Geometry Instructional Toolkit

The Geometry Instructional Toolkit is intended to assist teachers with planning instruction aligned to the Florida Standards. This toolkit is not intended to replace your district's curriculum, but rather it serves to support the teaching and learning of the Geometry Florida Standards. This toolkit includes a breakdown of information related to the Geometry End-of-Course (EOC) Assessment, CPALMS and Florida Students, the Geometry Florida Standards, and standards aligned resources.

Geometry End-of-Course Assessment

This section highlights some key information related to the Geometry EOC that can be found on the FSA Portal. These items include the Test Design Summary and Blueprint, Test Item Specifications and EOC Practice Tests.

Test Design Summary and Blueprint
The Geometry EOC standards can be broken down into three major reporting categories as assessed on the Geometry EOC with a corresponding weight. Within each reporting category are multiple domains and standards assessed. This information can also be found on page 8 of the Test Design Summary and Blueprint.

- Congruence, Similarity, Right Triangles, and Trigonometry (46%)
  - Congruence
  - Similarity, Right Triangles, & Trigonometry
- Circles, Geometric Measurement, and Geometric Properties with Equations (38%)
  - Circles
  - Geometric Measurement & Dimension
  - Expressing Geometric Properties with Equations
- Modeling with Geometry (16%)

Test Item Specifications
The Geometry Test Item Specification Document indicates the alignment of items with the Florida Standards. Assessment limits are included in the specifications, which define the range of content knowledge in the assessment items for the standard. In addition to limits, each item specification identifies whether or not that item could appear in the calculator allowed test session or no calculator allowed test session. Each standard in this toolkit lists the corresponding page number in the specifications document along with any assessment limits and allowable calculator use.

Practice Tests
Practice Tests are available for students to become familiar with the various item types that may be used on the Geometry EOC. Within the Test Item Specification document, page 42, is a chart aligning standards to each item type and item number on the Computer-Based Practice Test. Each Computer-Based Practice Test is provided with an answer key. It is important to note that students are not permitted to use a calculator of any kind on Session 1 of the Geometry EOC. Students will be permitted a scientific calculator on all other sessions. For information regarding usage of calculators, please see the Calculator and Reference Sheet Policy page on the FSA portal.

CPALMS: Official Source of Florida Standards

This section features information and tools that are found on CPALMS.

Geometry Course Description
The Geometry Course Description provides an overview for the course with standards aligned resources for educators, students, and parents.

Mathematics Formative Assessment System (MFAS)
One resource available on CPALMS that has been designed specifically for mathematics instruction is the Mathematics Formative Assessment System (MFAS). The system includes a task or problem that teachers can implement with their students. It also includes various levels of rubrics that help the teacher interpret students' responses. In addition to using the MFAS tasks as formative assessments for students, these tasks can be used by teachers to plan lessons that are closely aligned to the standards.

Model Eliciting Activity (MEAs)
Model Eliciting Activities (MEAs) are open-ended, interdisciplinary problem-solving activities that are meant to reveal students' thinking about the concepts embedded in these realistic activities. Students will work in teams to apply their knowledge of mathematics and science while considering constraints and tradeoffs. Each MEA is aligned to at least two subject areas, including mathematics, English language arts and/or literacy in the content areas, and science.

Mathematical Practices
The Mathematical Practices are habits of mind that describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. The Mathematical Practices should be infused during the course and will be assessed throughout the Geometry EOC. More information about each Mathematical Practice can be found by clicking on the links below.

MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them.

MAFS.K12.MP.2.1 Reason abstractly and quantitatively.

MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.

MAFS.K12.MP.4.1 Model with mathematics.

MAFS.K12.MP.5.1 Use appropriate tools strategically.

MAFS.K12.MP.6.1 Attend to precision.

