Cambrian Academy

High School Geometry

This course covers the topics shown below.
Students navigate learning paths based on their level of readiness.

Curriculum

- Arithmetic and Algebra Review (151 topics)
  - Fractions and Decimals (28 topics)
    - Factors
    - Greatest common factor of 2 numbers
    - Equivalent fractions
    - Simplifying a fraction
    - Division involving zero
    - Introduction to addition or subtraction of fractions with different denominators
    - Addition or subtraction of fractions with different denominators
    - Product of a unit fraction and a whole number
    - Product of a fraction and a whole number: Problem type 1
    - Fraction multiplication
    - Product of a fraction and a whole number: Problem type 2
    - The reciprocal of a number
    - Division involving a whole number and a fraction
    - Fraction division
    - Complex fraction without variables: Problem type 1
    - Decimal place value: Tenths and hundredths
    - Rounding decimals
    - Introduction to ordering decimals
    - Using a calculator to convert a fraction to a rounded decimal
    - Addition of aligned decimals
    - Decimal subtraction: Basic
    - Decimal subtraction: Advanced
    - Word problem with addition or subtraction of 2 decimals
    - Multiplication of a decimal by a power of ten
    - Introduction to decimal multiplication
    - Multiplying a decimal by a whole number
    - Word problem with multiple decimal operations: Problem type 1
    - Converting a fraction to a terminating decimal: Basic
  - Signed Numbers (14 topics)
    - Plotting integers on a number line
    - Ordering integers
    - Absolute value of a number
    - Integer addition: Problem type 1
    - Integer addition: Problem type 2
    - Integer subtraction: Problem type 1
    - Integer subtraction: Problem type 2
    - Integer subtraction: Problem type 3
    - Addition and subtraction with 3 integers
    - Operations with absolute value: Problem type 1
    - Integer multiplication and division
    - Multiplication of 3 or 4 integers
    - Signed fraction addition or subtraction: Basic
    - Signed fraction multiplication: Basic
  - Order of Operations and Algebraic Expressions (23 topics)
    - Introduction to exponents
    - Exponents and integers: Problem type 1
    - Exponents and fractions
    - Order of operations with whole numbers
    - Order of operations with whole numbers and exponents: Basic
    - Order of operations with integers
    - Exponents and signed fractions
    - Evaluating an algebraic expression: Whole number addition or subtraction
    - Evaluating an algebraic expression: Whole number multiplication or division
    - Evaluating an algebraic expression: Whole numbers with two operations
    - Evaluating a formula
    - Evaluating an algebraic expression: Whole numbers with one operation and an exponent
    - Evaluating a linear expression: Integer multiplication with addition or subtraction

- Evaluating a quadratic expression: Integers
- Combining like terms: Whole number coefficients
- Combining like terms: Integer coefficients
- Multiplying a constant and a linear monomial
- Distributive property: Whole number coefficients
- Distributive property: Integer coefficients
- Factoring a linear binomial
- Using distribution and combining like terms to simplify: Univariate
- Combining like terms in a quadratic expression
- Introduction to adding fractions with variables and common denominators

- Linear Equations (29 topics)
  - Identifying solutions to a one-step linear equation: Problem type 1
  - Identifying solutions to a one-step linear equation: Problem type 2
  - Additive property of equality with whole numbers
  - Additive property of equality with decimals
  - Additive property of equality with integers
  - Multiplicative property of equality with whole numbers
  - Multiplicative property of equality with whole numbers: Fractional answers
  - Multiplicative property of equality with fractions
  - Multiplicative property of equality with integers
  - Multiplicative property of equality with signed fractions
  - Identifying solutions to a linear equation in one variable: Two-step equations
  - Using two steps to solve an equation with whole numbers
  - Additive property of equality with a negative coefficient
  - Solving a two-step equation with integers
  - Introduction to using substitution to solve a linear equation
  - Introduction to solving an equation with parentheses
  - Identifying properties used to solve a linear equation
  - Introduction to solving an equation with variables on the same side
  - Solving a linear equation with several occurrences of the variable: Variables on the same side
  - Introduction to solving a linear equation with a variable on each side
  - Solving a linear equation with several occurrences of the variable: Variables on both sides
  - Solving a linear equation with several occurrences of the variable: Variables on the same side and distribution
  - Solving a linear equation with several occurrences of the variable: Variables on both sides and distribution
  - Introduction to solving a rational equation
  - Solving a rational equation that simplifies to linear: Denominator x
  - Translating a phrase into a one-step expression
  - Translating a sentence into a one-step equation
  - Writing an equation to represent a proportional relationship
  - Solving a word problem on proportions using a unit rate

