AAC K-12 Math Scope and Sequence

AAC's Math Curriculum uses the Common Core Math Standards as its base. Emphasis is placed on critical thinking and problem-solving skills, applying math to everyday life whenever possible. These 8 practices outline core processes and proficiencies that students of mathematics are taught to develop at all grade levels at AAC:

1. **Make Sense of Problems and Persevere in Solving Them.**
2. **Reason Abstractly and Quantitatively.**
3. **Construct Viable Arguments and Critique the Reasoning of Others.**
4. **Model with Mathematics.**
5. **Use Appropriate Tools Strategically.**
6. **Attend to Precision.**
7. **Look for and Make use of Structure.**
8. **Look for and Express Regularity in Repeated Reasoning.**

G12 Math - Statistics and Pre- Calculus

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1**:Interpret Data **Unit 2:** Analyse data on categorical & quantitative variables	**Unit 3:**Conditional Probability & Rules of Probability **Unit 4:** Using Probability to Make Decisions	**Unit 5:** Functions and Algebraic Models	**Unit 6:** Trigonometry and Advanced Algebraic Applications
Learning Targets	**1a.** Create and interpret visual data displays like dot plots, histograms, and box plots to describe patterns and distributions. **1b.** Compare and explain data using center, spread, and shape, including the effects of outliers. **1c.** Use normal distribution models to estimate populations and find probabilities with technology tools. **2a.** Use tables, plots, and graphs to summarize and describe relationships in categorical and quantitative data. **2b.** Fit and evaluate linear models, including interpreting slope and intercept in context. **2c.** Understand correlation vs. causation and analyze residuals to assess model fit.	**3a.** Understand and use conditional probability to describe events and interpret data in real-world situations. **3b.** Use rules of probability, including addition and multiplication rules, to compute probabilities of compound events. **3c.** Interpret and apply formulas for conditional probability and independence using tables, diagrams, and data. **4a.** Evaluate expected values and use them to make fair decisions in real-world contexts. **4b.** Analyze decisions and strategies using probability models, including simulations. **4c.** Compare and use different probability models to make predictions and justify choices.	**5a.** Identify and classify key families of functions: linear, quadratic, polynomial, rational, exponential, and logarithmic. **5b.** Analyze and interpret domain, range, intercepts, end behavior, and inverses. **5c.** Perform operations with functions, including composition and inverse functions. **5d.** Graph polynomial and rational functions, identifying key features like asymptotes and intercepts. **5e.** Solve equations involving polynomials, rationals, exponentials, and logarithms. **5f.** Apply function models to real-world contexts including exponential growth/decay and rational modelling. **5g.** Investigate and model arithmetic and geometric sequences and series.	**6a.** Use radian and degree measures to evaluate trigonometric functions using the unit circle. **6b.** Graph sine, cosine, and tangent functions with transformations. **6c.** Prove and apply trigonometric identities and solve trigonometric equations. **6d.** Model and interpret periodic phenomena using trig functions. **6e.** Analyze and graph conic sections: parabolas, ellipses, and hyperbolas from standard and general form equations.

