MIDDLE SCHOOL MATHEMATICS

ADVANCED MATHEMATICS 6

FOCUS OF MIDDLE SCHOOL MATHEMATICS LEARNING

- To build on students' concrete reasoning experiences developed in the elementary 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 6 is a course for sixth grade students who are transitioning from the emphasis placed on whole number arithmetic in elementary school to the foundations of algebra. The course focuses on the development of problem-solving skills and the acquisition of mathematical vocabulary and symbols. 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. Topics include: operations with rational numbers; operations with integers; concepts involving exponents and square roots; identifying and representing sequences and relationships; solving one-variable equations; measurement concepts and applications in the U.S. Customary and metric systems including perimeter, area, volume, and surface area; basic geometric concepts in the coordinate plane; and probability and statistics.

PREREQUISITE

Mathematics 5

OPTION FOR NEXT COURSE

Advanced Mathematics 7

REQUIRED STUDENT TEXTBOOK

Math Connects Course 1 (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: Number Sense (SOLs: 6.3 a, b, c; 6.5; 6.11 a, b; 7.1 a, b, d, e; and 7.3 a, b) (6½ weeks)
MA.6.NS.6.6	The student will identify, represent, compare, and order integers. **(SOL 6.3 a, b)**
MA.6.NS.6.7	The student will identify and describe absolute value for rational numbers. **(SOL 6.3 c, 7.1 e)**
MA.6.NS.6.9	The student will investigate and describe concepts of positive exponents, perfect squares, and square roots. **(SOL 6.5, 7.1 d) SOL 7.1 d – NON-CALCULATOR**
MA.6.NS.6.10	The student will investigate and describe the concept of positive and negative exponents for powers of ten. **(SOL 7.1 a)**
MA.6.NS.6.11	The student will determine scientific notation for numbers greater than zero. **SOL 7.1 b - NON-CALCULATOR**
MA.6.CE.6.5	The student will model and solve problems involving addition, subtraction, multiplication, and division of integers. **(SOL 7.3 a, b)** **SOL 7.3 b – NON-CALCULATOR**
MA.6.GE.6.1	The student will identify the coordinates of a point in a coordinate plane and graph ordered pairs in a coordinate plane. **(SOL 6.11 a, b)**
	Unit 2: Rational Numbers (SOLs: 6.2 b, c, d; 6.4; 6.6 a, b; 6.7; and 7.1 c) (7½ weeks)
MA.6.NS.6.4	The student will identify a given decimal, fraction, and/or percent from a representation. **(SOL 6.2 b)**
MA.6.NS.6.5	The student will compare and order fractions, decimals, percents, and scientific notation using manipulatives, pictorial representations, number lines, and the symbols $>, <, \leq, \geq, =$. **(SOL 6.2 c, d; 7.1 c) SOLs 6.2 c, 6.2 d, 7.1 c – NON-CALCULATOR**
MA.6.NS.6.8	The student will demonstrate multiple representations of multiplication and division of fractions. **(SOL 6.4)**
MA.6.CE.6.1	The student will determine the greatest common factor of two or more numbers using prime factorization.
MA.6.CE.6.2	The student will multiply and divide fractions and mixed numbers. **(SOL 6.6 a)** **SOL 6.6 a – NON-CALCULATOR**
MA.6.CE.6.3	The student will estimate solutions and then solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of fractions, and decimals. **(SOL 6.6 b, 6.7)**
MA.6.CE.6.6	The student will find the quotient, given a dividend expressed as a decimal through thousandths and a divisor expressed as a decimal to thousandths with exactly one non-zero digit. **NON-CALCULATOR**

	Unit 3: Algebra (SOLs: 6.8; 6.17; 6.18; 6.19; 6.20; 7.12; 7.13; 7.14; 7.16) (6 weeks)

MA.6.PF.6.1	The student will investigate, recognize, 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 6.19, 7.16)**

