Common Core Standards Curriculum Map - Mathematics / Geometry
QUARTER 1

Unit 1: Geometric Foundations, Constructions, and Relationships

Vision of the Graduate:
Adaptability
Communication
Content Knowledge

Common Core Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
CCSS Standards for this unit: **Experiment with transformations in the plane.** **G-CO.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. **Make geometric constructions** ***[Formalize and explain processes]*** **G-CO.12.** Make formal	• How does the use of the language of geometry help you to understand more complex geometric ideas and theorems? • In what situations would it be better to use a geometric sketch as opposed to a formal construction? • How does the knowledge of theorems, postulates, and definitions help to prove geometric concepts?	• Guided Notes • Group Work • Manipulatives (tactile and web-based) • Exploratory learning • Graphic Organizers • Edit and Assess • Peardeck • Deltamath • Desmos • Geogebra • Carousel Activities • Edulastic • Quizizz • Kahoot • Edpuzzle • Blooket • CK-12 • Illustrative Math	• Warmups • Exit Slips • Quizzes • Department Unit Assessments • Department Common Tasks

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.* **Prove geometric theorems.** ***[Focus on validity of underlying reasoning while using a variety of ways of writing proofs]*** **G-CO.9.** Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent.*		• Project based learning • Center-based learning	

G-CO.10. Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°.* **Content to be learned:** A)• Know precise definitions of geometric terms (e.g., 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. B)• Make formal geometric constructions with a variety of tools and methods. Constructions include: o Copying a segment/angle. o Bisecting a segment/angle. o Constructing perpendicular lines. o Constructing a perpendicular bisector of a line segment. o Constructing a line			

parallel to a given line through a point not on the line. C)• Prove theorems about lines and angles. Theorems include, but are not limited to: o Congruency of vertical angles. o Relationship between angles formed by intersection of parallel lines and a transversal. D)• Prove the triangle angle sum theorem.			

Resources:

- McGraw Hill/REVEAL

Common Core Standards Curriculum Map - Mathematics/Geometry
QUARTER 1

Unit 2: Triangle Congruency
Vision of the Graduate:
Collaboration
Communication
Content Knowledge

Common Core Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
CCSS Standards for this unit: **Understand congruence in terms of rigid motion** **G-CO.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. **G-CO.7:** Use the definition of congruence in terms of rigid motions to show that	• What are the properties of triangles and how can we apply those properties to prove that triangles are congruent? • How is rigid motion used to identify corresponding parts of sides and angles? • Why is congruence criteria an essential component of proofs and problem solving? • Describe special segments and angles in triangles. How can they be used to solve problems? • Given a proof, how can you use logical	• Guided Notes • Group Work • Manipulatives (tactile and web-based) • Exploratory learning • Graphic Organizers • Edit and Assess • Peardeck • Deltamath • Desmos • Geogebra • Carousel Activities • Edulastic • Quizizz • Kahoot • Edpuzzle • Blooket • CK-12 • Illustrative Math • Project based learning	• Warmups • Exit Slips • Quizzes • Department Unit Assessments • Department Common Tasks

two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. **G-CO.8:** Explain how the criteria for triangle congruence (ASA, SAS and SSS) follow from the definition of congruence in terms of rigid motions. **G-CO.10:** Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180 degrees; 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 to be learned:** • **Interior and Exterior Angles of Triangles** • **Establish the SSS, SAS, ASA, AAS, HL triangle congruence**	reasoning to critique, analyze and improve the argument? • Why are AAA and SSA invalid criteria for proving triangle congruence?	• Center-based learning	

criteria • **Determine if two triangles are congruent by using the definition of congruence** • **Prove theorems and solve problems involving congruence** • **Use CPCTC to apply congruent triangles** • **Identify and use Isosceles, Equilateral/Equiangular Triangles** • **Identify and use Bisector, Medians, Altitudes and Midsegments of Triangles**			