G11 Math – Algebra II

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Seeing Structure in Expressions **Unit 2:** Arithmetic with Polynomials and Rational Expressions	**Unit 3:** Creating Equations **Unit 4:** Reasoning with Equations and Inequalities	**Unit 5:**Linear, Quadratic, and Exponential Models **Unit 6:**Trigonometric Functions	**Unit 7:**Similarity, Right Triangles, and Trigonometry **Unit 8:**Introduction to grade 12.
Learning Targets	**1a.** Interpret and understand expressions by identifying parts like terms and factors, and seeing structure in complex expressions. **1b.**Use structure to rewrite or simplify expressions in different forms to solve problems more easily. **1c.**Apply geometric series formulas to solve real-world problems. **2a.** Add, subtract, and multiply polynomials, understanding how they work like integers. **2b.**Use the Remainder Theorem and zeros to evaluate polynomials and sketch graphs. **2c.** Apply polynomial identities and the Binomial Theorem to expand and analyze expressions.	**3a.** Write and solve equations and inequalities in one variable, including linear, quadratic, rational, and exponential forms. **3b.** Create and graph equations with two or more variables to represent real-world relationships. **3c.** Represent and solve problems using constraints and rearrange formulas to isolate variables. **4a.** Justify and explain steps when solving equations, including rational and radical types. **4b.** Solve linear and quadratic equations using various methods like factoring, square roots, completing the square, and the quadratic formula. **4c.** Identify and express complex solutions to quadratic equations and recognize extraneous solutions when they occur.	**5a.** Identify whether situations are best modelled with linear or exponential functions and explain the difference in how they grow. **5b.** Build linear and exponential models, including arithmetic and geometric sequences, from descriptions or data. **5c.** Use graphs, tables, and equations to compare and interpret function properties, like rates of change and parameters, in context. **6a.** Understand and use radian measure and the unit circle to define sine, cosine, and tangent for all real numbers. **6b.**Explain symmetry and periodicity in trig functions using the unit circle. **6c**. Model and graph real-world periodic behavior using sine and cosine functions, identifying amplitude, period, midline, and phase shift.	**7a.**Use triangle similarity criteria (AA, SAS, SSS) and solve problems involving similar right triangles. **7b.** Apply the Pythagorean Theorem and trigonometric ratios to solve right triangle problems. **7c.** Solve real-world problems with trigonometry, including angles of elevation/depression and basic trig identities. **8a.**Review algebra fundamentals such as solving equations, systems, and inequalities. **8b.**Explore introductory calculus concepts, including limits and basic derivative ideas. **8c.**Strengthen understanding of probability, statistics, and trigonometry as preparation for advanced math.

G10 Math – Geometry

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Number Systems Recap **Unit 2:** Algebra Recap	**Unit 3:** Congruence & Similarity **Unit 4:** Trigonometry	**Unit 5:**Circles **Unit 6:**Geometric Properties	**Unit 7:** 3D Geometry **Unit 8:** Conditional Probability
Learning Targets	**1a.** LCM & HCF using prime factorization (exponent form) **1b.** Properties of exponents to rational exponents. **1c.** Use properties of rational and irrational numbers. **1.d.** Reason quantitatively and use units to solve problems. **2a.** Interpret the structure of expressions. **2b.** Write expressions in equivalent forms to solve problems. **2c.** Perform arithmetic operations on polynomials. **2d.** The relationship between zeros & factors of polynomials. **2e.** Use polynomial identities to solve problems. **2f.**Rewrite rational expressions. **2g.** Create equations that describe relationships. **2h.** Solving equations as a process of reasoning **2i.** Solve equations and inequalities in one variable. **2j.** Solve systems of equations. **2k.** Represent and solve equations and inequalities graphically.	**3a** Transformations in the plane **3b** Understand congruence **3c** Prove geometric theorems **3d** Make geometric construction **3e.** Understand similarity **3f.** Use the definition of similarity to decide if they are similar **3g.** Use the properties of similarity transformations to establish the AA criterion for 2 triangles to be similar **3h** Prove theorems involving similarity **3i.** Use congruence and similarity criteria for triangles to solve problems **4a** Trigonometric ratios & solve problems with right triangles **4b**. Use the relationship between the sine and cosine of complementary angles. **4c**. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems **4d** Apply trigonometry to general triangles **4e.** Prove the Laws of Sines and Cosines and use them to solve problems	**5a.** Apply circle theorems. **5b.**Prove all circles are similar **5c.** Relationships among inscribed angles, radii, & chords. **5d.** Construct the inscribed and circumscribed circles of a triangle, prove properties of angles for quadrilateral inscribed in circles **5e.** Construct a tangent line from a point outside a given circle **5f.** Arc length and sector areas **6a**. Translate using geometric description and equation for a conic section **6b**. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation. **6c**. The equation of a parabola given a focus and directrix **6b**. Use coordinates to prove simple geometric theorems. **6c.** Slope for perpendicular & parallel lines to solve problems. **6d**. Coordinates to compute perimeters of polygons and areas of triangles and rectangles	**7a** Explain volume formulas and use them to solve problems **7b** Visualize relationships between two-dimensional and three-dimensional objects. **7c** Apply trigonometry to general 3D shapes **7d.**Apply geometric concepts in modeling situations **8a.** Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”). **8b.** Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, **8c.** Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified **8d.**Use the rules of probability to compute probabilities of compound events