MA.6.PF.6.2	The student will identify and extend geometric and arithmetic sequences. **(SOL 6.17)**
MA.6.PF.6.3	The student will represent relationships with tables, graphs, rules, and words. **(SOL 7.12)**
MA.6.PF.6.4	The student will write verbal expressions as algebraic expressions and sentences as equations and vice versa. **(SOL 7.13 a)**
MA.6.PF.6.5	The student will evaluate algebraic expressions for the given replacement values of the variables. **(SOL 7.13 b)**
MA.6.PF.6.6	The student will solve one- and two-step linear equations in one variable involving whole number coefficients and positive rational solutions. **(SOL 6.18, 7.14 a)**
MA.6.PF.6.7	The student will solve practical problems requiring the solution of one- and two-step linear equations. **(SOL 7.14 b)**
MA.6.PF.6.8	The student will graph inequalities on a number line. **(SOL 6.20)**
MA.6.CE.6.4	The student will evaluate whole number numerical expressions, using the order of operations. **(SOL 6.8)**
	Unit 4: Ratio and Proportion (SOLs: 6.1; 6.2 a, c; 6.6 b; 6.7) (3 weeks)
MA.6.NS.6.1	The student will describe and compare data, using ratios, and will use appropriate notations, such as $\frac{a}{b}$, a to b, and $a:b$. **(SOL 6.1)**
MA.6.NS.6.2	The student will create a relationship in words for a given ratio expressed symbolically. **(SOL 6.1)**
MA.6.NS.6.3	The student will investigate and describe fractions, decimals, and percents as ratios and demonstrate equivalent relationships. **(SOL 6.2 a, c)** **SOL 6.2 c – NON-CALCULATOR**
MA.6.CE.6.3	The student will estimate solutions and then solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of fractions, and decimals. **(SOL 6.6 b, 6.7)**
	Unit 5: Statistics (SOLs: 6.14; 6.15) (3 weeks)
MA.6.SP.6.1	The student, given a problem situation, will construct circle graphs, draw conclusions, and make predictions using those graphs. **(SOL 6.14 a, b)**
MA.6.SP.6.2	The student, given a problem situation, will compare and contrast graphs that present information from the same data set. **(SOL 6.14 c)**
MA.6.SP.6.3	The student will describe mean as balance point and decide which measure of center (mean, median, or mode) is appropriate for a given purpose. **(SOL 6.15)**
	Unit 6: Probability (SOLs: 6.16; 7.9; 7.10) (2 weeks)
MA.6.SP.6.4	The student will compare, contrast, and determine probabilities for dependent and independent events. **(SOL 6.16)**
MA.6.SP.6.5	The student will investigate and describe the difference between the experimental probability and theoretical probability of an event. **(SOL 7.9)**
MA.6.SP.6.6	The student will determine the probability of compound events using the Fundamental (Basic) Counting Principle. **(SOL 7.10)**

	Unit 7: Geometry (SOLs: 6.12; 6.13; 7.7) (2 weeks)
MA.6.GE.6.2	The student will determine congruence of segments, angles, and polygons. **(SOL 6.12)**
MA.6.GE.6.3	The student will describe, identify, compare, and contrast properties of quadrilaterals including parallelogram, rectangle, square, rhombus, and trapezoid. **(SOL 6.13, 7.7)**
	Unit 8: Measurement (SOLs: 6.9; 6.10; 7.5) (5 weeks)
MA.6.ME.6.1	The student will make ballpark comparisons between measurements in the U.S. Customary System of measurement and measurements in the metric system. **(SOL 6.9)**
MA.6.ME.6.2	The student will define π (pi) as the ratio of the circumference of a circle to its diameter. **(SOL 6.10 a)**
MA.6.ME.6.3	The student will solve practical problems involving circumference and area of a circle, given the diameter or radius. **(SOL 6.10 b)**
MA.6.ME.6.4	The student will solve practical problems involving area and perimeter of triangles, squares, rectangles, and parallelograms using formulas and manipulatives. **(SOL 6.10 c)**
MA.6.ME.6.5	The student will describe and determine the volume and surface area of rectangular prisms and cylinders. **(SOL 6.10 d, 7.5 a)**
MA.6.ME.6.6	The student will solve practical problems involving the volume and surface area of rectangular prisms and cylinders. **(SOL 7.5 b)**
MA.6.ME.6.7	The student will describe how changing one measured attribute of a rectangular prism affects its volume and surface area. **(SOL 7.5 c)**

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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.

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VIRGINIA BEACH CITY PUBLIC SCHOOLS
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