



Math Department Curriculum Guide

Grade 7 Math

Course Description
In Math 7, students extend their understanding of many concepts from previous years. They will use knowledge of ratios, rates and unit rates and apply this to develop an understanding of proportionality as seen in tables, graphs and equations. Students will develop a better understanding of rational numbers and perform all operations with them. Students will continue their study of geometric concepts through solving real-world and mathematical problems involving area, surface area, volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms, and area and circumference of circles. They will begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences. Throughout the course, there is an emphasis on real world applications and hands-on problem solving.
Content Standards
Grade 7 Massachusetts Curriculum Framework - Math



Subject: Grade 7 Math

Units	Concepts / Essential Questions
Term 1 Unit - Ratios and Proportional Relationships MA Standards: 7.RP.1, 7.RP.2, 7.RP.3	- Write, simplify and compare ratios. - Compute unit rates (including complex fractions). - Determine whether a table, graph and an equation shows a proportional relationship. - Identify the constant of proportionality in tables, graphs and equations. - Complete tables, create graphs and write equations for proportional relationships. - Use a proportions to solve part-to-part ratio and part-to-whole ratio problems. - Use a percent proportion to solve percent problems including markup, discount, tip, tax, fee, commission, simple interest and percent of change. - In what ways can ratios of fractions and quantities measured in like or different units be expressed as unit rates? - How would you recognize and represent proportional relationships between quantities measured in like or different units? - How can proportions be used to solve percent and ratio problems?
Term 1 Unit - Integers and Rational Numbers MA Standards: 7.NS.1, 7.NS.2, 7.NS.3	- Simplify expressions with opposites and absolute value. - Convert a rational number to a decimal and determine if it is a Terminating or a repeating decimal. - Evaluate numerical and variable expressions with integers and other rational numbers. - Solve real-world and mathematical problems using the four operations with integers and other rational numbers. - How do operations with integers relate to operations with all rational numbers? - How can you use previous understanding of operations with fractions to add, subtract, multiply and divide rational numbers? - How can you determine which operation to use when solving real-world word problems?
Term 2 Unit - Expressions and Equations MA Standards: 7.EE.1, 7.EE.2, 7.EE.3, 7.EE.4	- Use properties of operations (Distributive Property) to add, subtract, factor and expand linear expressions. - Solve real-world and mathematical problems involving one-, two- and multi-step equations. - Solve real-world and mathematical problems involving one-, two- and multi-step inequalities and interpret and graph the solutions. - How can properties of operations be used to generate equivalent expressions? - How can numerical and algebraic expressions, equations and inequalities be used to solve real-world and mathematical problems?



Units	Concepts / Essential Questions
Term 3 Unit - Geometry MA Standards: 7.G.1, 7.G.2, 7.G.3, 7.G.4, 7.G.5, 7.G.6	- Reproduce a scale drawing at a different scale. - Draw two-dimensional shapes with given conditions, with a focus on triangles. - Determine the two-dimensional shape created when a three-dimensional shape is sliced. - Calculate the circumference and area of circles. - Describe the relationship between the radius, diameter and circumference of a circle. - Use angle pairs to write and solve equations to find an unknown angle. - Solve real-world and mathematical problems involving area, surface area and volume of two- and three-dimensional objects. - How can you use scale drawings to solve problems? - What is the difference between a unique triangle, more than one triangle or no triangle? - What is the relationship between a circle's radius, diameter, circumference and area? - What are the major classification of angle pairs? - How can formulas be used to solve real-world application problems with three-dimensional shapes?
Term 3 Unit - Statistics and Probability MA Standards: 7.SP.1, 7.SP.2, 7.SP.3, 7.SP.4, 7.SP.5, 7.SP.6, 7.SP.7, 7.SP.8	- Use random sampling to draw inferences about a population. - Draw informal inferences comparing two populations using measures of center (mean, median) and measures of variability (range, MAD). - Approximate the probability of an event and express it as a number between 0 and 1. - Find the probability of compound events using tables, lists, tree diagrams, and simulations. - How are statistics used to compare populations and draw inferences about them? - How can you investigate chance processes and develop, use and evaluate probability models? - How is probability used to find the frequency of an event? - How are tables, lists, tree diagrams and simulations used to find the probability of an event?

Textbook

Connected Mathematics CMP3; published by Savvas