

MATHEMATICS: GRADE 5

In Grade 5, instructional time should focus on three critical areas: 1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); 2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and 3) developing understanding of volume.

1. Developing Fluency with Addition and Subtraction of Fractions, and Developing Understanding of the Multiplication of Fractions and of Division of Fractions in Limited Cases

Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationships between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions makes sense. (Note: this is limited to the case of dividing unit fractions by whole number and whole numbers by unit fractions.)

2. Extending Division to 2-Digit Divisors, Integrating Decimal Fractions into the Place Value System and Developing Understanding of Operations with Decimals to Hundredths, and Developing Fluency with Whole Number and Decimal Operations

Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

3. Developing an Understanding of Volume

Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit cube is the standard unit or measuring volume. They select appropriate units, strategies, and tools

for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of array cubes. They measure necessary attributes of shapes in order to determine volumes to solve real-world and mathematical problems.

Source: corestandards.org

Illinois Learning Standards: Grade 5 Overview

Operations and Algebraic Thinking <ul style="list-style-type: none">• Write and interpret numerical expressions.• Analyze patterns and relationships.
Number and Operations in Base Ten <ul style="list-style-type: none">• Understand the place value system.• Perform operations with multi-digit whole numbers and with decimals to hundredths.
Number and Operations -Fractions <ul style="list-style-type: none">• Use equivalent fractions as a strategy to add and subtract fractions.• Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
Measurement and Data <ul style="list-style-type: none">• Convert like measurement units within a given measurement system.• Represent and interpret data.• Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.
Geometry <ul style="list-style-type: none">• Graph points on the coordinate plane to solve real-world and mathematical problems.• Classify two-dimensional figures into categories on their properties.

Source: corestandards.org

Investigations in Number, Data, and Space 3

Scope and Sequence: Grade 5

Unit 1	Puzzles, Clusters, and Towers Multiplication and Division 1
Unit 2	Prisms and Solids 3-D Geometry and Measurement
Unit 3	Rectangles, Clocks, and Tracks Rational Numbers 1: Addition and Subtraction
Unit 4	How Many People and Teams? Multiplication and Division 2
Unit 5	Temperature, Height, and Growth Analyzing Patterns and Rules

Unit 6	Between 0 and 1 Rational Numbers 2: Addition and Subtraction
Unit 7	Races, Arrays, and Grids Rational Numbers 3: Multiplication and Division
Unit 8	Properties of Polygons 2-D Geometry and Measurement

Source: Investigations in Number, Data, and Space 3 (TERC, 2017)