

Standards Curriculum Map Bourbon County Schools

MP.1. Make sense of problems and persevere in solving them.
 MP.2. Reason abstractly and quantitatively.
 MP.3. Construct viable arguments and critique the reasoning of others.
 MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.
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Course: Geometry
 Updated: 7/24/2023

Module 1: Geometry Tools (11 Days)

Goals: Students will understand the basic elements of geometry, including points, lines, segments, planes and angles. Students will measure distances and compute midpoints on number lines and the coordinate plane.

Days:	KAS:	Skills:	Vocabulary:	SBG Learning Targets:	Resources:
1-11	<p>KY.HS.G.1 Know and apply precise definitions of the language of Geometry: a. Understand properties of line segments, angles and circles. b. Understand properties of and differences between perpendicular and parallel lines. MP.3, MP.6</p> <p>KY.HS.G.29 Use geometric shapes, their measures and their properties to describe</p>	<p>Module 1-2 Points, Lines, and Planes Name Points and Planes Model Points, Lines, and Planes Interpret Drawings</p> <p>Module 1-3 Segment Measures by Adding and Subtracting Segment Measures Using Equations Congruence to Solve Equations</p> <p>Module 1-4 Distance on Number Line Determine Segment Congruence</p>	analytic geometry, axiom, axiomatic system, betweenness of points, bisect, collinear, congruent, congruent segments, constructions, coplanar, defined term, definition, directed line segment,	<p>M1S1 - I can identify, name, and model points, lines, planes, and intersections of lines and planes.</p> <p>M1S2 - I can calculate measures of line segments.</p> <p>M1S3 - I can apply the definition of congruent line segments to solve for missing values.</p> <p>M1S4 - I can find the length of a line segment on a number line.</p> <p>M1S5 - I can apply the distance</p>	McGraw-Hill Reveal Math ALEKS Math Medic EFFL Geometry

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	<p>objects in real world settings. MP.1, MP.4</p> <p>KY,HS.G.8 Create and apply geometric constructions. a. Make formal geometric constructions with a variety of tools and methods. b. Apply basic construction procedures to construct more complex figures. MP.5, MP.6</p> <p>KY.HS.G.23 Find measurements among points within the coordinate plane. a. Use points from the coordinate plane to find the coordinates of a midpoint of a line segment and the distance between the endpoints of a line segment. b. Find the point on a directed line segment between two given points that partitions the segment in a given ratio. MP.2, MP.8</p>	<p>Distance on Coordinate Plane Distance in Real World</p> <p>Module 1-5 Point at a Fractional Distance on Number Line Fractional Distance in Real World Point at a Ratio on Number Line Partition a Directed Line Segment on Number Line</p> <p>Module 1-6 Fractional Distance on Coordinate Plane Point on a Coordinate Plane Given Ratio Partition a Directed Line Segment Coordinate Plane</p> <p>Module 1-7 Midpoint on Number Line Midpoint in Real World Midpoint on Coordinate Plane Missing Points on Coordinate Plane Segment Bisectors Missing Measures Segment Bisectors Total Length</p>	<p>distance, equidistant, fractional distance, intersection, line, line segment, midpoint, plane, point, postulate, segment bisector, space, synthetic geometry, theorem, undefined terms</p>	<p>formula to solve for the distance between two points on the coordinate plane.</p> <p>M1S6 - I can solve to find a point on a directed number line segment on a number line and on the coordinate plane that is a given fractional distance from the initial point.</p> <p>M1S7 - I can solve to find a point that partitions a directed number line segment on a number line and on the coordinate plane in a given ratio.</p> <p>M1S8 - I can solve to find the coordinate of the midpoint on a number line and on the coordinate plane.</p> <p>M1S9 - I can apply the definition of segment bisector to solve for missing values.</p> <p>M1S10 - I can model real world scenarios using geometric shapes, their measures and their properties.</p>	
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Module 2: Angles and Geometric Figures (16 Days)

