MATHEMATICS

ADVANCED MATHEMATICS 7

FOCUS OF MIDDLE SCHOOL MATHEMATICS LEARNING

- To build on students' concrete reasoning experiences developed in previous grades
- To construct through active learning experiences a more advanced understanding of mathematics
- To develop deep mathematical understandings required for success in abstract learning experiences
- To apply mathematics as a tool in solving real-world problems

Counselors are available to assist parents and students with course selections and career planning. Parents may arrange to meet with the counselor by calling the school's guidance department.

COURSE DESCRIPTION
Advanced Mathematics 7 is a course for seventh grade students that extends concepts and skills learned in previous grades and prepares students for more abstract concepts in algebra and geometry. The course focuses on computation with rational numbers and the use of proportions to solve a variety of problems. Concepts include solving multi-step equations and inequalities, graphing linear equations, visualizing three-dimensional shapes represented in two-dimensional drawings, and applying transformations to geometry shapes in the coordinate plane. Students will verify and apply the Pythagorean Theorem and represent relations and functions using tables, graphs, and rules. The active engagement of students along with the use of manipulatives and technology, such as calculators, computers, and spreadsheets, will allow students to develop an understanding of the mathematical principles they are learning. Facility in the use of technology will not be a substitute for students' understanding of quantitative concepts and proficiency in basic computations. The course objectives provide a solid foundation for Algebra I.

PREREQUISITE
Advanced Mathematics 6

OPTIONS FOR NEXT COURSE
Mathematics 8 or Algebra I (Honors or Series)

REQUIRED STUDENT TEXTBOOK
Glencoe Pre-Algebra (Virginia Edition*).* John A. Carter, Ph.D., Gilbert J. Cuevas, Ph.D., Roger Day, Ph.D., and Carol Malloy, Ph.D. Glencoe McGraw-Hill, 2012

RECOMMENDED CALCULATOR
TI-30Xa SEVA

VBO #	Objective
	Unit 1: Exploring Numbers and Number Relations
MA.7.NS.7.1	The student will describe and represent arithmetic and geometric sequences, using variable expressions. **(SOL 7.2)**
MA.7.NS.7.2	The student will simplify numerical expressions involving positive exponents, using rational numbers, order of operations, and properties of operations with real numbers. **(SOL 8.1 a)**
MA.7.NS.7.3	The student will compare and order decimals, fractions, percents, and numbers written in scientific notation. **(SOL 8.1 b)**
MA.7.NS.7.4	The student will describe orally and in writing the relationships between the subsets of the real number system. **(SOL 8.2)**
MA.7.CE.7.4	The student will apply the order of operations to evaluate algebraic expressions for given replacement values of the variables. **(SOL 7.13 b, 8.4)**
MA.7.CE.7.5	The student will determine whether a given number is a perfect square and find the two consecutive whole numbers between which a square root lies. **(SOL 8.5)**
	Unit 2: Patterns, Functions, and Algebra
MA.7.PF.7.1	The student will write verbal expressions as algebraic expressions and sentences as equations and vice versa. **(SOL 7.13 a)**
MA.7.PF.7.2	The student will make connections between any two representations (tables, graphs, words, and rules) of a given relationship. **(SOL 7.12, 8.14)**
MA.7.PF.7.3	The student will solve multistep linear equations in one variable with the variable on one and two sides of the equation. **(SOL 7.14 a, 8.15 a)**
MA.7.PF.7.4	The student will solve practical problems requiring the solution of one- and two-step linear equations. **(SOL 7.14 b)**
MA.7.PF.7.5	The student will solve two-step linear inequalities and graph the results on a number line. **(7.15, 8.15 b)**
MA.7.PF.7.6	The student will identify and apply the following properties of operations with real numbers: a) the commutative and associative properties for addition and multiplication; b) the distributive property; c) the additive and multiplicative identity properties; d) the additive and multiplicative inverse properties; and e) the multiplicative property of zero. **(SOL 7.16, 8.15 c)**
MA.7.PF.7.7	The student will graph a linear equation in two variables. **(SOL 8.16)**
MA.7.PF.7.8	The student will identify the domain, range, independent variable, or dependent variable in a given situation. **(SOL 8.17)**
	Unit 3: Proportional Reasoning
MA.7.CE.7.1	The student will solve single-step and multi-step practical problems involving rational numbers, ratios, and proportions. **(SOL 7.4, 8.3 a)**
MA.7.CE.7.2	The student will solve single-step and multi-step practical problems involving percents. **(SOL 8.3 a)**
MA.7.CE.7.3	The student will determine the percent increase or decrease for a given situation. **(SOL 8.3 b)**