- Solving Formulas for a Variable (3 topics)
  - Solving for a variable in terms of other variables using addition or subtraction: Basic
  - Solving for a variable in terms of other variables using multiplication or division: Basic
  - Solving for a variable in terms of other variables using addition or subtraction with division

- Percents (6 topics)
  - Introduction to converting a percentage to a decimal
  - Introduction to converting a decimal to a percentage
  - Converting between percentages and decimals
  - Converting a fraction to a percentage: Denominator of 4, 5, or 10
  - Converting a fraction to a percentage: Denominator of 20, 25, or 50
  - Writing a ratio as a percentage

- Inequalities (8 topics)
  - Translating a sentence by using an inequality symbol
  - Introduction to identifying solutions to an inequality
  - Translating a sentence into a compound inequality
  - Additive property of inequality with whole numbers
  - Additive property of inequality with integers
  - Multiplicative property of inequality with whole numbers
  - Solving a two-step linear inequality with whole numbers
  - Solving a two-step linear inequality: Problem type 1

- Exponents and Polynomials (11 topics)
  - Introduction to the product rule of exponents
  - Introduction to the power of a product rule of exponents
  - Simplifying a ratio of multivariate monomials: Basic
  - Simplifying a sum or difference of two univariate polynomials
  - Multiplying binomials with leading coefficients of 1
  - Multiplying binomials with leading coefficients greater than 1
  - Multiplying binomials in two variables
  - Squaring a binomial: Univariate

- Squaring a binomial: Multivariate
- Factoring a quadratic with leading coefficient 1
- Factoring a perfect square trinomial with leading coefficient 1

- Radicals (10 topics)
  - Square root of a perfect square
  - Using a calculator to approximate a square root
  - Square root of a rational perfect square
  - Simplifying the square root of a whole number less than 100
  - Simplifying the square root of a whole number greater than 100
  - Introduction to square root addition or subtraction
  - Introduction to square root multiplication
  - Square root multiplication: Basic
  - Simplifying a quotient of square roots
  - Rationalizing a denominator: Quotient involving square roots

- Venn Diagrams and Sets (4 topics)
  - Interpreting a Venn diagram of 2 sets
  - Interpreting a Venn diagram of 3 sets
  - Interpreting Venn diagram cardinalities with 2 sets for a real-world situation
  - Interpreting Venn diagram cardinalities with 3 sets for a real-world situation

- Introduction to Perimeter and Area (15 topics)
  - Perimeter of a polygon
  - Perimeter of a square or a rectangle
  - Finding the missing length in a figure
  - Writing algebraic expressions for the perimeter of a figure
  - Finding a side length given the perimeter and side lengths with variables
  - Area of a rectangle on a grid
  - Area of a square or a rectangle
  - Distinguishing between the area and perimeter of a rectangle
  - Areas of rectangles with the same perimeter
  - Word problem involving the area of a rectangle: Problem type 2
  - Finding side lengths of rectangles given one dimension and an area or a perimeter
  - Word problem on optimizing an area or perimeter
  - Finding the area of a composite figure on a grid
  - Introduction to area of a piecewise rectangular figure
  - Area between two rectangles

- Segments and Angles (37 topics)

  - Points, Lines, and Planes (5 topics)
    - Naming segments, rays, and lines
    - Analyzing relationships between points, lines, and planes given a figure
    - Identifying congruent shapes on a grid
    - Identifying parallel and perpendicular lines
    - Matching basic geometric terms with their definitions

  - Distances and Midpoints on a Number Line (5 topics)
    - Introduction to segment addition
    - Computing the distance between two integers on a number line
    - Finding a point on a number line given the length of a segment and another point
    - Midpoint of a number line segment: Integers
    - Segment addition and midpoints

