K-12 Math Scope and Sequence

Grades K-5

GRADE LEVEL	K	1	2	3	4	5
Counting and Cardinality	• Know number names and the count sequence. • Tell the number of objects. • Compare numbers.					
Operations and Algebraic Thinking	• Understand addition as putting together and adding to, and understand subtraction as taking apart and taking form.	• Represent and solve problems involving addition and subtraction • Understand and apply properties of operations and the relationship between addition and subtraction • Add and subtract within 20. • Work with addition and subtraction equations	• Represent and solve problems involving addition and subtraction. • Add and subtract within 20. • Work with equal groups of objects to gain foundations for multiplication.	• Represent and solve problems involving multiplication and division. • Understand the properties of multiplication and the relationship between multiplication and division. • Multiply and divide within 100. • Solve problems involving the four operations, and identify and explain patterns in	• Use the four operations with whole numbers to solve problems • Gain familiarity with factors and multiples within 100 • Generate and analyze patterns • Multiply and divide numbers 1-100	• Write and interpret numerical expressions • Analyze patterns and relationships

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				arithmetic.		
Numbers and Operations in Base Ten	• Work with numbers 11-19 to gain foundations for place value.	• Extend the counting sequence • Understand place value • Use place value understanding and properties of operations to add and subtract.	• Understand place value. • Use place value understanding and properties of operations to add and subtract.	• Use place value understanding and properties of operations to perform multi-digit arithmetic.	• Generalize place value understanding for multi-digit whole numbers • Use place value understanding and properties of operations to perform multi-digit arithmetic	• Understand the place value system • Perform operations with multi-digit whole numbers with decimals to hundredths
Measurement and Data	• Describe and compare measurable attributes. • Classify objects and count the number of objects in each category.	• Measure lengths indirectly and by iterating length units • Tell and write time. • Represent and interpret data.	• Measure and estimate lengths in standard units. • Relate addition and subtraction to length. • Work with time and money. • Represent and interpret data.	• Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. • Represent and interpret data. • Geometric measurement: understand concepts of area and related area to multiplication and addition. • Geometric measurement:	• Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit • Represent and interpret data • Geometric measurement: understand concepts of angle and measure angles	• Convert like measurement units within a given measurement system • Represent and interpret data • Geometric measurement: understand concepts of volume and relate volume to multiplication and addition

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				recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.		
Numbers and Operations-Fractions				• Develop an understanding of fractions as numbers.	• Extend understanding of fraction equivalence and ordering • Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers • Understand decimal notation for fractions and compare decimal fractions	• Use equivalent fractions as a strategy to add and subtract fractions • Apply and extend previous understandings of multiplication and division to multiply and divide fractions
Geometry	• Identify and describe shapes. • Analyze,	• Reason with shapes and their attributes.	• Reason with shapes and their attributes.	• Reason with shapes and their attributes.	• Draw and identify lines and angles, and classify	•

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	compare, create, and compose shapes.				shapes by properties of their lines and angles	
Mathematical Practice	• Make sense of problems and persevere in solving them • Reason abstractly and quantitatively • Construct viable arguments, and appreciate and critique the reasoning of others • Model with mathematics • Use appropriate tools strategically • Attend to precision • Look for and make use of structure in math • Look for and express regularity in repeated reasoning					

Grades 6 - 8

Domains/ Conceptual Categories	Ratios and Proportions	The Number System	Expressions and Equations	Geometry	Statistics and Probability	Functions
Grade 6	• Convert between fractions, percents, and decimals • Calculate the percent of a number • Use GCF and	• Perform basic operations with decimals • Perform basic operations with fractions • Use integers and absolute values	• Find the value of expressions involving adding, subtracting, multiplying, dividing, exponents, and parentheses	• Find the area of parallelograms, triangles, and trapezoids • Calculate the area of composite figures	• Find and interpret the mean, median, and mode of a set of data • Construct and analyze line plots	

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	LCM to calculate equivalent ratios and rates using equivalent fractions and ratio tables ● Use equivalent ratios and rates to solve real-life problems ● Graph ratio tables ● Compare and order fractions, decimals, and percents ● Find the percent of a number using equivalent ratios	to represent real-world situations ● Compare and order integers and rational numbers	using the order of operations ● Use the Distributive Property to rewrite algebraic expressions ● Write and solve addition, subtraction, multiplication, and division equations ● Construct and analyze different verbal, tabular, graphical, and algebraic representations of functions	● Find the volume of rectangular and triangular prisms ● Find the surface area of rectangular and triangular prisms using nets and formulas	● Construct and analyze histograms ● Display and interpret data in box plots ● Draw and interpret line graphs ● Construct and analyze line plots ● Construct and analyze histograms	
Grade 7	● Find unit rates ● Simplify complex fractions ● Identify proportional and nonproportional relationships by using tables and by graphing on the coordinate plane ● Represent and identify constant rate of change and slope using	● Add, subtract, multiply, and divide integers ● Add, subtract, multiply, and divide positive and negative fractions and mixed numbers with like and unlike denominators ● Convert units of measure between the	● Describe the relationships and extend terms in arithmetic sequences ● Simplify algebraic expressions using mathematical properties and the Distributive Property ● Add and subtract linear	● Identify and classify triangles ● Find missing angle measures in a triangle ● Solve problems involving scale drawings ● Identify three-dimensional figures and their cross sections ● Find the circumference	● Find the probability of a simple event and its complement ● Find and compare experimental and theoretical probabilities ● Find probabilities of compound events ● Use multiplication to count the	