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12-27	<p>KY.HS.G.1 Know and apply precise definitions of the language of Geometry: a. Understand properties of line segments, angles and circles. b. Understand properties of and differences between perpendicular and parallel lines. MP.3, MP.6</p> <p>KY.HS.G.8 Create and apply geometric constructions. a. Make formal geometric constructions with a variety of tools and methods. b. Apply basic construction procedures to construct more complex figures. MP.5, MP.6</p> <p>KY.HS.G.24 Use coordinates within the coordinate plane to calculate measurements of two dimensional figures. a. Compute the perimeters of various polygons. b.</p>	<p>Module 2-1 Identify Angles Congruent Angles and Angle Bisectors Vertical Angles Angle Bisectors</p> <p>Module 2-2 Complementary and Supplementary Angles Perpendicular Lines Interpreting Diagrams</p> <p>Module 2-3 Perimeter, Circumference, Area Model 2-Dimensional Figures Using a 2-Dimensional Model</p> <p>Module 2-5 Properties of 3-Dimensional Figures Model 3-Dimensional Figures Measures of 3-Dimensional Figures Solve for Unknown Values</p>	accuracy, adjacent angles, angle, angle bisector, angle of rotation, approximate error, area, base of a pyramid or cone, bases of a prism or cylinder, center of rotation, circumference, complementary angles, concave polygon, cone, congruent angles, convex polygon, cylinder, edge of a polyhedron, equiangular polygon, equilateral polygon, exterior,	<p>M2S1 - I can analyze figures using the definition of angles, parts of angles and types of angles.</p> <p>M2S2 - I can calculate angle measures using the definition of congruent angles and angle bisectors.</p> <p>M2S3 - I can calculate angle measures using the characteristics of complementary and supplementary angles and perpendicular lines.</p> <p>M2S4 - I can apply the definition of complementary and supplementary angles to solve for missing values.</p> <p>M2S5 - I can calculate perimeters, circumferences, and areas of 2-dimensional figures and real-world objects.</p>	McGraw-Hill Reveal Math ALEKS Math Medic EFFL Geometry

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	<p>Compute the areas of triangles, rectangles and other quadrilaterals. MP.2, MP.4</p> <p>KY.HS.G.29 Use geometric shapes, their measures and their properties to describe objects in real world settings. MP.1, MP.4</p> <p>KY.HS.G.27 Use volume formulas to solve problems for cylinders, pyramids, cones, spheres, prisms MP.4, MP.6</p> <p>KY.HS.N.5 Define appropriate units in context for the purpose of descriptive modeling.</p> <p>KY.HS.N.6 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. MP.2, MP.6</p>	<p>Module 2-6 Nets to find Surface Area Draw Nets for 3-D Figures Nets for Real World Objects</p> <p>Module 2-7 Precision and Accuracy Approximate Error Rounded Measurements</p> <p>Module 2-8 Significant Figures Significant Figures Using Tools Calculate Significant Figures Use Tools to Calculate Measures</p>	<p>face of a polyhedron, geometric model, image, interior, linear pair, net, opposite rays, perimeter, perpendicular, polygon, polyhedron, precision, prism, pyramid, ray, regular polygon, regular polyhedron, sides, significant figures, sphere, straight angle, supplementary angles, surface area, vertex, vertical angles, vertex of a polyhedron, volume</p>	<p>M2S6 - I can determine characteristics of 3-dimensional figures.</p> <p>M2S7 - I can calculate surface areas and volumes.</p> <p>M2S8 - I can calculate surface areas of 3-dimensional figures represented by nets, and determine correct nets for 3-dimensional figures.</p> <p>M2S9 - I can determine the correct number of significant figures and round to the correct number of significant figures.</p> <p>M2S10 - I can describe objects in real world settings using geometric shapes, their measures and their properties (angles, 3-D figures, area, perimeter, volume).</p>	
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Module 3: Logical Arguments and Line Relationships (19 days)

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28-46	<p>MP.1, MP.3, MP.4, MP.5, MP.6, MP.7, MP.8</p> <p>KY.HS.G.1 Know and apply precise definitions of the language of Geometry: a. Understand properties of line segments, angles and circles. b. Understand properties of and differences between perpendicular and parallel lines. MP.3, MP.6</p> <p>KY.HS.G.6 Apply theorems for lines, angles, triangles, parallelograms. MP.2, MP.3</p> <p>KY.HS.G.22 Justify and apply the slope criteria for parallel and perpendicular lines and use them to solve geometric problems. MP.3, MP.7</p>	<p>*Module 3-1 Patterns and Conjectures Algebraic Conjectures Geometric Conjectures Conjectures from Data Counterexamples</p> <p>*Module 3-2 Truth Values of Conjunctions and Disjunctions Conditionals Related Conditionals Biconditionals Truth Value of Biconditionals</p> <p>Module 3-4 Postulates Two Column Proofs Algebraic Proofs Proofs Points, Lines, Planes</p> <p>Module 3-5 Segment Addition Postulate Prove Segment Congruence Determine Congruence</p>	<p>alternate exterior angles, alternate interior angles, biconditional statement, compound statement, conclusion, conditional statement, conjecture, conjunction, consecutive interior angles, contrapositive, converse, corresponding angles, counterexample, deductive argument, deductive reasoning, disjunction, equidistant,</p>	<p>*M3S1 - I can write and analyze conjectures by using inductive reasoning.</p> <p>*M3S2 - I can disprove conjectures by using counterexamples.</p> <p>*M3S3 - I can write compound statements for conjunctions and disjunctions and determine truth values of statements.</p> <p>*M3S4 - I can identify hypotheses and conclusions of conditional statements and write related conditionals.</p> <p>*M3S5 - I can write and analyze biconditional statements and determine truth values of statements.</p> <p>M3S6 - I can analyze figures to identify and use postulates about points, lines, and planes.</p>	<p>McGraw-Hill Reveal Math</p> <p>ALEKS</p> <p>Math Medic EFFL Geometry</p>

