



Math Department Curriculum Guide

Grade 5 Math

Course Description
In Grade 5, instructional time focuses on four critical 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 (unit fractions divided by whole numbers and whole numbers divided by unit fractions); 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; developing understanding of measurement systems and determining volumes to solve problems; and solving problems using the coordinate plane.
Content Standards
<u>Grade 5 Massachusetts Curriculum Framework - Math</u>



Subject: Grade 5 Math

Units	Essential Questions/ Concepts
Term 1 Unit - Understand Place Value MA Standard: 5.NBT.A	- Use patterns and the properties of multiplication to calculate a product when multiplying by a power of 10; use whole-number exponents to write powers of 10. - Read and write whole numbers and decimals using standard form, expanded form, and number names; identify equivalent decimals. - Represent decimals to thousandths as fractions and fractions with denominators of 1,000 as decimals. - Use place value to round and compare decimals through thousandths. - Use the structure of the decimal place-value system to solve problems involving patterns. - How are whole numbers and decimals written, compared, and ordered?
Unit - Use Models and Strategies to Add/Subtract Decimals MA Standard: 5.NBT.B	- Use properties of addition and strategies to solve problems mentally. - Use rounding and compatible numbers to estimate sums and differences. - Model sums and differences of decimals. - Add and subtract decimals to hundredths using familiar strategies such as partial sums and differences. - Use prior math knowledge and equations or bar diagrams to solve problems. - How can sums and differences of decimals be estimated? - What are some common strategies for adding and subtracting decimals? - How can sums and differences be found mentally?
Unit - Graph Points on the Coordinate Plane MA Standard: 5.G.A	- Locate and graph points on the coordinate grid. - Solve real-world problems by graphing points. - Use reasoning to solve problems by making sense of quantities and relationships in the situation. - How are points plotted? - How are relationships shown on the graph?
Term 2 Unit - Fluently Multiply Multi-Digit Whole Numbers MA Standard: 5.NBT.B	- Use place value understanding and patterns and mentally multiply whole numbers and powers of 10. - Use rounding and compatible numbers to estimate products. - Use knowledge of place value and multiplying with 2-digit and 3-digit numbers to multiply with zeros. - Use properties, place value, partial products and the standard algorithm for multiplication to find the product of multi-digit numbers. - Use models and strategies to solve word problems. - Critique the reasoning of others by asking questions, looking for flaws, and using prior knowledge of estimating products. - What are the standard procedures for estimating and finding products of multi-digit numbers?



Units	Essential Questions/ Concepts
Unit - Geometric Measurement: Classify Two-Dimensional Figures MA Standard: 5.G.B	- Classify triangles and quadrilaterals by their properties. - Classify quadrilaterals in a hierarchy. - Construct arguments about geometric figures. - How can triangles and quadrilaterals be described, classified, and named?
Unit - Use Models and Strategies to Multiply Decimals MA Standard: 5.NBT.B	- Use knowledge about place value and patterns to find the product of a decimal number and a power of 10. - Use rounding and compatible numbers to estimate the product of a decimal and a whole number. - Use models, place-value understanding, and an algorithm to multiply a decimal and a whole number. - Multiply decimals using properties, partial products and models. - Use number sense and reasoning to place the decimal point in a product. - What are some common procedures for estimating and finding products involving decimals?
Unit - Use Models and Strategies to Divide Whole Numbers MA Standard: 5.NBT.B	- Use place value patterns and mental math to find quotients. - Use compatible numbers and place value to estimate quotients. - Use models and partial quotients to find quotients. - Use place value to divide by 2-digit divisors and greater dividends. - Select from different strategies to divide 3 and 4 digit. numbers by 2-digit numbers - What are some common procedures for dividing whole numbers and why do they work?
Unit - Use Models and Strategies to Divide Decimals MA Standard: 5.NBT.B	- Use mental math and place value patterns to divide a decimal by a power of 10. - Use reasoning and strategies such as rounding and compatible numbers to estimate quotients in problems with decimals. - Use models to help find quotients in problems involving decimals. - Use models to visualize the relationship between divisions and multiplication to divide decimals by 2-digit whole numbers. - Use models to divide a decimal by a decimal. - Use reasoning to solve problems by making sense of quantities and relationships in situations. - What are some common procedures for estimating and finding quotients involving decimals?
Unit - Understand Volume Concepts MA Standard: 5.MD.C	- Find the volume of solid figures such as rectangular prisms and combinations of rectangular prisms using a formula. - Use models, prior knowledge of volume and previously learned strategies to solve word problems involving volume. - What is the meaning of volume of a solid? - How can the volume of a rectangular prism be found?



