

Reading Public Schools

Instilling a joy of learning and inspiring the innovative leaders of tomorrow



Mathematics Curriculum Guide

Grade 5

Fifth Grade Priority Areas

Developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (NF)

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 relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense.

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 (NBT)

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 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 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.

Developing understanding of volume (MD)

Students convert among different-sized measurement units within a given measurement system allowing for efficient and accurate problem solving with multi-step real-world problems as they progress in their understanding of scientific concepts and calculations. Students recognize volume as an attribute of three-dimensional space. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume.

Solving problems using the coordinate plane (G)

Students learn to interpret the components of a rectangular coordinate system as lines and understand the precision of location that these lines require. Students learn to apply their knowledge of number and length to the order and distance relationships of a coordinate grid and to coordinate this across two dimensions. Students solve mathematical and real world problems using coordinates.

Mathematical Practice Standards

- Making sense of problems and persevering in solving them
- Reasoning abstractly and quantitatively
- Constructing viable arguments and critiquing the reasoning of others
- Modeling with mathematics
- Using appropriate tools strategically
- Attending to precision
- Looking for and making use of structure
- Looking for and expressing regularity in repeated reasoning

Content Standards

Operations and Algebraic Thinking (OA)

- Write and interpret numerical expressions
- Analyze patterns and relationships

Number and Operations in Base Ten (NBT)

- Understand the place value system
- Perform operations with multi-digit whole numbers and with decimals to hundredths

Number and Operations—Fractions (NF)

- 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 (MD)

- 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 (G)

- Graph points on the coordinate plane to solve real-world and mathematical problems
- Classify two-dimensional figures into categories based on their properties



Concepts	Essential Questions	Resources
<i>Operations and Algebraic Thinking (OA):</i> Write and interpret numerical expressions.	<ul style="list-style-type: none"> How are the values of an algebraic expression and a numerical expression found? 	Math in Focus (ch 2, 5) Understanding Numbers; Place Value, Addition & Subtraction
<i>Operations and Algebraic Thinking (OA):</i> Analyze patterns and relationships	<ul style="list-style-type: none"> How can we show the relationship between patterns with given rules using a coordinate plane? 	Math in Focus (ch 11)
<i>Number and Operations in Base Ten (NBT):</i> Understand the place value system	<ul style="list-style-type: none"> How are whole numbers and decimals written, compared, and ordered? How can place value patterns help in multiplication and division of decimals by a power of ten? What are different ways numbers can be read and written? 	Math in Focus (ch 2, 8) Understanding Numbers; Place Value
<i>Number and Operations in Base Ten (NBT):</i> Perform operations with multi-digit whole numbers and with decimals to hundredths	<ul style="list-style-type: none"> What are the standard algorithms for multi-digit multiplication and division? What are the standard algorithms for finding products and quotients involving numbers with decimals? How can place value strategies, properties of operations and/or the relationship between multiplication and division be helpful with whole numbers and with decimals to hundredths? 	Math in Focus (ch 2, 8, 9) Understanding Numbers; Addition & Subtraction, Decimals
<i>Number and Operations –Fractions (NF):</i> Use equivalent fractions as a strategy to add and subtract fractions	<ul style="list-style-type: none"> What does it mean to add and subtract fractions with unlike denominators? What is a standard procedure for adding subtracting fractions with unlike denominators? What visual models are useful in adding and subtracting fractions? 	Math in Focus (ch 3)
<i>Number and Operations –Fractions (NF):</i> Apply and extend previous understandings of multiplication & division to multiply and divide fractions	<ul style="list-style-type: none"> What are the procedures for estimating and finding products and quotients of fractions and mixed numbers? What visual models are most useful to show multiplication and/or division of fractions? 	Math in Focus (ch 4)
<i>Measurement and Data (MD):</i> Convert like measurement units within a given measurement system	<ul style="list-style-type: none"> What are the customary measurement units and how are they related? What are the metric measurement units and how are they related? How can the place value system be useful in converting among different-sized metric units within a given measurement system? 	Understanding Numbers; Place Value, Decimals
<i>Measurement and Data (MD):</i> Represent and interpret data	<ul style="list-style-type: none"> How can line plots be used to represent data and answer questions? How can numbers be used to describe certain data sets? 	Math in Focus (ch 11, 15)
<i>Measurement and Data (MD):</i> Geometric measurement: Understand concepts of volume & relate volume to multiplication & to addition	<ul style="list-style-type: none"> How can three-dimensional shaped be represented and analyzed? What does the volume of a rectangular prism mean and how can it be found? 	Math in Focus (ch 15)
<i>Geometry (G):</i> Graph points on the coordinate plane to solve real-world and mathematical problems	<ul style="list-style-type: none"> How are points graphed? How can we show the relationship between sequences on a graph? 	Math in Focus (ch 11)
<i>Geometry (G):</i> Classify two-dimensional figures into categories based on their properties	<ul style="list-style-type: none"> How can polygons, triangles, and quadrilaterals be described, classified and named? 	Math in Focus (ch 13) Understanding Numbers; Decimals

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Curriculum Guide Overview

Curriculum Guide	Curriculum guides are public documents that are aligned with the Massachusetts Department of Education Curriculum Frameworks. They focus on the set of standards that students will learn within certain disciplines at appropriate grade levels. Curriculum Guides are intended for teachers, parents, and the wider school community as an overview document of the course of study for the year.
Curriculum Map	Curriculum maps are internal documents utilized as planning tools for teachers. Curriculum maps keep a focus on the end-of-year standards and chart a course for the teaching and learning over the year. They are typically organized in a grade-level overview organized by month or marking period. Curriculum maps typically include; standards and expectations for the grade/content, essential skills/concepts, methods of assessment, and major content resources. Maps are never “done” as ongoing work of educators include revisions, additions, and revisits to the maps. They provide an overview for the year while also allowing educators to see a vertical picture of how the content develops as students progress through each grade.
Standards	The standards used as the foundation of our curriculum come directly from the Massachusetts Department of Education Curriculum Frameworks. State standards may be viewed here: http://www.doe.mass.edu/frameworks/
Priority Areas	The state of Massachusetts identifies critical areas that should be the priority focus of that grade’s instructional time.
Practice Standards	Practice Standards are a set of skills/behaviors that are replicated in grades preK-12 and are currently found in Mathematics, Social Studies, and Science standards. These standards describe ways in which students engage with the content and the level of application grows increasingly complex as students progress vertically throughout their education.
Content Standards	The Content Standards describe what students should know and be able to do within each grade-level.
Essential Questions	Essential questions are questions that are not answerable with an easy answer or a simple instruction. The purpose of essential questions is to provide opportunities for inquiry into the learning and act as an umbrella to anchor the unit/lesson.
Resources	Resources identified in Curriculum Guides are not intended to be exhaustive, nor are they intended to be prescriptive. The resources identified may function as a menu of curriculum resources from which educators identify the most appropriate tools to utilized in their classrooms. More specifics about identified resources are identified within the curriculum map documents.