Reading Public Schools

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

Mathematics Curriculum Guide **Grade 6**

Course Description

In Grade 6, students will learn how to use reasoning about multiplication and division to solve ratio and rate problems about quantities by viewing equivalent ratios and rates. They will use the meaning of fractions and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students will extend their previous understandings of numbers and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers. They will understand the use of variables in mathematical expressions. Their study in this area will focus on writing expressions and equations that represent given situations, evaluating expressions, understanding that expressions in different forms can be equivalent, and solving one step equations. Students will reinforce their understanding of numbers by beginning to develop their ability to think statistically.Recognizing that data distribution may not have a definite center, students will learn that the median and mean yield different values. They will also build on their knowledge of area by reasoning about relationships among shapes to determine area, surface area, and volume. During all these critical areas, students are encouraged to apply their critical thinking through word problems.

Content Standards

Ratios and Proportional Relationships

- Understand ratio and rate concepts and use ratio reasoning to solve problems.

The Number System

- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- Compute fluently with multi-digit numbers and find common factors and multiples.
- Apply and extend previous understandings of numbers to the system of rational numbers.

Statistics and Probability

- Develop understanding of statistical variability. Summarize and describe distributions.

Expressions and Equations

- Apply and extend previous understandings of arithmetic to algebraic expressions.
- Reason about and solve one-variable equations and inequalities.
- Represent and analyze quantitative relationships between dependent and independent variables.

Geometry

- Solve real-world and mathematical problems involving area, surface area, and volume.

Mathematical Practice Standards

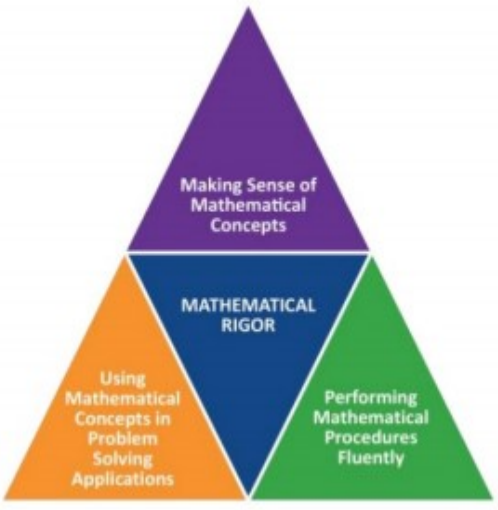
- Making sense of problems and persevering in solving them
- Reasoning abstractly and quantitatively
- Constructing viable arguments and critiquing the reasoning of others
- Modeling with mathematics
- Using appropriate tools strategically
- Attending to precision
- Looking for and making use of structure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

Units	Essential Questions
Ratios and Proportional Relationships	• What is a ratio? What is a unit rate? • How can I use ratios, rates, and unit rates to represent a real world problem? • How can ratios be represented in tables and graphs? • How can I use proportional reasoning to solve percent problems? • How are ratios and percents related?
The Number System	• How can properties of operations help to generate equivalent expressions that can be used in solving problems? • How can I use positive and negative numbers and zero to represent real world situations? • How can I represent points on a number line and coordinate plane? • How can I use an inequality to represent a real world situation? • How can I use absolute value to find the distance between two points on the coordinate plane? • What are the methods I can use to find common factors and multiples and what types of real world problems can LCM and GCF help me solve? • How can I solve real world problems involving fraction division and interpret the quotient in the context of the problem? • Can I operate fluently with positive rational numbers?
Expressions and Equations	• How do I write and evaluate exponents? • What is the mathematical terminology for algebraic expressions and equations? • How can algebraic expressions and equations be written to represent patterns and/or real world situations? • What does it mean to evaluate, simplify, or solve an algebraic expression or equation? • What does the solution represent when solving an inequality or equation? • What are independent and dependent variables? • How can tables and graphs show the relationship between independent and dependent variables ?
Geometry	• How can I represent 2D shapes on the coordinate plane? • How can I use geometry to solve real world problems? • How can I find the volume of a right rectangular prism with fractional sides? • How can I use a net to find surface area? • How can I find the area of an irregular shape by composing and decomposing into familiar shapes?
Statistics	• What is a statistical question? • How can I describe a set of data by its center, spread, and overall shape? • What is the difference between measures of center and measures of variation? • How can I choose the best way to organize and/or display data?

Structures for Learning

During instructional time, students and teachers may be engaged in…

- Whole class instruction
- Small group instruction
- Formative assessments
- Summative assessments
- Performance tasks
- Group projects
- Explorations with technology
- Real-world application problems



Reading Public Schools

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

Curriculum Guide Overview

Curriculum Guide	Curriculum guides are public documents 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. Each area of the curriculum is divided into general strands (broad categories) under which the standards fall. When we discuss "standards-based education" we mean that students are measured against their proficiency and growth towards meeting these standards. 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	Priority areas are defined by the state of Massachusetts as the most critical areas in each grade level on which instructional time should focus.
Mathematical Practice Standards	Mathematical Practice Standards are a set of skills/behaviors that are replicated in grades preK-12. These standards describe ways in which students engage with the mathematical 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 once within the area of mathematics.
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.