  - Ordered Pairs (3 topics)
    - Reading a point in the coordinate plane
    - Plotting a point in the coordinate plane
    - Table for a linear equation

  - Distances and Midpoints in the Coordinate Plane (7 topics)
    - Finding distances between points that share a common coordinate given the graph
    - Finding distances between points that share a common coordinate given their coordinates
    - Introduction to the Pythagorean Theorem
    - Pythagorean Theorem
    - Distance between two points in the plane: Exact answers
    - Identifying congruent segments in the plane
    - Midpoint of a line segment in the plane

  - Angles (13 topics)
    - Measuring an angle with the protractor
    - Drawing an angle with the protractor
    - Acute, obtuse, and right angles
    - Naming angles, sides of angles, and vertices

        - Introduction to angle addition
        - Finding the complement or supplement of an angle given a figure
        - Solving an equation involving complementary or supplementary angles
        - Finding supplementary and complementary angles
        - Angle addition with relationships between angles
        - Angle addition and angle bisectors
        - Identifying linear pairs and vertical angles
        - Finding angle measures given two intersecting lines
        - Solving equations involving vertical angles and linear pairs

    - Segment and Angle Constructions (4 topics)
        - Constructing congruent line segments
        - Constructing an angle bisector
        - Constructing congruent angles
        - Constructing the perpendicular bisector of a line segment

- Reasoning (13 topics)

    - Patterns and Inductive Reasoning (3 topics)
        - Finding the next terms of an arithmetic sequence with whole numbers
        - Finding the next terms of a geometric sequence with whole numbers
        - Finding patterns in shapes

    - Negations and Conditional Statements (6 topics)
        - Negation of a statement
        - Conditional statements and negations
        - The converse, inverse, and contrapositive of a conditional statement
        - Writing the converse, inverse, and contrapositive of a conditional statement and determining their truth values
        - Writing a biconditional statement as a conditional statement and its converse and determining truth values
        - Finding counterexamples to conjectures

    - Deductive Reasoning (1 topics)
        - Conditional statements and deductive reasoning

    - Proofs Involving Segments and Angles (3 topics)
        - Introduction to proofs: Justifying statements
        - Proofs involving segment congruence
        - Proofs involving angle congruence

- Lines (31 topics)

    - Parallel Lines and Transversals (5 topics)
        - Identifying corresponding and alternate angles
        - Finding angle measures given two parallel lines cut by a transversal
        - Solving equations involving angles and a pair of parallel lines
        - Solving equations involving angles and two pairs of parallel lines
        - Establishing facts about the angles created when parallel lines are cut by a transversal

    - Line Constructions (2 topics)
        - Constructing a pair of perpendicular lines
        - Constructing a pair of parallel lines

    - Proofs Involving Parallel Lines (2 topics)
        - Introduction to proofs involving parallel lines
        - Proofs involving parallel lines

    - Graphing Lines (8 topics)
        - Identifying solutions to a linear equation in two variables
        - Finding a solution to a linear equation in two variables
        - Graphing a linear equation of the form y = mx
        - Graphing a line given its equation in slope-intercept form: Integer slope
        - Graphing a line given its equation in slope-intercept form: Fractional slope
        - Graphing a line given its equation in standard form
        - Graphing a vertical or horizontal line
        - Finding x- and y-intercepts given the graph of a line on a grid

    - Slope of Lines (3 topics)
        - Finding slope given the graph of a line on a grid
        - Finding slope given two points on the line
        - Finding the slope of horizontal and vertical lines

    - Equations of Lines (5 topics)
        - Finding the slope and y-intercept of a line given its equation in the form y = mx + b
        - Finding the slope and y-intercept of a line given its equation in the form Ax + By = C

        - Writing an equation of a line given its slope and y-intercept
        - Writing an equation in slope-intercept form given the slope and a point
        - Writing an equation of a line given the y-intercept and another point

    - Parallel and Perpendicular Lines (5 topics)
        - Finding slopes of lines parallel and perpendicular to a line given in slope-intercept form
        - Finding slopes of lines parallel and perpendicular to a line given in the form Ax + By = C
        - Identifying parallel and perpendicular lines from equations
        - Writing equations of lines parallel and perpendicular to a given line through a point
        - Identifying parallel and perpendicular lines from coordinates