G09 Math - Algebra I

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Equations and Inequalities **Unit 2:** Properties of Functions/slope	**Unit 3:** Linear Functions & Systems **Unit 4:** Exponents and Polynomials	**Unit 5:** Factoring Polynomials **Unit 6:** Quadratic Functions	**Unit 7:**Exponential Functions **Unit 8:** Sequences **Unit 9:** Data and Statistics
Learning Targets	**1a.** Simplify expressions using properties like the distributive property. **1b.** Solve equations and inequalities, including those with no or infinite solutions. **1c.** Solve literal equations for a given variable. **2a.** Identify functions and find domain and range using graphs, tables, or equations. **2b.** Graph and describe functions and their inverses. **2c.** Find slope, write linear equations/inequalities, and graph them. **2d.** Solve direct variation and write equations of parallel/perpendicular lines. **2e.** Describe linear transformations using shifts and scaling.	**3a.** Find slope and write linear equations and inequalities in different forms, then graph and interpret them in real-world situations. **3b.** Solve direct variation problems and write equations of lines, including parallel and perpendicular ones. **3.c** Describe transformations of linear functions, including shifts and changes from multiplying or scaling. **3d.** Use data to write linear models, make predictions, and understand correlation, causation, and association. **3e.** Graph and solve systems of equations and inequalities using different methods, and choose the most efficient strategy. **4a.** Add, subtract, multiply, and divide polynomials, and apply patterns like special products and factoring techniques.	**5a.** Factor expressions using GCF, trinomials, difference of squares, and perfect square trinomials. **5b.** Graph quadratic functions and identify features like vertex and symmetry. **5c.** Analyze and compare domain, range, and key features of quadratic forms. **5d.** Describe transformations of quadratic functions through shifts and scaling. **6a.**Solve quadratics by factoring, square roots, completing the square, and the quadratic formula. **6b.** Simplify radicals and use the discriminant to determine solution types.	**7a.** Compare linear and exponential functions, and identify horizontal asymptotes and suitable models. **7b.** Graph exponential functions, identify domain, range, and initial value, and write equations from tables or graphs. **7c.** Determine growth or decay and interpret exponential model parameters using technology. **8a.** Write and apply recursive and explicit formulas for arithmetic and geometric sequences. **9a.** Analyze and compare measures of center and spread, including mean, MAD, and standard deviation. **9b.** Interpret and compare data using dot plots, histograms, box plots, and two-way tables.