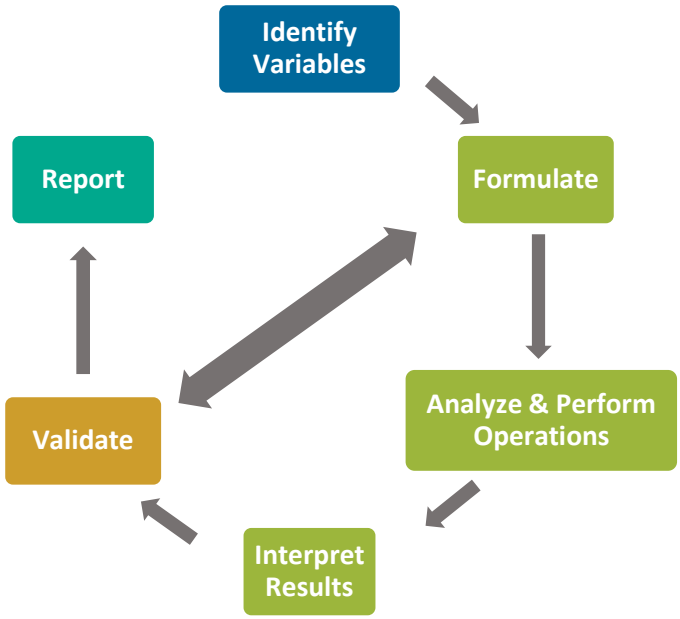
MAFS.K12.MP.7.1 Look for and make use of structure.

MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

Depth of Knowledge
Florida has adopted Webb's four-level Depth of Knowledge (DOK) model of content complexity as a means of classifying the cognitive demand presented by the Florida standards. It is important to distinguish between the DOK rating for a given standard and the possible DOK ratings for assessment items designed to address the standard. This is particularly important for assessment purposes, since 50% or more of assessment items associated with a given standard should meet or exceed the DOK level of the standard. The DOK Levels are identified for each standard throughout this document. Please visit the CPALMS Content Complexity page for more information about the DOK complexity for standards. For more information about the DOK complexity for mathematics assessments, please visit page 9 of the mathematics Test Design Summary and Blueprint on the FSA Portal.

Math Modeling Standards

Standards that are marked with a star symbol (★) are standards within the math modeling conceptual category. Modeling standards are best interpreted in relation to other standards and within other content areas. The basic modeling cycle involves (1) identifying variables in the situation and selecting those that represent essential features, (2) formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, (3) analyzing and performing operations on these relationships to draw conclusions, (4) interpreting the results of the mathematics in terms of the original situation, (5) validating the conclusions by comparing them with the situation, and then either improving the model or, if it is acceptable, (6) reporting on the conclusions and the reasoning behind them. Choices, assumptions, and approximations are present throughout this cycle. See figure below that visualizes the modeling cycle.



Florida Students

Resources specifically designed with students in mind are available on Florida Students. Florida Students is an interactive site that provides educational resources and student tutorials aligned to the Florida Standards. This site should not be used as a lesson guide, but rather a tool to help students obtain mastery in various mathematical concepts.

Florida Students Achieve

Resources specifically designed with parents in mind are available on Florida Students Achieve. This site provides parents with information on what their student should be learning at each grade level so that may support their child's education.

Geometry Florida Standards

This section includes a breakdown of each standard by domain and cluster. Standards should not be taught in the order below. To do so would strip the coherence of the mathematical ideas and miss opportunity to enhance the major work of the grade with the supporting clusters and/or standards. In addition to the breakdown, each standard has the corresponding DOK Level, clarifications and assessment limits with page number in the Geometry Test Item Specifications, and aligned resources.

Domain: Geometry-Congruence

Cluster 1 *(Supporting): Experiment with transformations in the plane.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-CO.1.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc. Content Complexity: Level 1: Recall	Page 15; Students will use the precise definitions of angles, circles, perpendicular lines, parallel lines, and line segments, basing the definitions on the undefined notions of point, line, distance along a line, and distance around a circular arc. Item assessed with and/or without calculator.	MFAS: Definition of a Circle Lesson: Musical Chairs with Words and a Ball
MAFS.912.G-CO.1.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch). Content Complexity: Level 2: Basic Application of Skills & Concepts	Pages 16-17; Students will represent transformations in the plane. Students will describe transformations as functions that take points in the plane as inputs and give other points as outputs. Students will compare transformations that preserve distance and angle to those that do not. Items may require the student to find the distance between two points or the slope of a line. In items that require the student to represent transformations, at least two transformations should be applied. Item assessed with and/or without calculator.	MFAS: Comparing Transformations Lesson: Transformations… Geometry in Motion
MAFS.912.G-CO.1.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself. Content Complexity: Level 2: Basic Application of Skills & Concepts	Pages 18-19; Students will describe rotations and reflections that carry a geometric figure onto itself. Item assessed with and/or without calculator.	MFAS: Transformations of Trapezoids Lesson: I am Still Me Transformed