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	tables and graphs ● Find the percent of a number using proportions ● Solve problems involving percents by using the percent equation ● Solve problems involving percent increase, percent decrease, sales tax, tips, markup, discount, and simple interest	customary and metric systems ● Solve real-world and mathematical problems involving the four operations with rational numbers	expressions ● Factor linear expressions ● Solve addition, subtraction, multiplication and division equations with rational coefficients ● Solve two-step equations ● Solve addition, subtraction, multiplication, and division inequalities ● Model and solve two-step inequalities and represent the solution on the number line ● Solve multi-step real-world problems that utilize equations and expressions	and area of circles ● Find the area of composite figures ● Find the volume of prisms and pyramids ● Find the surface area of prismsand pyramids ● Find the area and volume of composite figures	number of outcomes and find probabilities ● Find the number of permutations of a set of objects and find probabilities ● Find the probability of independent and dependent events ● Predict actions of a larger group by using a sample	
Grade 8		● Multiply and divide monomials ● Use the Laws of Exponents to find powers of monomials	● Write and solve two-step equations with rational coefficients that represent real-life	● Identify relationships of angles formed by two parallel lines cut by a transversal ● Find missing	● Use a scatter plot to investigate the relationship between two sets of data ● Draw lines of	● Represent relations using tables and graphs and translate them into linear equations

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		● Simplify expressions involving negative exponents ● Use scientific notation to write large and small numbers, and use technology to compute with numbers written in scientific notation ● Find square roots and cube roots ● Estimate square and cube roots ● Compare mathematical expressions	situations ● Solve multi-step equations with variables on each side ● Identify proportional and nonproportional linear relationships by finding a constant rate of change ● Use tables and graphs to find the slope of a line ● Use direct variation to solve problems ● Graph linear equations using the slope and y-intercept or by using the x- and y-intercepts ● Write an equation of a line ● Solve real-life and mathematical systems of linear equations by graphing or algebraically	angle measures in triangles ● Use the Pythagorean Theorem to find missing side lengths in right triangles ● Solve problems using the Pythagorean Theorem ● Graph translations, reflections, and rotations on the coordinate plane ● Use scale factors to graph dilations ● Use a series of transformations to create congruent figures ● Solve problems involving similar triangles ● Find the volume and surface area of cylinders and cones ● Find the volume of spheres	best fit and use them to make predictions about data ● Construct and interpret two-way tables ● Find measures of center and variation ● Find and interpret the mean absolute deviation for a set of data ● Analyze data distributions	● Find function values and complete function tables ● Compare properties of functions represented in different ways ● Find and interpret the rate of change and initial value of a function ● Determine whether a function is linear or nonlinear ● Graph quadratic functions ● Sketch and describe qualitative graphs

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Grades 9 - 12

PreAlgebra	Algebra I	Geometry	Integrated II	Algebra II
• Operations involving Whole Numbers • Word Problems Involving All Four Operations • Operations Involving Decimals • Operations Involving Fractions • Perimeter/Area/Volume • Ratios and Proportions • Finding GCF and LCM • Conversions between Metric and English systems • Operations Involving Integers • Solving One-Step and Two-Step Equations	• Expressions, Equations, and Functions • Linear Equations • Linear Functions • Equations of Linear Functions • Linear Inequalities • Systems of Linear Equations and Inequalities • Exponents and Exponential Functions • Quadratic Expressions and Equations • Quadratic Functions and Equations • Radical Functions and Geometry • Rational Functions and Equations • Statistics and Probability	• Tools for Geometry • Reasoning and Proof • Parallel and Perpendicular Lines • Congruent Triangles • Relationships in Triangles • Quadrilaterals • Proportions and Similarity • Right Triangles and Trigonometry • Circles • Areas of Polygons and Circles • Extending Surface Area and Volume	• Exponents and Roots • Polynomials and Factoring • Quadratic Functions • Solving Quadratic Equations • Quadratic Equations and Complex Numbers • Working with Functions • Linear Systems and Matrices • Right Triangles and Trigonometry • Combinatorics and Probability • Polynomials and Rational Functions	• Equations and Inequalities • Linear Relations and Functions • Systems of Equations and Inequalities • Matrices • Quadratic Functions and Relations • Polynomials and Polynomial Functions • Inverses and Radical Functions and Relations • Rational Functions and Relations • Conic Sections

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Integrated 3	Precalculus	Calculus	Introductory Statistics	Intermediate Algebra
• Linear Functions and Systems • Polynomial Functions • Rational Functions • Rational Exponents • Exponential and Logarithmic Functions • Trigonometric Identities • Graphing Trigonometric Functions	• Trigonometric Functions • Graphing Trig. Equations • Law of Sines and Law of Cosines • Trigonometry Identities • Functions from a Calculus perspective • Exponential and Logarithmic Functions • Conic Sections • Power, Polynomial, and Rational Functions	• Prerequisites for Calculus • Limits and Continuity • Arithmetic Sequences • Derivatives • More Derivatives • Applications of Derivatives • The Definite Integral	• Dual credit course. Curriculum determined by Mid-State Technical College.	• Dual credit course. Curriculum determined by Mid-State Technical College.