Units	Essential Questions/ Concepts
Term 3 Unit - Use Equivalent Fractions to Add/Subtract Fractions MA Standard: 5.NF.A	▪ Estimate sums and differences of fractions by using the nearest half or whole number. ▪ Find common denominators for fractions with unlike denominators. ▪ Add and subtract fractions with unlike denominators using equivalent fractions with a common denominator. ▪ Estimate sums and differences of fractions and mixed numbers. ▪ Add and subtract mixed numbers using models, equivalent fractions and a common denominator. ▪ How can sums and differences of fractions and mixed numbers be estimated? ▪ What are common procedures for adding and subtracting fractions and mixed numbers?
Unit - Apply Understanding of Multiplication to Multiply Fractions MA Standard: 5.NF.B	▪ Multiply a fraction by a whole number, whole number by a fraction, multiply fractions and whole numbers. ▪ Use models or an algorithm to multiply two fractions. ▪ Find the area of a rectangle using fractions and diagrams. ▪ Use models, equations and previously learned strategies to multiply mixed numbers. ▪ Compare the size of the product to the size of one factor without multiplying to consider multiplication as scaling. ▪ What does it mean to multiply whole numbers and fractions? ▪ How can multiplication with whole numbers and fractions be shown using models and symbols?
Unit - Apply Understanding of Division to Divide Fractions MA Standard: 5.NF.B	▪ Understand how fractions are related to division. ▪ Implement division of fractions to show quotients as fractions and mixed numbers. ▪ Use multiplication to divide a whole number by a unit fraction. ▪ Use models, such as pictorial models or a number line, to show dividing a whole number by a unit fraction. ▪ Use models to divide unit fractions by non-zero whole numbers and whole numbers by a unit fraction. ▪ Solve multi-step problems involving division with unit fractions. ▪ Notice repetition in calculations and generalize about how to divide whole numbers and unit fractions. ▪ How are fractions related to division? ▪ How can you divide with whole numbers and unit fractions?
Unit - Represent and Interpret Data MA Standard: 5.MD.B	▪ Read, analyze, organize and display data in a line plot. Solve problems using data from line plots. ▪ Critique the reasoning of others using understanding of line plots and fractions. ▪ How can line plots be used to represent data and answer questions?



Units	Essential Questions/ Concepts
Unit - Write and Interpret Numerical Expressions MA Standard: 5.OA.A	▪ Use the order of operations to evaluate expressions. ▪ Write simple expressions that show calculations with numbers. ▪ Interpret numerical expressions without evaluating them. ▪ How is the value of a numerical expression found?
Unit - Algebra: Analyze Patterns and Relationships MA Standard: 5.OA.B	▪ Analyze numerical patterns and use tables to identify relationships between patterns. ▪ Analyze patterns, and graph ordered pairs generated from number sequences. ▪ How can number patterns be analyzed and graphed? ▪ How can number patterns and graphs be used to solve problems?
Unit - Converting Measurements MA Standard: 5.MD.A	▪ Convert customary and metric units of length, capacity and weight and units of time. ▪ Solve real-world problems with measurement conversions. ▪ What are customary measurement units and how are they related? ▪ What are metric measurement units and how are they related?

Textbook
<i>Envision Math 2020</i> ; published by Savvas