MAFS.912.G-CO.1.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	Pages 16-17; Students will use definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. Item assessed with and/or without calculator.	MFAS: Define a Rotation Virtual Manipulative: Transformations - Rotation
MAFS.912.G-CO.1.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure, e.g., graph paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another. Content Complexity: Level 2: Basic Application of Skills & Concepts	Pages 18-19; Students will apply two or more transformations to a given figure to draw a transformed figure. Students will specify a sequence of transformations that will carry a figure onto another. Item assessed with and/or without calculator.	MFAS: Indicate the Transformations Lesson: How Did it Get There?

Cluster 2 *(Major): Understand congruence in terms of rigid motions.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-CO.2.6	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. Content Complexity: Level 2: Basic Application of Skills & Concepts	Pages 20-21; Students will use rigid motions to transform figures. Students will predict the effect of a given rigid motion on a given figure. Items may require the student to justify congruence using the properties of rigid motion. Students will apply congruence to solve problems. Students will use congruence to justify steps within the context of a proof. Item assessed with and/or without calculator.	MFAS: Transform This Lesson: How do your Air Jordan's move?
MAFS.912.G-CO.2.7	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. Content Complexity: Level 1: Recall	Pages 20-21; Students will use the definition of congruence in terms of rigid motions to determine if two figures are congruent. Students will apply congruence to solve problems. Students will use congruence to justify steps within the context of a proof. Item assessed with and/or without calculator.	MFAS: Showing Triangles Congruent Using Rigid Motion Lesson: Match That!
MAFS.912.G-CO.2.8	Explain how the criteria for triangle congruence (ASA, SAS, SSS, and Hypotenuse-Leg) follow from the	Pages 20-21; Students will explain triangle congruence using the definition of congruence in terms of	MFAS: Justifying SAS Congruence

	definition of congruence in terms of rigid motions. Content Complexity: Level 2: Basic Application of Skills & Concepts	rigid motions. Students will apply congruence to solve problems. Students will use congruence to justify steps within the context of a proof. Item assessed with and/or without calculator.	Lesson: Turning to Congruence

Cluster 3 *(Major): Prove geometric theorems.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-CO.3.9	Prove theorems about lines and angles; use theorems about lines and angles to solve problems. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.* Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	Page 22; Students will prove theorems about lines. Students will prove theorems about angles. Students will use theorems about lines to solve problems. Students will use theorems about angles to solve problems. Items may include narrative proofs, flow-chart proofs, two-column proofs, or informal proofs. In items that require the student to justify, the student should not be required to recall from memory the formal name of a theorem. Item assessed with and/or without calculator.	MFAS: Find Angle Measures Lesson: Parallel Thinking Debate
MAFS.912.G-CO.3.10	Prove theorems about triangles; use theorems about triangles to solve problems. *Theorems include: measures of interior angles of a triangle sum to 180°; triangle inequality theorem; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.* Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	Page 23; Students will prove theorems about triangles. Students will use theorems about triangles to solve problems. Items may include narrative proofs, flow-chart proofs, two-column proofs, or informal proofs. In items that require the student to justify, the student should not be required to recall from memory the formal name of a theorem. Item assessed with and/or without calculator.	MFAS: The Third Side of a Triangle Lesson: Keeping Triangles in Balance
MAFS.912.G-CO.3.11	Prove theorems about parallelograms; use theorems about parallelograms to solve problems. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a*	Page 24; Students will prove theorems about parallelograms. Students will use properties of parallelograms to solve problems. Items may require the student to be familiar with similarities and differences between types of	MFAS: Proving Parallelogram Diagonals Bisect

	parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals. Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	parallelograms (e.g., squares and rectangles). Items may require the student to identify a specific parallelogram. Items may include narrative proofs, flow-chart proofs, two-column proofs, or informal proofs. In items that require the student to justify, the student should not be required to recall from memory the formal name of a theorem. Item assessed with and/or without calculator.	Lesson: Proving Parallelograms Algebraically