G08 Math – Pre Algebra

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Real Number System **Unit 2:** Exponents & Scientific Notation	**Unit 3:**Linear Equations & Relationships **Unit 4:**Functions	**Unit 5:**System of Equations **Unit 6:**Transformations	**Unit 7:**Angle Relationships & Pythagorean Theorem **Unit 8:** Volume, Scatter plots and Data
Learning Targets	**1a.** Fractions and Decimals **1b**. Squares and Square Roots **1c.** Estimating Square Roots **1d.** Rational vs. Irrational Numbers **1e.** Classifying Real Numbers **1f.** Comparing and Ordering Real Numbers **2a.** Square roots and Cube Roots **2b.** Properties of Exponents **2c.** Properties of Negative and Zero Exponents **2d.** Scientific Notation **2e.** Adding and Subtracting with Scientific Notation **2f.** Multiplying and Dividing with Scientific Notation **2g.** Estimating Quantities	**3a.** Simplifying Expressions **3b.** Simplifying Expressions with Distributive Property **3c.** One and two step Equations **3d.** Multi-step Equations **3f.** Multi Step Equations with Distributive Property **3g.** Equations with variables on both sides **3h.** Writing equations with Variables on both sides **3i.** Equations with Special Cases **3j.** Slope and Rate of Change **3k.** Slope -Intercept Form **3l.** Graphing Linear Equations **3m.** Multiple Representations **3n.** Proportional and Non-Proportional Relationships **4a.** Identifying Functions **4b.** Linear vs Nonlinear Functions **4c.** Writing Equations of Linear Functions **4d.** Applying Linear Functions **4e.** Analysing Functions and Graphs	**5a.** Intro to system of Equations **5b.** Solving Systems by Graphing **5c.** Solving Systems by Substitution **5d.** Solving Systems by Elimination **5e.** Solving Systems by Inspection **5f.** Applying Systems of Equations **6a.** Basics of Transformations **6b.**Translations on the Coordinate Plane **6c.**Reflections on the Coordinate Plane **6d.** Rotation on the Coordinate Plane **6e.** Identifying Transformations **6f.** Scale Factor and Dilations **6g.** Dilations on the Coordinate Plane **6h.** Properties of Transformations	**7a.** Parallel Lines and Transversals **7b.** Applying Angle Relationships **7c.** Interior Angles of Triangles **7d.** Exterior Angles of Triangles **7e.** Angles in Similar Triangles **7f.** The Pythagorean Theorem **7g.** Pythagorean Theorem Converse **7h.** Applying the Pythagorean Theorem **7i.** Distance on a Coordinate Plane **7j.** 3D Applications of Pythagorean Theorem **8a.** Volume of Cylinder **8b.** Volume of Cones **8c.** Applying Volume of Cylinder and Cones **8d.**Volume of Spheres **8e.** Applying Volume of Spheres **8f.** Scatter Plots and Association **8g.** Constructing Scatter Plots **8h.** Scatter Plots and Predictions **8i.** Trend Line Equations **8j.** Two-Way-Tables **8k.** Relative Frequency

G07 Math

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Rational Numbers **Unit 2:** Expressions, Equations and Inequalities	**Unit 3:** Proportional Relationships **Unit 4:** Percents **Unit 5:** Angles and Triangles	**Unit 6:** Plane Geometry **Unit 7:** Surface Area and Volume	**Unit 8:** Data and Statistics **Unit 9:** Probability
Learning Targets	**1a.** Represent and compare integers and rational numbers on a number line. **1b.** Add, subtract, multiply, and divide rational numbers, including decimals and fractions. **1c.** Simplify expressions involving rational numbers using properties of operations. **2a.** Solve one-step, two-step, and multi-step equations with rational numbers. **2b.** Write, solve, and graph one- and two-step inequalities. **2c.** Solve real-world problems involving inequalities and rational numbers.	**3a.** Understand and apply proportional relationships to solve real-world problems. **3b.** Solve problems involving ratios, rates, and proportions, including real-world applications. **3c.** Analyze and represent proportional relationships using tables, graphs, and equations. **3d.** Interpret and compare proportional relationships to make predictions and decisions. **4a.** Solve problems involving percentages, including finding percent of a number and solving for unknowns. **5a.** Solve problems using angle relationships (supplementary, complementary, vertical, adjacent). **5b.** Use triangle properties to find unknown side lengths or angles.	**6a.** Understand and apply the properties of geometric figures, including angles, lines, and shapes. **6b.** Solve problems involving scale drawings and geometric transformations, such as rotations and reflections. **6c.** Classify two- and three-dimensional figures based on their properties. **7a.** Calculate the area and surface area of geometric figures. **7b.** Calculate the volume of geometric figures. **7c.** Apply proportionality in geometry, such as similarity and dilations.	**8a.** Understand and interpret data displays, such as dot plots, histograms, and box plots. **8b.** Summarize and describe data using mean, median, mode, range, and interquartile range. **9a.** Understand and calculate probabilities, and use them to predict outcomes. **9b.** Use data to make inferences and justify conclusions. **9c.** Evaluate and interpret the effects of outliers and variability on data analysis.