    - Systems of Equations (1 topics)
        - Solving a system of linear equations of the form y = mx + b

- Triangles (47 topics)

    - Classifying Triangles (4 topics)
        - Acute, obtuse, and right triangles
        - Classifying scalene, isosceles, and equilateral triangles by side lengths
        - Identifying coordinates that give right triangles
        - Identifying scalene, isosceles, and equilateral triangles given coordinates of their vertices

    - Angles of Triangles (6 topics)
        - Finding an angle measure of a triangle given two angles
        - Finding an angle measure for a triangle with an extended side
        - Finding an angle measure given extended triangles
        - Finding an angle measure given a triangle and parallel lines
        - Finding angle measures of a triangle given angles with variables
        - Establishing facts about the interior angles of a triangle

    - Congruent Triangles (5 topics)
        - Identifying transformations
        - Identifying and naming congruent parts of congruent triangles
        - Determining if figures are related by rigid motions
        - Examining triangle congruence in terms of rigid motion
        - Exploring the triangle congruence theorems

    - Proving Triangle Congruence (13 topics)
        - Completing proofs involving congruent triangles using SSS or SAS
        - Introduction to proving triangles congruent using SSS or SAS
        - Identifying and naming congruent triangles
        - Completing proofs involving congruent triangles using ASA or AAS
        - Introduction to proving triangles congruent using ASA or AAS
        - Proofs involving congruent triangles and segment or angle bisectors
        - Separating overlapping triangles and identifying common features
        - Proofs involving congruent triangles that overlap: Basic
        - Proofs involving congruent triangles with parallel or perpendicular segments
        - Determining when to apply the HL congruence property
        - Introduction to proving triangles congruent using the HL property
        - Introduction to proofs involving congruent triangles and CPCTC
        - Proofs involving congruent triangles, parallel or perpendicular segments, and CPCTC

    - Isosceles and Equilateral Triangles (4 topics)
        - Finding side lengths and angle measures of isosceles and equilateral triangles
        - Finding an angle measure for a triangle sharing a side with another triangle
        - Finding angle measures of an isosceles triangle given angles with variables
        - Proofs of theorems involving isosceles triangles

    - Segments within Triangles (7 topics)
        - Classifying segments inside triangles
        - Using the circumcenter of a triangle to find segment lengths
        - Using the incenter of a triangle to find segment lengths and angle measures
        - Using the centroid of a triangle to find segment lengths
        - Introduction to the triangle midsegment theorem
        - Proving the triangle midsegment theorem in the coordinate plane
        - Proof involving points on the perpendicular bisector of a line segment

    - Triangle Constructions and Triangle Inequalities (8 topics)
        - Creating triangles from given side lengths: Problem type 1
        - Using triangle inequality to determine if side lengths form a triangle
        - Using triangle inequality to determine possible lengths of a third side
        - Drawing a circle with a given radius or diameter
        - Relationship between angle measures and side lengths in a triangle
        - Relationship between angle measures and side lengths in two triangles

        - Using the hinge theorem
        - Indirect proof (proof by contradiction)

- Polygons and Quadrilaterals (20 topics)

    - Angles of Polygons (5 topics)
        - Naming polygons
        - Sum of the angle measures of a quadrilateral
        - Finding the sum of the interior angle measures of a convex polygon given the number of sides
        - Finding a missing interior angle measure in a convex polygon
        - Finding the measures of an interior angle and an exterior angle of a regular polygon

    - Parallelograms and Trapezoids (15 topics)
        - Identifying parallelograms, rectangles, and squares
        - Properties of quadrilaterals
        - Classifying parallelograms
        - Finding measures involving diagonals of parallelograms
        - Conditions for parallelograms
        - Finding measures involving diagonals of rectangles
        - Finding angle measures involving diagonals of a rhombus
        - Conditions for quadrilaterals
        - Completing proofs of theorems involving sides of a parallelogram
        - Completing proofs of theorems involving angles of a parallelogram
        - Drawing and identifying a polygon in the coordinate plane
        - Finding the coordinates of a point to make a parallelogram
        - Finding coordinates of vertices of polygons
        - Proving that a quadrilateral with given vertices is a parallelogram
        - Classifying parallelograms in the coordinate plane