Cluster 4 *(Supporting): Make geometric constructions.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-CO.4.12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.* Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 25; Students will identify the result of a formal geometric construction. Students will determine the steps of a formal geometric construction. Items should not ask student to find values or use properties of the geometric figure that is constructed. Item assessed with and/or without calculator.	MFAS: Bisecting a Segment and an Angle Original Tutorial: The Blueprints of Construction
MAFS.912.G-CO.4.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle. Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 23; Students will identify the result of a formal geometric construction. Students will determine the steps of a formal geometric construction. Items should not ask student to find values or use properties of the geometric figure that is constructed. Item assessed with and/or without calculator.	MFAS: Square in a Circle Lesson: Construct Regular Polygons Inside Circles

Domain: Geometry-Similarity, Right Triangles, & Trigonometry

Cluster 1 *(Major): Understand similarity in terms of similarity transformations.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-SRT.1.1	Verify experimentally the properties of dilations given by a center and a scale factor: *a)* A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. *b)* The dilation of a line segment is longer or shorter in the ratio given by the scale factor. Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 37; When dilating a line that does not pass through the center of dilation, students will verify that the dilated line is parallel. When dilating a line that passes through the center of dilation, students will verify that the line is unchanged. When dilating a line segment, students will verify that the dilated line segment is longer or shorter with respect to the scale factor. Item assessed with and/or without calculator.	MFAS: Dilation of a Line Segment Lesson: Discovering Dilations
MAFS.912.G-SRT.1.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides. Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 38; Students will use the definition of similarity in terms of similarity transformations to decide if two figures are similar. Students will explain using the definition of similarity in terms of similarity transformations that corresponding angles of two figures are congruent and that corresponding sides of two figures are proportional. Item assessed with and/or without calculator.	MFAS: Showing Similarity Lesson: Transformation and Similarity
MAFS.912.G-SRT.1.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar. Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 39; Students will explain using properties of similarity transformations why the AA criterion is sufficient to show that two triangles are similar. Item assessed with and/or without calculator.	MAFS: Justifying a Proof of the AA Similarity Theorem Lesson: How Much Proof Do We Need?

Cluster 2 *(Major): Prove theorems involving similarity.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-SRT.2.4	Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean*	Page 37; Students will use triangle similarity to prove theorems about triangles. Students will prove the Pythagorean theorem using similarity.	MFAS: Pythagorean Theorem Proof

	Theorem proved using triangle similarity. Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	Item assessed with and/or without calculator.	Original Tutorial: Proving Theorems About Triangles
MAFS.912.G-SRT.2.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	Page 40; Students will use congruence criteria for triangles to solve problems. Students will use congruence criteria for triangles to prove relationships in geometric figures. Students will use similarity criteria for triangles to solve problems. Students will use similarity criteria for triangles to prove relationships in geometric figures. Item assessed with and/or without calculator.	MFAS: Basketball Goal Lesson: What's the Problem

Cluster 3 *(Major): Define trigonometric ratios and solve problems involving right triangles.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-SRT.3.6	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. Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 41; Students will use trigonometric ratios and the Pythagorean theorem to solve right triangles in applied problems. Items will assess only sine, cosine, and tangent to determine the length of a side or an angle measure. Item assessed with and/or without calculator.	MFAS: The Cosine Ratio Lesson: Discovering Trigonometric Ratios
MAFS.912.G-SRT.3.7	Explain and use the relationship between the sine and cosine of complementary angles. Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 41; Students will use similarity to explain the definition of trigonometric ratios for acute angles. Items will assess only sine, cosine, and tangent to determine the length of a side or an angle measure. Item assessed with and/or without calculator.	MFAS: Patterns in the 30-60-90 Table Lesson: Sine, Sine, Everywhere a Sine
MAFS.912.G-SRT.3.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. ★ Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 41; Students will explain the relationship between sine and cosine of complementary angles. Students will use the relationship between sine and cosine of complementary angles. Items will assess only sine, cosine, and tangent	MFAS: Step Up Original Tutorial: Around the World with

		to determine the length of a side or an angle measure. Item assessed with and/or without calculator.	Right Triangles