G06 Math

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Decimal and Fractions **Unit 2:** The Number System	**Unit 3:**Rates and Percents **Unit 4:**Coordinate Plane	**Unit 5:**Expressions **Unit 6:**Equations and Inequalities **Unit 7:**Area and Surface Area	**Unit 8:**Data and Statistics **Unit 9:** Review and Mixed Practice
Learning Targets	**1a**. Add, subtract, multiply, and divide fractions, decimals, and integers. **1b.** Solve problems involving ratios and rates, and use ratios to solve real-world problems. **1c.**Understand and apply the concepts of equivalent fractions and the distributive property. **2a.** Write and solve equations involving variables and unknowns. **2b.** Use proportional relationships to solve real-Understand and represent rational numbers on a number line. **2c.** World problems involving percentages. **2d.** Work with fractions, decimals, and percentages to solve complex problems.	**3a.** Apply ratios and proportions to solve real-world problems involving rates and percentages. **3b.** Understand and use variables to represent numbers and write algebraic expressions. **3c.** Solve one-step and two-step equations and inequalities. **3d.** Understand and apply the distributive property and other algebraic principles. **3e.** Use expressions and equations to model and solve real-world problems. **4a.** Graph points in all four quadrants of the coordinate plane and interpret the meaning of coordinates in context. **4b.** Solve real-world problems by plotting points on the coordinate plane.	**5a.** Understand and apply properties of operations to simplify and evaluate algebraic expressions. **6a.** Use the distributive property and other algebraic rules to solve expressions and equations. **6b.** Solve real-world problems by writing and interpreting algebraic expressions and equations. **7a.** Understand and calculate the area, perimeter, and volume of geometric figures. **7b.** Classify and analyze two-dimensional shapes based on their properties. **7c.** Understand and apply concepts of coordinate geometry to solve problems.	**8a.** Understand and interpret data displays, such as histograms, dot plots, and box plots. **8b.** Summarize and analyze data using mean, median, mode, range, and interquartile range. **8c.** Understand and calculate probabilities using outcomes to determine likelihood. **8d.** Apply probability to solve real-world problems and make predictions. **9a** Apply concepts and skills from previous units to solve mixed problems and real-world applications.

G05 Math

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Operations and Algebraic Thinking	**Unit 2:** Fluency with Whole Numbers and Decimals	**Unit 3:** Operations with Fractions	**Unit 4:** Geometry, Measurement, and Data
Learning Targets	1. Write and interpret numerical expressions 2. Analyze patterns and relationships 3. Graph points on the coordinate plane to solve real-world and mathematical problems 4. Analyze patterns and relationships	1. Understand the place value system 2. Perform all four operations with multi-digit whole numbers with decimals to hundredths. 3. Understand volume and relate volume to multiplication and division.	1. Use equivalent fractions as strategy to add and subtract fractions 2. Apply and extend multiplication and division to multiply and divide fractions.	1. Represent and interpret data 2. Classify two and three-dimensional figures into categories based on their properties 3. Convert like measurement units in the same system

G04 Math

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Place Value and Operations with Whole Numbers- Multiplication	**Unit 2:** Place Value and Operations with Whole Numbers - Division	**Unit 3:** Fractions and Decimals	**Unit 4:** Geometry, Measurement, and Data
Learning Targets	1. Demonstrate understanding of multi-digit place value 2. Perform operations with multi-digit numbers. 3. Use the four operations with whole numbers to solve problems (+,-,x,÷) 4. Performs operations with multi-digit numbers	1. Demonstrate understanding of multi-digit place value 2. Perform operations with multi-digit numbers. 3. Use the four operations with whole numbers to solve problems (+,-,x,÷) 4. Performs operations with multi-digit numbers. 5. Efficiently apply strategies to solve problems. 6. Clearly communicate mathematical thinking	1. Add and subtract fractions 2. Demonstrate understanding of fraction equivalence and ordering 3. Demonstrate an understanding of the relationship between fractions and decimals 4. Efficiently apply strategies to solve problems 5. Clearly communicate mathematical thinking	1. Solve problems involving measurement, perimeter, area, and volume 2. Represent and interpret data 3. Draw and identify lines and angles 4. Classify shapes by properties of lines and angles 5. Efficiently apply strategies to solve problems 6. Clearly communicate mathematical thinking