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	<p>KY.HS.G.31 Apply geometric methods to solve design problems. MP.1, MP.4</p>	<p>Module 3-6 Angle Addition Postulate Complement and Supplement Theorem Congruent Supplements and Complements Vertical Angles Right Angle Theorems in Proofs</p> <p>Module 3-7 Parallel and Skew Relationships Classify Angle Pair Relationships Identify Transversals Classify Angle Pairs Theorems About Parallel Lines</p> <p>Module 3-8 Determine Line Relationships Given Points and Graphs Equations of Lines Slope to Graph a line Equations of Parallel and Perpendicular Lines</p> <p>Module 3-9 Identify Parallel lines Use Angle Relationships Prove Lines Parallel</p>	<p>exterior angles, flow proof, hypothesis, if-then statement, inductive reasoning, interior angles, inverse, logically equivalent, negation, paragraph proof, parallel lines, parallel planes, proof, skew lines, slope, slope criteria, statement, transversal, truth value, two-column proof, valid argument</p>	<p>M3S7 - I can analyze and construct viable arguments in a two-column proof.</p> <p>M3S8 - I can prove theorems about line segments using the Segment Addition Postulate and properties of segment congruence.</p> <p>M3S9 - I can prove theorems about angles using the Angle Addition Postulate and properties and theorems of angle congruence.</p> <p>M3S10 - I can prove theorems about right angles.</p> <p>M3S11 - I can identify and classify special angle pairs, parallel, and skew lines, and transversals.</p> <p>M3S12 - I can find values by applying theorems about parallel lines and transversals.</p> <p>M3S13 - I can classify lines using parallel, perpendicular, or neither by comparing the slopes</p>	
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				and equations. M3S14 - I can apply angle relationship theorems to identify parallel lines and find missing values.	
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Module 4: Transformations (11 Days)

Days:	KAS:	Skills:	Vocabulary:	SBG Learning Targets:	Resources:
47-57	<p>KY.HS.G.2 Representing transformations in the plane.</p> <p>a. Describe transformations as functions that take points in the plane as inputs and give other points as outputs</p> <p>b. Compare transformations that preserve distance and angle measures to those that do not.</p> <p>c. Given a rectangle, parallelogram, trapezoid, or regular polygon, formally describe the rotations and reflections that carry it onto itself, using properties of these figures. MP.5, MP.7</p> <p>KY.HS.G.4 Understand the effects of transformations of geometric figures.</p> <p>a. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure.</p>	<p>Module 4-1 Reflection Reflection Horizontal or Vertical Line Reflection in the Line $y=x$</p> <p>Module 4-2 Translation Translation Vector Translations in Coordinate Plane</p> <p>Module 4-3 Rotation Rotation About the Origin Rotation About a Point (Not the Origin) Effect of a Rotation</p> <p>*Module 4-4 Glide Reflection Composition of Transformations Reflect in 2 Lines Determine Congruence Describe Transformations</p>	center of symmetry, composition of transformations, glide reflection, line of symmetry, line symmetry, magnitude, magnitude of symmetry, order of symmetry, point of symmetry, point symmetry, regular tessellation, rotational symmetry	<p>M4S1 - I can develop formal definitions of reflections, translations, and rotations.</p> <p>M4S2 - I can use rigid motions to reflect figures and describe the effects of the reflection.</p> <p>M4S3 - I can determine the translation vector.</p> <p>M4S4 - I can use rigid motions to rotate figures about points that are not the origin and describe the effects of the rotations.</p> <p>*M4S5 - I can determine the image of a figure after a composition of transformations.</p> <p>*M4S6 - I can describe the transformation that produces the same image as a reflection in two lines.</p>	McGraw-Hill Reveal Math ALEKS Math Medic EFFL Geometry

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	<p>b. Specify a sequence of transformations that will carry a given figure onto another.</p> <p>c. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure. Given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.</p> <p>MP.2, MP.8</p> <p>KY.HS.G.3 Develop formal definitions of rotations, reflections and translations in terms of angles, circles, perpendicular lines, parallel lines and line segments.</p> <p>MP.6, MP.7</p>				
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Module 5: Triangles and Congruence (12 Days)