Resources:
- McGraw Hill/REVEAL

Common Core Standards Curriculum Map - (Math / Geometry)
QUARTER 2

Unit 3: Similarity
Vision of the Graduate:
Collaboration
Communication
Content Knowledge

Common Core Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
CCSS Standards for this unit: **Understand similarity in terms of similarity transformations.** **G-SRT.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	• What can you conclude about similar triangles, and how can you prove that two triangles are similar? • How can similar triangles be used to measure objects, and what are the benefits of using indirect measurement? • How can you use triangle similarity to prove the Pythagorean Theorem? • What are the similarities and differences between triangle similarity and triangle congruence criteria?	• Guided Notes • Group Work • Manipulatives (tactile and web-based) • Exploratory learning • Graphic Organizers • Edit and Assess • Peardeck • Deltamath • Desmos • Geogebra • Carousel Activities • Edulastic • Quizizz • Kahoot • Edpuzzle • Blooket • CK-12 • Illustrative Math • Project based learning	• Warmups • Exit Slips • Quizzes • Department Unit Assessments • Department Common Tasks

sides. **G-SRT.3.** Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar. **Prove theorems involving similarity.** **G-SRT.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 Theorem proved using triangle similarity.* **G-SRT.5.** Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. **Content to be learned:** A)· Establish the AA, SSS, and SAS triangle similarity criteria using similarity transformations.		• Center-based learning	

B)• Determine if two triangles are similar by using the definition of similarity. C)• Explain the meaning of similarity for triangles using similarity transformations. D)• Prove theorems about triangles using triangle similarity; examples include: o A line parallel to one side of a triangle divides the other two proportionally. o The Pythagorean Theorem. E)• Prove theorems and solve problems involving similarity using congruence and similarity criteria.			

<u>Resources:</u>

- McGraw Hill/REVEAL

Common Core Standards Curriculum Map - Math/Geometry
QUARTER 2

Unit 4: Right Triangle Trigonometry
Vision of the Graduate:
Collaboration
Communication
Content Knowledge

Common Core Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)

CCSS Standards for this unit: **Define trigonometric ratios and solve problems involving right triangles.** **G-SRT.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. **G-SRT.7.** Explain and use the relationship between the sine and cosine of complementary angles. **G-SRT.8.** Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. ★ **Content to be learned:** A)• Define trigonometric ratios (sine, cosine, tangents) in right triangles by understanding that by similarity, side ratios in	• How can you apply your knowledge of triangle-relationships to find a side length or angle measure of a triangle? • How are right triangle trigonometric ratios related to similarity?	• Guided Notes • Group Work • Manipulatives (tactile and web-based) • Exploratory learning • Graphic Organizers • Edit and Assess • Peardeck • Deltamath • Desmos • Geogebra • Carousel Activities • Edulastic • Quizizz • Kahoot • Edpuzzle • Blooket • CK-12 • Illustrative Math • Project based learning • Center-based learning	• Warmups • Exit Slips • Quizzes • Department Unit Assessments • Department Common Tasks

right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. B)• Calculate the side lengths and the trigonometric ratios associated with special right triangles. • Explain and use the relationship between the sine and cosine of complementary angles. C)• Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.★ + Apply trigonometry to general triangles: D)• Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying			

problems, resultant forces). E)• Prove the Laws of Sines and Cosines and use them to solve problems. F)• Derive the formula A = 1/2 ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side. (contextualize) G)• Given a real-world situation, create and solve a system of equations. (decontextualize).			