- Similarity (25 topics)

    - Ratios and Proportions (8 topics)
        - Writing ratios for real-world situations
        - Simplifying a ratio of whole numbers: Problem type 1
        - Solving a proportion of the form x/a=b/c: Basic
        - Solving a proportion of the form x/a = b/c
        - Solving a proportion of the form (x+a)/b = c/d
        - Word problem on proportions: Problem type 1
        - Finding a point that partitions a number line segment in a given ratio
        - Finding a point that partitions a segment in the plane in a given ratio

    - Similar Figures (8 topics)
        - Identifying similar or congruent shapes on a grid
        - Finding a missing side length given two similar triangles
        - Finding angle measures of a triangle given two angles of a similar triangle
        - Similar polygons
        - Similar right triangles
        - Indirect measurement
        - Triangles and parallel lines
        - Triangles and angle bisectors

    - Proving Triangle Similarity (6 topics)
        - Determining if figures are related by similarity transformations
        - Examining triangle similarity in terms of similarity transformations
        - Identifying and naming similar triangles
        - Proofs involving similar triangles
        - Completing proofs involving the triangle proportionality theorem
        - Proving the slope criterion for parallel or perpendicular lines

    - Scale Factors and Scale Drawings (3 topics)
        - Finding lengths using scale models
        - Finding a scale factor: Same units
        - Using a scale drawing to find actual area

- Right Triangles and Trigonometry (24 topics)

    - The Pythagorean Theorem (2 topics)
        - Word problem involving the Pythagorean Theorem
        - Identifying side lengths that give right triangles

    - Similar Right Triangles and Special Right Triangles (4 topics)
        - Identifying similar right triangles that overlap
        - Right triangles and geometric mean
        - Proving the Pythagorean Theorem using similar triangles

    - Special right triangles: Exact answers

- Right Triangle Trigonometry (11 topics)
    - Sine, cosine, and tangent ratios: Numbers for side lengths
    - Using a calculator to approximate sine, cosine, and tangent values
    - Understanding trigonometric ratios through similar right triangles
    - Relationship between the sines and cosines of complementary angles
    - Using similar right triangles to find trigonometric ratios
    - Using a trigonometric ratio to find a side length in a right triangle
    - Solving a right triangle
    - Using trigonometry to find a length in a word problem with one right triangle
    - Using trigonometry to find a length in a word problem with two right triangles
    - Using a trigonometric ratio to find an angle measure in a right triangle
    - Using trigonometry to find angles of elevation or depression in a word problem

- Laws of Sines and Cosines (7 topics)
    - Solving a triangle with the law of sines: Problem type 1
    - Solving a triangle with the law of sines: Problem type 2
    - Solving a word problem using the law of sines
    - Proving the law of sines
    - Solving a triangle with the law of cosines
    - Solving a word problem using the law of cosines
    - Proving the law of cosines

- Transformations (37 topics)

    - Translations (6 topics)
        - Translating a point and giving its coordinates: One step
        - Translating a point and giving its coordinates: Two steps
        - Properties of translated figures
        - Determining if figures are related by a translation
        - Translating a polygon
        - Understanding the definition of a translation

    - Reflections (9 topics)
        - Reflecting a point across an axis
        - Reflecting a point across an axis and giving its coordinates
        - Finding the coordinates of a point reflected across an axis
        - Reflecting a polygon across the x-axis or y-axis
        - Properties of reflected figures
        - Determining if figures are related by a reflection
        - Reflecting a polygon over a vertical or horizontal line
        - Finding the coordinates of a point reflected across an axis and translated
        - Understanding the definition of a reflection

    - Rotations (5 topics)
        - Rotating a point and giving its coordinates
        - Properties of rotated figures
        - Determining if figures are related by a rotation
        - Rotating a figure about the origin
        - Understanding the definition of a rotation

    - Symmetry (3 topics)
        - Drawing lines of symmetry
        - Finding an angle of rotation
        - Identifying rotational symmetry and angles of rotation