Domain: Geometry-Circles

Cluster 1 *(Additional): Understand and apply theorems about circles.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-C.1.1	Prove that all circles are similar. Content Complexity: Level 2: Basic Application of Skills & Concepts	Pages 11; Students will use a sequence of transformations to prove that circles are similar. Students will use the measures of different parts of a circle to determine similarity. Items should not require the student to write an equation of a circle. Item assessed with and/or without calculator.	MFAS: Similar Circles Lesson: Why are Circles Similar?
MAFS.912.G-C.1.2	Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.* Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 12; Students will solve problems related to circles using the properties of central angles, inscribed angles, circumscribed angles, diameters, radii, chords, and tangents. Items may include finding or describing the length of arcs when given information. Item assessed with and/or without calculator.	MFAS: Central and Inscribed Angles Lesson: The Seven Circles Water Fountain
MAFS.912.G-C.1.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle. Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	Page 13; Students will construct a circle inscribed inside a triangle. Students will construct a circle circumscribed about a triangle. Students will solve problems using the properties of inscribed and circumscribed circles of a triangle. Students will use or justify properties of angles of a quadrilateral that is inscribed in a circle. Items may include problems that use the incenter and circumcenter of a triangle. Item assessed with and/or without calculator.	MFAS: Inscribed Quadrilaterals

Cluster 2 *(Additional): Find arc lengths and areas of sectors of circles.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-C.2.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector. Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	Pages 14; Students will use similarity to derive the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure as the constant of proportionality. Students will apply similarity to solve problems that involve the length of the arc intercepted by an angle and the radius of a circle. Students will derive the formula for the area of a sector. Students will use the formula for the area of a sector to solve problems. The center of dilation must be given. Item assessed with and/or without calculator.	MFAS: Sector Area Lesson: My Favorite Slice

Domain: Geometry-Expressing Geometric Properties with Equations

Cluster 1 *(Additional): Translate between the geometric description and the equation of a conic section.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-GPE.1.1	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. Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 29; Students will use the Pythagorean theorem, the coordinates of a circle's center, and the circle's radius to derive the equation of a circle. Students will determine the center and radius of a circle given its equation in general form. In items where the student has to complete the square to find the center and radius of the circle, coefficients of quadratic terms should equal 1 and all other terms should have integral coefficients. Item assessed with and/or without calculator.	MFAS: Derive the Circle – Specific Points Lesson: Circle Reasoning

Cluster 2 *(Major): Use coordinates to prove simple geometric theorems algebraically.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-GPE.2.4	Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given*	Page 30; Students will use coordinate geometry to prove simple geometric theorems algebraically. Items may require the student to use slope or to	Lesson: What's The Point?

	points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2). Content Complexity: Level 2: Basic Application of Skills & Concepts	find the distance between points. Items may require the student to prove properties of triangles, properties of quadrilaterals, properties of circles, and properties of regular polygons. Items may require the student to use coordinate geometry to provide steps to a proof of a geometric theorem. Item assessed with and/or without calculator.	MFAS: Describe the Quadrilateral
MAFS.912.G-GPE.2.5	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 31; Students will prove the slope criteria for parallel lines. Students will prove the slope criteria for perpendicular lines. Students will find equations of lines using the slope criteria for parallel and perpendicular lines. Lines may include horizontal and vertical lines. Items may not ask the student to provide only the slope of a parallel or perpendicular line. Item assessed with and/or without calculator.	Lesson: Forget Waldo – Where is the orthocenter? MFAS: Writing Equations for Parallel Lines
MAFS.912.G-GPE.2.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio. Content Complexity: Level 1: Recall	Page 32; Students will find a point on a directed line segment between two given points when given the partition as a ratio. Item assessed with and/or without calculator.	Original Tutorial: High Tech Seesaw MFAS: Partitioning a Segment
MAFS.912.G-GPE.2.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula. ★ Content Complexity: Level 1: Recall	Page 33; Students will use coordinate geometry to find a perimeter of a polygon. Students will use coordinate geometry to find the area of triangles and rectangles. Items may require the use of the Pythagorean theorem. Items may include convex, concave, regular, and/or irregular polygons. In items that require the student to find the area, the polygon must be able to be divided into triangles and rectangles. Item assessed with and/or without calculator.	Lesson: My Geometry Classroom MFAS: Perimeter and Area of an Obtuse Triangle