G03 Math

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Place Value and Operations with Whole Numbers-Multiplication	**Unit 2:** Place Value Operations and Understanding Whole Number Operations-Multiplication and Division	**Unit 3:** Fractions and Data	**Unit 4:** Measurement and Geometry
Learning Targets	1. Add and subtract whole numbers fluently 2. Represent and solve problems involving multiplication 3. Multiply whole numbers fluently 4. Multiply within 100	1. Use place value understanding to perform multi-digit arithmetic 2. Divide whole numbers fluently 3. Understand properties of multiplication and the relationship between multiplication and division 4. Divide within 100 5. Represent and solve problems involving multiplication and division 6. Solve problems involving the four operations, and identify and explain patterns in arithmetic.	1. Demonstrate an understanding of fractions 2. Represent and interpret data	1. Tell and write time 2. Solve problems involving measurement 3. Represent and interpret data 4. Demonstrate an understanding of area and perimeter 5. Categorize and partition shapes

G02 Math

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Number Sense and Place Value	**Unit 2:** Addition and Subtraction	**Unit 3:** Money, Time, and Measurement	**Unit 4**:Geometry, Fraction, and Data
Learning Targets	1. Represent and solve problems involving addition and subtraction. 2. Fluently add and subtract within 20. 3. Work with equal groups of objects to gain foundations for multiplication.	1. Understand two-digit and three-digit numbers represent hundreds, tens,and ones. 2. Count within 1000; skip-count by 5s, 10s, and 100s. 3. Read, write, and compare numbers to 1000. 4. Use place value understanding to regroup when adding and subtracting within 1000.	1. Measure and estimate lengths in standard units. 2. Tell time to the nearest five minutes, using a.m. and p.m. 3. Solve problems involving dollar bills and coins.	1. Reason with shapes and their attributes. 2. Describe equal parts of the whole. 3. Represent and interpret data by using picture graphs or bar graphs.

G01 Math

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Number Sense and Place Value	**Unit 2:** Operations and Algebraic Thinking	**Unit 3:** Measurement and Data	**Unit 4:** Geometry
Learning Targets	1. Count to 120 2. Understand that a 2 digit number represents tens and ones 3. Compare two digits 4. Use place value understanding and properties of operations to add and subtract 5. Count within 120; Skip-count by 2s, 5s, 10s	1. Add and subtract within 20, with fluency to 10 2. Represent and solve problems involving addition and subtraction within 100	1. Express the length of an object as a whole number of length units 2. Tell time to the hour and half-hours 3. Organize, represent, and interpret data	1. Compare, compose, and partition shapes

KG2 Math

	Quarter I	Quarter II	Quarter III	Quarter IV
Units	**Unit 1:** Counting, Cardinality, Number Sense and operations in Base Ten	**Unit 2:**Operations and Algebraic Thinking	**Unit 3:** Measurement and Data	**Unit 4: Geometry**
Learning Targets	1. Orally count to 100 by 1's and 10's. 2. Know number names and the counting sequence to 20. 3. Count to tell the number of objects to 20. 4. Work with numbers 11-19 to demonstrate place value. 5. Compare sets of objects to tell more, less, or equal quantities.	1. Demonstrate addition as putting together/adding to and subtraction as taking apart/taking from. 2. Fluently add and subtract within 5. 3. Add and subtract within 10 using objects.	1. Describe and compare measurable attributes such as length or weight. 2. Classify objects and count the number of objects in each category.	1. Identify, describe, and compare shapes - Square, circle, triangle, rectangle, hexagon. 2. Identify, describe, and compare 3-D shapes - cube, cone, cylinder, sphere.