Days:	KAS:	Skills:	Vocabulary:	SBG Learning Targets:	Resources:
58-69	<p>KY.HS.G.5 Know and apply the concepts of triangle congruence: a. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. b. Explain how the criteria for triangle congruence (ASA, SAS and SSS) follow from the definition of congruence in terms of rigid motions. MP.3, MP.6</p> <p>KY.HS.G.7 Prove theorems about geometric figures. a. Construct formal proofs to justify theorems for lines, angles and triangles. B. Construct formal proofs to justify theorems for parallelograms. MP.6, MP.7</p>	<p>Module 5-1 Triangle Angle-Sum Theorem Exterior Angle Theorem Triangle Angle-Sum Corollaries</p> <p>Module 5-2 Congruent Triangles Corresponding Congruent Parts Third Angles Theorem Proving Triangles Congruent</p> <p>Module 5-3 SSS to Prove Triangles Congruent SAS to Prove Triangles Congruent</p> <p>Module 5-4 ASA to Prove Triangles Congruent AAS to Prove Triangles Congruent</p> <p>Module 5-5 Congruence Theorems Right Triangles</p>	auxiliary line, base angles of an isosceles triangle, congruent polygons, coordinate proofs, corollary, corresponding parts, exterior angle of a triangle, included angle, included side, interior angle of a triangle, isosceles triangle, legs of an isosceles triangle, principle of superposition, remote interior angles, vertex angle of an isosceles triangle	<p>M5S1 - I can prove the Triangle Angle-Sum Theorem, the Exterior Angle Theorem, and corollaries and apply to solve problems.</p> <p>M5S2 - I can use congruence criterion of corresponding congruent parts of triangles to solve problems.</p> <p>M5S3 - I can use the SSS, SAS, ASA, and AAS Congruence criterion for triangles to solve problems.</p> <p>M5S4 - I can prove relationships in triangles using the SSS. SAS. ASA, and AAS Congruence criterion.</p> <p>M5S5 - I can use the right triangle congruence theorems to prove relationships in geometric figures.</p> <p>M5S6 - I can solve problems</p>	McGraw-Hill Reveal Math ALEKS Math Medic EFFL Geometry

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	<p>KY,HS.G.11 Understand theorems about triangles. a. Apply theorems about triangles. b. Prove theorems about triangles. c. Use similarity criteria for triangles to solve problems and to prove relationships in geometric figures. MP.1, MP.3</p> <p>KY,HS.G.21 Use coordinates to justify and prove simple geometric theorems algebraically. MP.2, MP.6</p>	<p>Problem Solving Right Triangles</p> <p>Module 5-6 Isosceles, Equilateral, Scalene Triangles Prove Theorems Isosceles Triangles Missing Measures Isosceles and Equilateral Triangles</p> <p>*Module 5-6 Position and Label Triangles Identify Missing Coordinates Write a Coordinate Proof Classify a Triangle</p>		<p>involving isosceles and equilateral triangles.</p> <p>*M5S7 - I can write coordinate proofs to verify properties and prove theorems about triangles.</p>	
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Module 6: Relationships in Triangles (11 Days)

Days:	KAS:	Skills:	Vocabulary:	SBG Learning Targets:	Resources:
70-80	<p>KY.HS.G.6 Apply theorems for lines, angles, triangles, parallelograms. MP.2, MP.3</p> <p>KY.HS.G.7 Prove theorems about geometric figures. a. Construct formal proofs to justify theorems for lines, angles and triangles. b. Construct formal proofs to justify theorems for parallelograms. MP.6, MP.7</p> <p>KY.HS.G.8 Create and apply geometric constructions. a. Make formal geometric constructions with a variety of tools and methods. b. Apply basic construction procedures to construct more complex figures. MP.5, MP.6</p>	<p>Module 6-1 Perpendicular Bisector Theorem Converse of Perpendicular Bisector Theorem Circumcenter Theorem Perpendicular Bisector in Design Problems</p> <p>Module 6-2 Angle Bisector Theorem Converse of Angle Bisector Theorem Incenter Theorem Angle Bisector in Design Problems</p> <p>Module 6-3 Centroid Theorem Orthocenter</p> <p>Module 6-4 Exterior Angle Inequality Theorem Order Angle Measures Order Side Lengths Angle-Side Relationships</p> <p>Module 6-6</p>	altitude of a triangle, centroid, circumcenter, concurrent lines, incenter, indirect proof, indirect reasoning, median, orthocenter, perpendicular bisector, point of concurrency, proof by contradiction	<p>M6S1 - I can prove theorems and solve problems for perpendicular bisectors of line segments.</p> <p>M6S2 - I can prove theorems and solve problems for angle bisectors.</p> <p>M6S3 - I can prove theorems and apply geometric methods to solve design problems using the perpendicular bisectors and angle bisectors of triangles.</p> <p>M6S4 - I can solve problems by applying the Centroid Theorem.</p> <p>M6S5 -I can use altitudes and medians and their properties to solve problems.</p> <p>M6S6 - I can solve problems by applying the Exterior Angle Inequality Theorem and the Triangle Inequality Theorem.</p>	McGraw-Hill Reveal Math ALEKS Math Medic EFFL Geometry Add Pythagorean Theorem review as it is used in solving some problems, but is not addressed until Module 9.

