



# STAFFORD COUNTY PUBLIC SCHOOLS

## Curriculum Overview 6Extended Math

---

### Course Description:

All of the Grade 6 Mathematics Standards of Learning and part of the Grade 7 Standards of Learning are taught in this course which prepares students for successful daily living and further study in algebra and geometry. The course is designed for students who have a solid foundation in computation with whole numbers, fractions, and decimals, and who can learn material at an accelerated pace. Students will solve real-world problems including consumer problems, ratios and proportions. Other topics to be covered are (plane and solid) geometry, measurement, statistics and probability, and one-step equations. Students will use approved scientific calculators wherever appropriate. Students enrolled in this class will take the Grade 6 Math Virginia Standards of Learning test. Students who successfully complete this class may enroll in 7 Extended Mathematics.

---

### 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

---

### Essential Knowledge:

#### Number and Number Sense (10 items)

- Describe and compare two sets of data using ratios using appropriate notations (such as,  $a/b$ ,  $a$  to  $b$ , and  $a:b$ ).
- Identify, represent, order, describe and compare integers (including absolute value of integers)
- Investigate and describe fractions, decimals and percents as ratios
- Identify a given fraction, decimal or percent from a representation
- Demonstrate equivalent relationships among fractions, decimals, and percents (*complete items without the use of a calculator*)
- Model addition, subtraction, multiplication, and division of integers; and add, subtract, multiply, and divide integers (*complete items without the use of a calculator*)
- Compare and order fractions, decimals, and percents (*complete items without the use of a calculator*)
- Demonstrate multiple representations of multiplication and division of fractions
- Determine square roots (*complete items without the use of a calculator*)
- Investigate and describe concepts of positive exponents and perfect squares, and 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*)
- Identify and describe absolute value for rational numbers
- Describe and represent arithmetic and geometric sequences, using variable expressions

### **Computation and Estimation (9 items)**

- Solve problems that involve multiplying and dividing fractions and mixed numbers (*complete items without the use of a calculator*)
- Estimate solutions and then solve single-step and multistep practical problems involving addition, subtraction, multiplication and division of fractions
- Solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of decimals
- Model addition, subtraction, multiplication, and division of integers
- Solve practical problems using addition, subtraction, multiplication and division of integers
- Evaluate whole number numerical expressions, using the order of operations (*complete items without the use of a calculator*).

### **Measurement and Geometry (12 items)**

- Comparisons between measurements in the U.S. Customary System of measurement and measurements in the metric system (*The intent is for students to make “ballpark” comparisons and not to memorize factors between U.S. and metric units.*)
- Define  $\pi$  (*pi*) as the ratio of the circumference of a circle to its diameter
- Solve practical problems involving circumference and area of a circle, given the diameter or radius
- Solve practical problems involving area and perimeter
- Describe and determine the volume and surface area of a rectangular prism
- Identify and graph the coordinates of a point in a coordinate plane
- Determine congruence of segments, angles, and polygons
- Describe and identify properties of quadrilaterals
- 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
- Compare and contrast the following quadrilaterals based on properties: parallelogram, rectangle, square, rhombus, and trapezoid

### **Probability, Statistics, Patterns, Functions, and Algebra (19 items)**

- Given a problem situation; construct circle graphs; draw conclusions and make predictions, using circle graphs; compare and contrast graphs that present information from the same data set
- Describe mean as balance point and decide which measure of center is appropriate for a given purpose
- Compare and contrast dependent and independent events and determine probabilities for dependent and independent events
- Identify and extend geometric and arithmetic sequences.
- Graph inequalities on a number line.
- 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
- Write verbal expressions as algebraic expressions and sentences as equations and versa
- Evaluate algebraic expressions for given replacement values of the variables
- 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.

---

### **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/index.shtml](http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.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 1 and Course 2 ©2010 <http://phschool.com/webcodes10/index.cfm?area=view&wcprefix=aqk&wcsuffix=0099>