    - Congruence Transformations (7 topics)
        - Writing a rule to describe a translation
        - Writing a rule to describe a reflection
        - Writing a rule to describe a rotation
        - Identifying transformations that map a quadrilateral onto itself
        - Identifying transformations that map a regular polygon onto itself
        - Determining if figures are congruent and related by a transformation
        - Determining if figures are congruent and related by a sequence of transformations

    - Dilations (7 topics)
        - Dilating a segment and giving the coordinates of its endpoints
        - The effect of dilation on side length
        - Determining if figures are related by a dilation
        - Dilating a figure
        - Writing a rule to describe a dilation
        - Exploring similarity of circles
        - Exploring the effect of dilation on lines

- Area and Volume (65 topics)
  - Areas of Parallelograms and Triangles (12 topics)
    - Area of a parallelogram
    - Finding the area of a right triangle on a grid
    - Finding the area of a right triangle or its corresponding rectangle
    - Area of a triangle
    - Finding the perimeter or area of a rectangle in the coordinate plane
    - Word problem on population density
    - Finding the perimeter of a triangle, trapezoid, or parallelogram in the coordinate plane
    - Finding the area of a triangle or parallelogram in the coordinate plane
    - Finding the area of a right triangle using the Pythagorean Theorem
    - Area involving rectangles and triangles
    - Using trigonometry to find the area of a right triangle
    - Expressing the area of a triangle in terms of the sine of one of its angles
  - Areas of Trapezoids, Rhombi, and Kites (3 topics)
    - Area of a trapezoid
    - Area of a rhombus
    - Finding the area of a trapezoid, rhombus, or kite in the coordinate plane
  - Areas of Regular Polygons and Similar Polygons (4 topics)
    - Area of a regular polygon
    - Finding the area of a regular polygon using special right triangles
    - Side lengths, perimeters, and areas of similar polygons
    - Investigating the effects on the area for non-proportional and proportional figures
  - Circumferences and Areas of Circles (13 topics)
    - Introduction to a circle: Diameter, radius, and chord
    - Circumference of a circle
    - Informal argument for the formula of the circumference of a circle
    - Area of a circle
    - Circumference and area of a circle
    - Circumference and area of a circle: Exact answers in terms of pi
    - Informal argument for the formula of the area of a circle
    - Area involving rectangles and circles
    - Area between two concentric circles
    - Area involving inscribed figures
    - Area involving multiple inscribed figures
    - Area of a sector of a circle: Exact answer in terms of pi
    - Informal argument for the formula of the area of a sector
  - Solids and Cross Sections (6 topics)
    - Classifying solids
    - Vertices, edges, and faces of a solid
    - Identifying geometric shapes that model real-world objects
    - Nets of solids
    - Identifying horizontal and vertical cross sections of solids
    - Identifying solids generated by rotations of two-dimensional regions
  - Surface Areas of Prisms and Cylinders (3 topics)
    - Surface area of a cube or a rectangular prism
    - Surface area of a triangular prism
    - Surface area of a cylinder
  - Volumes of Prisms and Cylinders (16 topics)
    - Volume of a rectangular prism made of unit cubes
    - Volume of a rectangular prism
    - Writing equivalent expressions for the volume of a rectangular prism
    - Volume of an oblique rectangular prism
    - Distinguishing between surface area and volume
    - Word problem involving the volume of a rectangular prism
    - Computations involving density, mass, and volume
    - Word problem on density involving the volume of a rectangular solid
    - Volume of a piecewise rectangular prism
    - Word problem involving the volume of a piecewise rectangular prism
    - Volume of a triangular prism
    - Volume of a cylinder
    - Informal argument for the formula of the volume of a cylinder
    - Volume of an oblique cylinder
    - Word problem involving the volume of a cylinder
    - Using cross sections to identify solids with the same volume
  - Volumes of Pyramids and Cones (3 topics)

    - Volume of a pyramid
    - Volume of a cone
    - Informal argument for the formula of the volume of a cone

  - Surface Areas and Volumes of Spheres (2 topics)
    - Surface area of a sphere
    - Volume of a sphere

  - Similar Solids (3 topics)
    - Identifying similar solids
    - Computing ratios of side lengths, surface areas, and volumes for similar solids
    - Computing side length, surface area, and volume for similar solids

- Circles (31 topics)

