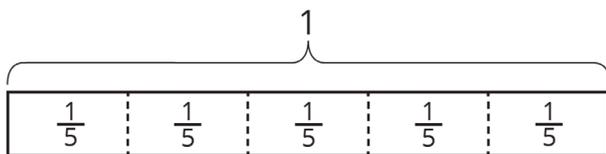


### Division of Fractions and Operations with Rational Numbers

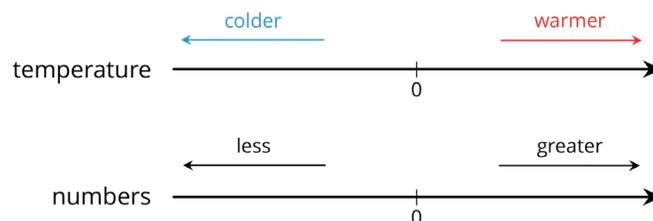
In 6th grade, students learn what it really means to divide by a fraction. For example, a problem like  $1 \div 1/5$  asks, “How many pieces that are one-fifth the size of a whole fit into one whole?” Using pictures, models, and number lines helps students see why dividing by a small fraction can actually give a bigger answer. Students also extend these ideas to rational numbers—fractions, decimals, and negative numbers—so they can make sense of math across all kinds of situations, from temperatures to measurements to real-life comparisons.

Students use number lines and visual models to understand what division means when fractions and rational numbers are involved. In the first image, the fraction strip helps students see why dividing 1 by  $1/5$  gives 5 equal pieces, and why  $1 \div 1/5 = 5$ . In the second image, the number line is used to explore to help students compare values and make sense of results that are above or below zero. These visuals help students see patterns, compare values, and build confidence working with rational numbers in everyday contexts.

**EXAMPLE:** Fraction strip showing 1 divided by  $1/5$



**EXAMPLE:** Number line showing positive and negative numbers around 0



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### Communicating Reasoning in Math

When students explain their thinking about fractions and rational numbers, they’re learning to connect visual models, patterns, and rules. Talking about why operations work helps them see consistency across all kinds of numbers—positive or negative, whole or fractional. They learn to:

- Explain why dividing by a fraction can make a number larger or smaller
- Use diagrams or number lines to show what’s happening in a problem
- Listen to others’ ideas and refine their explanations
- Use clear math language, such as “rational numbers,” “opposite,” “product,” “quotient,” and “absolute value.”
- Explain: “I know  $2/3 \div 1/2 = 1 1/3$  because there are one and  $1/3$  halves in  $2/3$ .”

These conversations show students that math rules always have meaning—they aren’t just steps to memorize.

## What You Might See in the Classroom

Students using number lines and fraction models to show division of fractions.

Teachers asking:

- “Why does dividing by a fraction sometimes make the number larger?”
- “What patterns do you notice with positive and negative numbers?”
- “How do the models help you understand what’s happening?”

Students explaining strategies using pictures, equations, and number lines.

Students exploring how operations behave differently with positive and negative numbers.

Students connecting their models to rules about multiplication and division that always hold.

## What You Can Do at Home

Use everyday examples: “If half a recipe uses  $\frac{3}{4}$  cup of sugar, how much is in a whole recipe?”

Ask: “Can you show me how you pictured that?” or “Why does that answer make sense?”

Try it: “Draw or explain how you know that  $\frac{1}{2} \div \frac{1}{2} = 1$ ?”

Connect ideas: “What happens when you multiply by a number smaller than one?”

Talk it out: “What patterns do you notice when dividing by fractions?”

## Make it a Math Moment!

Everyday moments are math moments. When students explain why dividing by a fraction can make a number larger or smaller, they’re using real reasoning—not just rules—which helps them make sense of rational numbers in real-life situations.