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		Identify Possible Triangles Given Side Lengths Find Possible Side Lengths Triangle Inequality Theorem		M6S7 - I can prove and apply theorems about inequalities in one triangle.	
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Module 7: Quadrilaterals (10 days)

Days:	KAS:	Skills:	Vocabulary:	SBG Learning Targets:	Resources:
81-90	<p>KY.HS.G.7 Prove theorems about geometric figures. a. Construct formal proofs to justify theorems for lines, angles and triangles. b. Construct formal proofs to justify theorems for parallelograms. MP.6, MP.7</p> <p>KY,HS.G.21 Use coordinates to justify and prove simple geometric theorems algebraically. MP.2, MP.6</p> <p>KY.HS.G.29 Use geometric shapes, their measures and their properties to describe objects in real world settings. MP.1, MP.4</p>	<p>Module 7-1 Interior Angles Sum Polygon Interior Angle Measures Regular Polygon Identify Polygon Given Interior Angle Measure Exterior Angle Measures Polygon</p> <p>Module 7-2 Properties of Parallelograms Proofs Using Properties Properties of Parallelograms and Algebra Parallelograms and Coordinate Geometry</p> <p>Module 7-3 Identify Parallelograms Parallelograms to Find Values Parallelograms Coordinate Plane</p> <p>Module 7-4 Properties of Rectangles Properties and Algebra Prove Rectangle Relationships Rectangles Coordinate Plane</p>	base angle of a trapezoid, bases of a trapezoid, diagonal, isosceles trapezoid, kite, legs of a trapezoid, midsegment of a trapezoid, parallelogram, rectangle, rhombus, square, trapezoid	<p>M7S1 - I can prove and use the Polygon Interior Angle Sum Theorem and Exterior Angle Sum Theorem.</p> <p>M7S2 - I can prove and use theorems about the properties of parallelograms and the diagonals of parallelograms to solve problems.</p> <p>M7S3 - I can use the tests for parallelograms to determine if quadrilaterals are parallelograms.</p> <p>M7S4 - I can identify and apply properties of rectangles and determine whether parallelograms are rectangles.</p> <p>M7S5 - I can identify and apply properties of rhombi and squares and determine whether quadrilaterals are rhombi or squares.</p>	McGraw-Hill Reveal Math ALEKS Math Medic EFFL Geometry

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		<p>Module 7-5 Definition of Rhombus Diagonals of Rhombus Definition of Square Conditions for Rhombus and Square Properties of Rhombus</p> <p>Module 7-6 Properties of Isosceles Trapezoid Midsegments of Trapezoids Missing Values in Trapezoids Angle Measures in kites Lengths in Kites</p>		<p>M7S6 - I can identify and apply the properties of trapezoids and kites to solve problems.</p> <p>M7S7 - I can describe and solve problems with quadrilaterals in real world settings using their measures and their properties.</p>	
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Module 8: Similarity (12 Days)

Days:	KAS:	Skills:	Vocabulary:	SBG Learning Targets:	Resources:
91-102	<p>KY.HS.G.9 Understand properties of dilations. a. Verify the properties that result from dilations given by a center and a scale factor. b. Verify that a dilation produces an image that is similar to the pre-image. MP.5, MP.7</p> <p>KY.HS.G.7 Prove theorems about geometric figures. a. Construct formal proofs to justify theorems for lines, angles and triangles. b. Construct formal proofs to justify theorems for parallelograms. MP.6, MP.7</p> <p>KY.HS.G.8 Create and apply geometric constructions. a. Make formal geometric constructions with a variety of tools and methods.</p>	<p>Module 8-1 Identify Dilation to Find Scale Factor Use Scale Factor Dilate a Figure Scale Factor of Dilation</p> <p>Module 8-2 Similarity Statement Similar Polygons Similar Figures Missing Measures Similar Polygons and Perimeter</p> <p>Module 8-3 AA Similarity Postulate Parts of Similar Triangles</p> <p>Module 8-4 SSS and SAS Similarity Theorems Parts of Similar Triangles Similar Triangles to Solve Problems</p> <p>Module 8-5 Triangle Proportions Side Length Triangle Proportions Parallel Lines</p>	center of dilation, dilation, enlargement, midsegment of a triangle, nonrigid motion, reduction, scale factor of dilation, similar polygons, similarity ratio, similarity transformation, similar triangles	<p>M8S1 - I can use scale factor to calculate dimensions of dilated images.</p> <p>M8S2 - I can represent dilations as functions and find the scale factor.</p> <p>M8S3 - I can determine whether two figures are similar.</p> <p>M8S4 - I can describe and solve problems using perimeters of similar polygons.</p> <p>M8S5 - I can use AA, SAS, SSS Similarity criteria to solve problems and prove triangles similar.</p> <p>M8S6 - I can solve problems and prove theorems by using triangle proportionality and the Triangle Midsegment Theorem and its corollaries.</p>	<p>McGraw-Hill Reveal Math</p> <p>ALEKS</p> <p>Math Medic EFFL Geometry</p>