  - Segments in a Circle and Tangent Lines (3 topics)
    - Identifying chords, secants, and tangents of a circle
    - Tangents of a circle: Problem type 1
    - Constructing a tangent of a circle

  - Chords and Arcs (5 topics)
    - Naming and finding measures of central angles, inscribed angles, and arcs of a circle
    - Applying properties of radii, diameters, and chords
    - Arc length
    - Arc length and area of a sector of a circle
    - Computing ratios of arc lengths to radii and describing the result

  - Inscribed Angles and Polygons (9 topics)
    - Central angles and inscribed angles of a circle
    - Central angles and angles involving chords and tangents of a circle
    - Inscribed angles in relation to a diameter or a polygon inscribed in a circle
    - Inscribed angles and angles involving chords and tangents of a circle
    - Establishing facts about a quadrilateral inscribed in a circle
    - Inscribing an equilateral triangle or a regular hexagon in a circle
    - Inscribing a square in a circle
    - Inscribing a circle in a triangle
    - Circumscribing a circle about a triangle

  - Angle and Segment Relationships in Circles (2 topics)
    - Angles of intersecting secants and tangents
    - Lengths of chords, secants, and tangents

  - Graphs and Equations of Circles (7 topics)
    - Identifying the center and radius to graph a circle given its equation in standard form
    - Completing the square
    - Identifying the center and radius to graph a circle given its equation in general form: Basic
    - Writing the equation of a circle centered at the origin given its radius or a point on the circle
    - Writing an equation of a circle and identifying points that lie on the circle
    - Writing an equation of a circle given its center and radius or diameter
    - Deriving the equation of a circle using the Pythagorean Theorem

  - Graphs and Equations of Parabolas (5 topics)
    - Graphing a parabola of the form $y = ax^2$
    - Graphing a parabola of the form $y = ax^2 + c$
    - Finding the vertex, intercepts, and axis of symmetry from the graph of a parabola
    - Graphing a parabola of the form $y^2 = ax$ or $x^2 = ay$
    - Deriving the equation of a parabola given its focus and directrix

- Probability and Data Analysis (43 topics)

  - Permutations and Combinations (9 topics)
    - Introduction to the counting principle
    - Counting principle
    - Counting principle with repetition allowed
    - Factorial expressions
    - Computing permutations and combinations
    - Word problem involving permutations
    - Introduction to permutations and combinations
    - Permutations and combinations: Problem type 1
    - Permutations and combinations: Problem type 2

  - Probability of Simple Events (8 topics)
    - Determining a sample space and outcomes for a simple event
    - Introduction to the probability of an event

- Probability involving one die or choosing from n distinct objects
- Probability involving choosing from objects that are not distinct
- Probability of selecting one card from a standard deck
- Probabilities of an event and its complement
- Experimental and theoretical probability
- Area as probability

- Two-Way Tables (3 topics)
  - Constructing a two-way frequency table: Basic
  - Constructing a two-way frequency table: Advanced
  - Computing a percentage from a table of values

- Probabilities of Independent and Dependent Events (15 topics)
  - Determining a sample space and outcomes for a compound event
  - Outcomes and event probability
  - Experimental and theoretical probability for compound events
  - Probabilities of a permutation and a combination
  - Identifying independent events given descriptions of experiments
  - Probability of independent events
  - Probability of dependent events
  - Determining outcomes for compound events and complements of events
  - Computing conditional probability using a sample space
  - Using a Venn diagram to understand the multiplication rule for probability
  - Outcomes and event probability: Conditional probability
  - Identifying independent events given values of probabilities
  - Computing conditional probability using a two-way frequency table
  - Computing conditional probability to make an inference using a two-way frequency table
  - Conditional probability: Basic

- Probabilities of the Union of Two Events (3 topics)
  - Using a Venn diagram to understand the addition rule for probability
  - Outcomes and event probability: Addition rule
  - Computing probability involving the addition rule using a two-way frequency table

- Modeling Randomness and Simulations (5 topics)
  - Identifying outcomes in a random number table used to simulate a simple event
  - Using a random number table to simulate a simple event
  - Constructing a percent bar graph
  - Generating a random number table with technology to simulate a simple event
  - Using a random number table to make a fair decision