



# STAFFORD COUNTY PUBLIC SCHOOLS

## Curriculum Overview Seventh Grade Mathematics

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### Course Description:

The Grade 7 Math Standards of Learning are taught in this course to prepare students for successful daily living and further study in algebra and geometry. Students will use fractions, decimals, percents and proportional reasoning to solve a variety of problems. Students will use the properties of real numbers to solve linear equations and inequalities. Units of study will include data analysis techniques to make inferences and predictions. The principles of plane and solid geometry will be used in solving problems. Students will use approved scientific calculators wherever appropriate. Students enrolled in this class will take the Grade 7 Standards of Learning test. Students who successfully complete this class may take Grade 8 Mathematics.

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### Essential Skills/Processes:

The development of problem solving skills and logical reasoning is a major goal of the mathematics program at every level. Students will develop a wide range of mathematical skills and strategies for understanding and solving a variety of problem types, with an increased emphasis on consumer mathematics and practical problems.

Mathematics has its own language, the vocabulary and symbols are very important to a student's understanding of concepts and use of mathematics to solve problems. Students will use mathematical skills, symbols, vocabulary to read mathematics, discuss mathematics, write about mathematics, do mathematics, and solve problems. Students build on the concrete reasoning experiences developed in elementary school while developing the deeper mathematical understandings required for success in more complex learning experiences.

Technology is an important tool in both learning mathematics and solving problems in mathematics. To use technology appropriately and effectively students must know the basic facts, understand concepts, and be able to estimate and reason logically.

Students are more likely to be successful if they are:

- self-motivated,
- able to recall and use prior math skills,
- willing to practice skills regularly, including homework, and
- persistent in problem solving

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### Essential Knowledge:

#### Number, Number Sense, Computation and Estimation (16 items)

- Investigate and describe the concept of negative exponents for powers of ten
- Determine scientific notation for numbers greater than zero (*complete items without the use of a calculator*)
- Compare and order fractions, decimals, percents, and numbers written in scientific notation (*complete items without the use of a calculator*)
- Determine square roots (*complete items without the use of a calculator*)
- Identify and describe absolute value for rational numbers
- Describe and represent arithmetic and geometric sequences, using variable expressions
- Model addition, subtraction, multiplication, and division of integers; and add, subtract, multiply, and divide integers (*complete items without the use of a calculator*)
- Solve single-step and multistep practical problems, using proportional reasoning

#### Measurement and Geometry (13 items)

- Describe volume and surface area of cylinders
- Solve practical problems involving the volume and surface area of rectangular prisms and cylinders and describe how changing one measured attribute of a rectangular prism affects its volume and surface area
- Determine whether plane figures, quadrilaterals and triangles, are similar and write proportions to express the relationships between corresponding sides of similar figures

- Compare and contrast the following quadrilaterals based on properties: parallelogram, rectangle, square, rhombus, and trapezoid
- Given a polygon in the coordinate plane, represent transformations (reflections, dilations, rotations, and translations) by graphing in the coordinate plane

### **Probability, Statistics, Patterns, Functions, and Algebra (21 items)**

- Investigate and describe the difference between the experimental probability and theoretical probability of an event
- Determine the probability of compound events, using the Fundamental (Basic) Counting Principle
- Given data for a practical situation, construct and analyze histograms and compare and contrast histograms with other types of graphs presenting information from the same data set
- Represent relationships with tables, graphs, rules, and words.
- Write verbal expressions as algebraic expressions and sentences as equations and versa
- Evaluate algebraic expressions for given replacement values of the variables
- Solve one- and two-step linear equations in one variable
- Solve practical problems requiring the solution of one- and two-step linear equations
- Solve one-step inequalities in one variable and graph the solutions to inequalities on the number line
- Apply the following properties of operations with real numbers: the commutative and associative properties for addition and multiplication; the distributive property; the additive and multiplicative identity properties; the additive and multiplicative inverse properties; and the multiplicative property of zero.

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### **Resources:**

- Stafford County Public Schools: <http://stafford.schoolfusion.us/>
- Middle School Program of Studies: <http://stafford.schoolfusion.us/> Click on For Parents/Students tab.
- VA Standards of Learning: [http://www.doe.virginia.gov/testing/sol/standards\\_docs/mathematics/review.shtml](http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/review.shtml)
- School Report Card (VA Department of Education): [http://www.doe.virginia.gov/statistics\\_reports/school\\_report\\_card/index.shtml](http://www.doe.virginia.gov/statistics_reports/school_report_card/index.shtml)
- Prentice Hall: Mathematics Course 2 ©2010  
<http://phschool.com/webcodes10/index.cfm?fuseaction=home.gotoWebCode&wcprefix=ark&wcsuffix=0099>