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	<p>b. Apply basic construction procedures to construct more complex figures. MP.5, MP.6</p> <p>KY.HS.G.10 Apply the properties of similarity transformations to establish the AA criterion for two triangles to be similar. MP.3, MP.6</p> <p>KY.HS.G.11 Understand theorems about triangles. a. Apply theorems about triangles. b. Prove theorems about triangles. c. Use similarity criteria for triangles to solve problems and to prove relationships in geometric figures. MP.1, MP.3</p> <p>KY.HS.G.22 Justify and apply the slope criteria for parallel and perpendicular lines and use them to solve geometric problems. MP.3, MP.7</p>	<p>Triangle Midsegment Theorem. Proportional Segments of Transversals Congruent Segments of Transversals</p> <p>Module 8-6 Special Segments in Similar Triangles Similar Triangles to Solve Problems Triangle Angle Bisector</p>		<p>M8S7 - I can solve problems and prove theorems about parts of similar triangles using triangle similarity.</p>	
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Module 9: Right Triangles and Trigonometry (13 Days)

Days:	KAS:	Skills:	Vocabulary:	SBG Learning Targets:	Resources:
103-115	<p>MP.3, MP.4, MP.6</p> <p>KY.HS.G.11 Understand theorems about triangles. a. Apply theorems about triangles. b. Prove theorems about triangles. c. Use similarity criteria for triangles to solve problems and to prove relationships in geometric figures. MP.1, MP.3</p> <p>KY.HS.G.12 Understand properties of right triangles. a. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles (sine, cosine and tangent). b. Explain and use the relationship between the</p>	<p>*Module 9-1 Geometric Mean Similar Right Triangles Geometric Mean with Right Triangles</p> <p>Module 9-2 Missing Measures Using Pythagorean Theorem Pythagorean Triple Use Pythagorean Theorem Converse of Pythagorean Theorem Classify Triangles</p> <p>Module 9-4 Special Right Triangles Find Measures 45-45-90 Find Lengths 30-60-90 Use Properties to Solve</p> <p>Module 9-5 Trigonometric Ratios Special Right Triangles Trig Ratios Find Angle Measures Using Inverse Trig Ratios Solve a Right Triangle</p>	<p>30°-60°-90° triangle, 45°-45°-90° triangle, ambiguous case, angle of depression, angle of elevation, cosine, geometric mean, indirect measurement, inverse cosine, inverse sine, inverse tangent, octant, ordered triple, Pythagorean triple, sine, solving a triangle, tangent, trigonometric</p>	<p>*M9S1 - I can use similarity criteria for triangles and geometric means to solve problems and to prove relationships in geometric figures.</p> <p>M9S2 - I can use the Pythagorean Theorem to solve problems involving right triangles.</p> <p>M9S3 - I can classify triangles using the converse of the Pythagorean Theorem.</p> <p>M9S4 - I can use the relationship between side ratios and angles in special right triangles to solve for missing parts.</p> <p>M9S5 - I can solve problems by using the trigonometric ratios and inverse trigonometric ratios for acute angles.</p>	<p>McGraw-Hill Reveal Math</p> <p>ALEKS</p> <p>Math Medic EFFL Geometry</p>

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	<p>sine and cosine of complementary angles. c. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. MP.3, MP.4</p> <p>KY.HS.G.13 (+) Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side. MP.6, MP.7</p> <p>KY.HS.G.14 Understand and apply the Law of Sines and the Law of Cosines. a. Use the Law of Sines and Cosines to find unknown measurements in right and non-right triangles. b. Prove the Laws of Sines and Cosines and use them to solve problems. MP.1, MP.3</p>	<p>Module 9-6 Angle of Elevation and Depression Area of Triangle Given Included Angle Find Area of Any Triangle</p> <p>*Module 9-7 Law of Sines Ambiguous Case</p> <p>*Module 9-8 Law of Cosines Solve Non-right Triangle Solve Right Triangle</p>	<p>ratio, trigonometry</p>	<p>M9S6 - I can solve real-world problems by using the trigonometric ratios and their inverses.</p> <p>*M9S7 - I can understand and apply the Law of Sines to find unknown measures in right and non right triangles.</p> <p>*M9S8 - I can understand and apply the Law of Cosines to find unknown measures in right and non right triangles.</p>	
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Module 11: Measurements (19 Days)