Domain: Geometry-Geometric Measurement & Dimension

Cluster 1 *(Additional): Explain volume formulas and use them to solve problems.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-GMD.1.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.* Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	Page 26; Students will give an informal argument for the formulas for the circumference of a circle; the area of a circle; or the volume of a cylinder, a pyramid, and a cone. Item assessed with and/or without calculator.	Lesson: Discovering the Formulas for Circumference and Area of a Circle MFAS: Volume of a Pyramid
MAFS.912.G-GMD.1.3	Use colume formulas for cylinders, pyramids, cones, and sphere to solve problems. ★ Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 27; Items may require the student to recall the formula for the volume of a sphere. Items may require the student to find a dimension. Items that involve cones, cylinders, and spheres should require the student to do more than just find the volume. Items may include composite figures, including three-dimensional figures previously learned. Items may not include oblique figures. Items may require the student to find the volume when one or more dimensions are changed. Items may require the student to find a dimension when the volume is changed. Item assessed with and/or without calculator.	MFAS: Sports Drinks Lesson: Yogurt Land Container

Cluster 2 *(Additional): Visualize relationships between two-dimensional and three-dimensional objects.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-GMD.2.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects. Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 28; Students will identify the shape of a two-dimensional cross-section of a three-dimensional object. Students will identify a three-dimensional object generated by a rotation of a two-dimensional object. Item assessed with and/or without calculator.	MFAS: Slice It Original Tutorial: Ninja Nancy Slices

Domain: Geometry-Modeling with Geometry

Cluster 1 *(Major): Apply geometric concepts in modeling situations.*

Standard Code	Standard	Clarification(s) & Assessment Limit(s)	Resources
MAFS.912.G-MG.1.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). ★ Content Complexity: Level 1: Recall	Page 34; Students will use geometric shapes to describe objects found in the real world. Students will use measures of geometric shapes to find the area, volume, surface area, perimeter, or circumference of a shape found in the real world. Students will apply properties of geometric shapes to solve real-world problems. Item assessed with and/or without calculator.	MFAS: Estimating Area STEM Lesson: Interchangeable Wristwatch Band
MAFS.912.G-MG.1.2	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot). ★ Content Complexity: Level 2: Basic Application of Skills & Concepts	Page 35; Students will apply concepts of density based on area in modeling situations. Students will apply concepts of density based on volume in modeling situations. Item assessed with and/or without calculator.	MFAS: How Many Trees? Lesson: Propensity for Density
MAFS.912.G-MG.1.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios). ★ Content Complexity: Level 3: Strategic Thinking & Complex Reasoning	Page 36; Items may require the student to use knowledge of other Geometry standards. Item assessed with and/or without calculator.	MFAS: Softball Complex Lesson: The Grass is Always Greener

Geometry Resources

Course Descriptions, Standards, and Resources

- Geometry Course Description
- Geometry Honors Course Description
- Geometry Student Resources
- Text Complexity Resources
- Florida Assessments for Instruction in Mathematics (FAIM)
- Student Support Resources
- Parent Support Resources

Florida Standards Assessment Assistance

- Test Item Specifications
- Test Design Summary and Blueprint
- FSA Fact Sheet
- Calculator and Reference Sheet Policy
- Reference Sheet
- Understanding FSA Reports