MA.7.ME.7.3	The student will determine whether plane figures—quadrilaterals and triangles—are similar and write proportions to express the relationships between corresponding sides of similar figures. **(SOL 7.6)**
	Unit 4: Geometry and Measurement
MA.7.ME.7.1	The student will verify by measuring and describe the relationships among vertical angles, adjacent angles, supplementary angles, and complementary angles. **(SOL 8.6 a)**
MA.7.ME.7.2	The student will measure angles of less than 360º. **(SOL 8.6 b)**
MA.7.ME.7.4	The student will investigate and solve practical problems involving volume and surface area of prisms, cylinders, cones, and pyramids. **(SOL 8.7 a)**
MA.7.ME.7.5	The student will describe how changing one measured attribute of a figure affects the volume and surface area. **(SOL 8.7 b)**
MA.7.GE.7.1	The student, given a polygon in the coordinate plane, will apply and identify transformations (reflections, dilations, rotations, and translations) by graphing in the coordinate plane. **(SOL 7.8, 8.8)**
MA.7.GE.7.3	The student will verify and apply the Pythagorean Theorem. **(SOL 8.10)**
MA.7.GE.7.4	The student will solve practical area and perimeter problems involving composite plane figures. **(SOL 8.11)**
	Unit 5: Probability and Statistics
MA.7.SP.7.1	The student, given data for a practical situation, will construct and analyze histograms. **(SOL 7.11 a)**
MA.7.SP.7.2	The student will compare and contrast histograms with other types of graphs presenting information from the same data set. **(SOL 7.11 b)**
MA.7.SP.7.3	The student will make comparisons, predictions, and inferences, using information displayed in graphs. **(SOL 8.13 a)**
MA.7.SP.7.4	The student will construct and analyze scatterplots. **(SOL 8.13 b)**

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For further information, please call (757) 263-1070.

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To seek resolution of grievances resulting from alleged discrimination or to report violations of these policies, please contact the Title IX Coordinator/Director of Student Leadership at (757) 263-2020, 1413 Laskin Road, Virginia Beach, Virginia 23451 (for student complaints) or the Section 504/ADA Coordinator/Chief Human Resources Officer at (757) 263-1133, 2512 George Mason Drive, Municipal Center, Building 6, Virginia Beach, Virginia 23456 (for employees or other citizens). Concerns about the application of Section 504 of the Rehabilitation Act should be addressed to the Section 504 Coordinator/Director of Guidance Services and Student Records at (757) 263-1980, 2512 George Mason Drive, Virginia Beach, Virginia 23456 or the Section 504 Coordinator at the student's school.

Alternative formats of this publication which may include taped, Braille, or large print materials are available upon request for individuals with disabilities. Call or write the Department of Teaching and Learning, Virginia Beach City Public Schools, 2512 George Mason Drive, P.O. Box 6038, Virginia Beach, VA 23456-0038. Telephone (757) 263-1070 (voice); fax (757) 263-1424; 263-1240 (TDD) or email Emmanuel Cenizal at Emmanuel.Cenizal@vbschools.com.
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VIRGINIA BEACH CITY PUBLIC SCHOOLS
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