Days:	KAS:	Skills:	Vocabulary:	SBG Learning Targets:	Resources:
129-147	<p>KY.HS.G.25 Analyze and determine the validity of arguments for the formulas for the various figures and shapes.</p> <p>a. Finding the circumference and area of a circle.</p> <p>b. Finding the volume of a sphere, prism, cylinder, pyramid and cone. MP.3, MP.7</p> <p>KY.HS.G.24 Use coordinates within the coordinate plane to calculate measurements of two dimensional figures. a. Compute the perimeters of various polygons. b. Compute the areas of triangles, rectangles and other quadrilaterals.</p> <p>KY.HS.G.26 Give an informal argument using</p>	<p>Module 11-1 Area of a Parallelogram Area of a Trapezoid Area of a Rhombus Area of a Kite</p> <p>Module 11-2 Segments and Angles Regular Polygons Area of Regular Polygon Area of Composite Figure Adding and Subtracting</p> <p>Module 11-3 Area of a Circle Find Missing Measures Area of a Sector Use Area of a Sector to Find Area of a Circle</p> <p>Module 11-4 Lateral/Surface Area Prism Lateral/Surface Area Cylinder Lateral/Surface Area Regular Pyramid Lateral/Surface Area Cone</p>	altitude of a parallelogram, altitude of a prism or cylinder, altitude of a pyramid or cone, apothem, axis of a cone, axis of a cylinder, axis symmetry, base edge, base of a parallelogram, center of a regular polygon, central angle of a regular polygon, chord of a sphere, composite figure, composite solid, congruent solids, conic sections, cross section, decomposition, density, diameter of a	<p>M11S1 - I can use area formulas to solve for the area of parallelograms, trapezoids, kites, and rhombi.</p> <p>M11S2 - I can use area formulas to solve for the areas of regular polygons and composite figures.</p> <p>M11S3 - I can apply the properties of a circle to solve for the areas of circles and sectors of circles.</p> <p>M11S4 - I can use the formulas for the surface area of prisms, cylinders, pyramids, cones, and spheres to solve problems.</p> <p>M11S5 - I can identify shapes of all cross sections formed by cuts to a solid.</p> <p>M11S6 - I can identify 3-dimensional solids generated by rotations of 2-dimensional</p>	McGraw-Hill Reveal Math ALEKS Math Medic EFFL Geometry

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	<p>Cavalieri's principle for the formulas for the volume of a sphere and other solid figures. MP.2, MP.5</p> <p>KY.HS.G.27 Use volume formulas to solve problems for cylinders, pyramids, cones, spheres, prisms MP.4, MP.6</p> <p>KY.HS.G.28 Identify the shapes of two-dimensional cross-sections of three-dimensional objects and identify three-dimensional objects generated by rotations of two-dimensional objects. MP.5, MP.7</p> <p>KY.HS.G.29 Use geometric shapes, their measures and their properties to describe objects in real world settings. MP.1, MP.4</p> <p>KY.HS.G.30 Apply concepts of density based on area and volume in</p>	<p>Lateral/Surface Area Sphere</p> <p>Module 11-6 Volume of a Prism Volume of a Pyramid Volume Using Algebraic Expressions</p> <p>Module 11-7 Volume of a Cylinder Volume of a Cone Volume of a Sphere Volume of a Composite Solid</p> <p>*Module 11-8 Areas of Similar Figures Similar Figures to Find Area Similar Solids to Find Volume</p> <p>*Module 11-9 Find the Density of an Area Find the Density of a Solid</p>	<p>sphere, height of a parallelogram, height of a solid, height of a trapezoid, lateral area, lateral edges, lateral faces, lateral surface of a cone, lateral surface of a cylinder, plane symmetry, radius of a regular polygon, radius of a sphere, regular pyramid, sector, similar solids, slant height of a pyramid or right cone, solid of revolution, tangent to a sphere</p>	<p>solids about an axis.</p> <p>M11S7 - I can use formulas to solve for volumes of prisms, pyramids, cylinders, cones, and spheres.</p> <p>M11S8 - can apply 3-dimensional solids, their measures and their properties to model objects in the real world.</p> <p>*M11S9 - I can determine measures of similar figures and similar solids by using scale factor.</p> <p>*M11S10 - I can solve real-world problems involving density by using area and volume.</p>	
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	modeling situations, using appropriate units of measurement. MP.4, MP.6 KY.HS.G.31 Apply geometric methods to solve design problems. MP.1, MP.4				
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Module 10: Circles (13 days)

Days:	KAS:	Skills:	Vocabulary:	SBG Learning Targets:	Resources:
116-128	<p>KY.HS.G.15 Verify using dilations that all circles are similar. MP.5, MP.8</p> <p>KY,HS.G.16 Identify and describe relationships among angles and segments within the context of circles involving: a. Recognize differences between and properties of inscribed, central and circumscribed angles. b. Understand relationships between inscribed angles and the diameter of a circle. c. Understand the relationship between the radius of a circle and the line drawn through the point of tangency on that radius. MP.3, MP.5, MP.7</p> <p>HS.G.17 Apply basic construction procedures</p>	<p>Module 10-1 Segments in a Circle Radius and Diameter Relationship Circumference Find Diameter and Radius Measures in Intersecting Circles</p> <p>Module 10-2 Measures of Central Angles Classify Arcs Arc Measures Arc Measures Circle Graphs Arc Addition *Arc Length Degrees to Radians</p> <p>Module 10-3 Congruent Arcs Chord Lengths Radius Perpendicular to Chord Diameter Perpendicular to Chord Chords Equidistant from Center</p> <p>Module 10-4 Inscribed Angles to Find Measures Congruent Inscribed Angles Inscribed Polygons</p>	adjacent arcs, arc, arc length, center of a circle, central angle of a circle, chord of a circle, circle, circumscribed angle, circumscribed polygon, common tangent, concentric circles, congruent arcs, degree, diameter of a circle, directrix, focus, inscribed angle, inscribed polygon, intercepted arc, major arc, minor arc, parabola, pi, point of tangency,	<p>M10S1 - I solve for the circumference of circles.</p> <p>M10S2 - I can find measures in intersecting circles and prove relationships between circles.</p> <p>M10S3 - I can solve for measures of angles and arcs using the properties of circles.</p> <p>M10S4 - I can solve for arc length.</p> <p>*M10S5 - I can convert between degrees and radians.</p> <p>M10S6 - I can solve problems using the relationships between arcs, chords, and diameters.</p> <p>M10S7 - I can describe relationships between inscribed angles and use those relationships to solve problems.</p>	<p>McGraw-Hill Reveal Math</p> <p>ALEKS</p> <p>Math Medic EFFL Geometry</p>

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	<p>within the context of a circle. a. Construct the inscribed and circumscribed circles of a triangle. b. Construct a tangent line from a point outside a given circle to the circle. MP.5, MP.6</p> <p>KY.HS.G.18 Understand the relationship between an intercepted arc length within a circle and the radius of the circle. a. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius. Derive the formula for the area of a sector. b. Define the radian measure of the angle as the measure of a central angle that intercepts an arc equal in length to the radius of the circle. MP.2, MP.3</p> <p>KY.HS.G.19 Understand the relationship between the algebraic form and the</p>	<p>Module 10-5 Tangent Tangent to Find Missing Values Congruent Tangents Circumscribed Angles Circumscribed Polygons</p> <p>Module 10-6 Intersecting Chords and Secants Secants and Tangents Intersecting on a Circle Tangents and Secants Intersecting Outside a Circle</p> <p>*Module 10-7 Equation of a Circle Using Center and Radius Equation of a Circle Using Center and a Point Graph a Circle Diameter to Write an Equation Intersections with Circles</p>	<p>radian, radius of a circle, secant, semicircle, tangent to a circle</p>	<p>M10S8 - I can identify relationships in inscribed polygons and use those relationships to solve problems.</p> <p>M10S9 - I can describe relationships between radii and tangents and use those relationships to solve problems.</p> <p>M10S10 - I can describe relationships between central and circumscribed angles and use those relationships to solve problems.</p> <p>*M10S11 - I can derive the equation of a circle using the Pythagorean Theorem and complete the square to find the center and radius of a circle.</p>	
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	<p>geometric representation of a circle.</p> <p>a. Write the equation of a circle of given center and radius using the Pythagorean Theorem.</p> <p>b. Derive and write the equation of a circle of given center and radius using the Pythagorean Theorem.</p> <p>c. Complete the square to find the center and radius of a circle given by an equation. MP.6, MP.8</p> <p>KY.HS.G.21 Use coordinates to justify and prove simple geometric theorems algebraically. MP.2, MP.6</p> <p>KY.HS.N.5 Define appropriate units in context for the purpose of descriptive modeling.</p>				
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