Resources:

- McGraw Hill/REVEAL

Common Core Standards Curriculum Map - Mathematics / Geometry
QUARTER 3

Unit 5: Transformations
Vision of the Graduate:
Adaptability
Collaboration
Communication
Content Knowledge
Critical Thinking & Innovation

Common Core Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)

CCSS Standards for this unit: **Experiment with transformations in the plane.** **G-CO.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). **G-CO.4.** Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. **G-CO.5.** Given a geometric figure and a rotation, reflection, or translation,	• After a transformation (rotation, dilation, translation, reflection) has taken place on the coordinate plane, where does the image lie and what does it look like? • What tools or methods would you use to construct a figure under a reflection, translation, rotation, and dilation? • Compare dilation to rigid motions, how are they similar? How are they different? • Where would you find transformations in the real world?	• Guided Notes • Group Work • Manipulatives (tactile and web-based) • Exploratory learning • Graphic Organizers • Edit and Assess • Peardeck • Deltamath • Desmos • Geogebra • Carousel Activities • Edulastic • Quizizz • Kahoot • Edpuzzle • Blooket • CK-12 • Illustrative Math • Project based learning • Center-based learning	• Warmups • Exit Slips • Quizzes • Department Unit Assessments • Department Common Tasks

draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another. **Understand similarity in terms of similarity transformations.** **G-SRT.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 to be learned:**			

A)· Represent, construct, and draw transformations (reflections, translations, dilations, and rotations) in the plane using a variety of tools, such as transparencies and geometry software. B)· Describe transformations as functions that take points in the plane as inputs and give other points as outputs. C)· Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch). D)· Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. E)· State a sequence of transformations that will carry a given figure onto			

another. F)• Verify experimentally the properties of dilations given by a center and a scale factor: o The dilation of a line segment is longer or shorter depending on the scale factor. o 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.			

<u>Resources:</u>

- McGraw Hill/REVEAL

Common Core Standards Curriculum Map - Mathematics/Geometry
QUARTER 3

Unit 6: Polygons
Vision of the Graduate:
Adaptability
Collaboration
Communication
Content Knowledge

Common Core Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
CCSS Standards for this unit: **Prove geometric theorems** ***[Focus on validity of underlying reasoning while using a variety of ways of writing proofs].*** **G-CO.11.** Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with*	• How can different quadrilaterals in the coordinate plane be identified and verified? • What are the similarities and differences of squares, rectangles, rhombi, kites, trapezoids and parallelograms? • How would you use the various properties of quadrilaterals to calculate missing sides and angles? • How do you use the number of sides of a polygon to calculate the interior and exterior angle	• Guided Notes • Group Work • Manipulatives (tactile and web-based) • Exploratory learning • Graphic Organizers • Edit and Assess • Peardeck • Deltamath • Desmos • Geogebra • Carousel Activities • Edulastic • Quizizz • Kahoot • Edpuzzle • Blooket • CK-12	• Warmups • Exit Slips • Quizzes • Department Unit Assessments • Department Common Tasks

congruent diagonals. **Use coordinates to prove simple geometric theorems algebraically** ***[Include distance formula; relate Pythagorean Theorem].*** **G-GPE.4.** Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given 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).* **G-GPE.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). **G-GPE.6.** Find the point on a directed line segment	measures and their sums?	• Illustrative Math • Project based learning • Center-based learning	

between two given points that partitions the segment in a given ratio. **G-GPE.7.** Use coordinates to compute perimeters of polygons and areas of triangles, e.g., using the distance formula.★ **Experiment with transformations in the plane.** **G-CO.3.** Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself. **Apply geometric concepts in modeling situations.** **G-MG.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 to be learned: • Identify polygons by their properties and attributes • Apply angle sum theorems to find measures of interior and exterior angles of polygons • Identify and apply properties of parallelograms and special parallelograms • Identify and apply properties of kites and trapezoids			

<u>Resources:</u>
- McGraw Hill/REVEAL

Common Core Standards Curriculum Map - Mathematics/ Geometry
QUARTER 4

Unit 7: 2-D and 3-D Measurements and Modeling
Vision of the Graduate:
Collaboration
Communication
Content Knowledge

Common Core Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
CCSS Standards for this unit: **Apply geometric concepts in modeling situations.** **G-MG.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).★ **G-MG.2.** Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★ **Explain volume formulas**	• How is surface area and lateral area the same and how are they different? • In what ways can the use of calculating volume be applied to real world situations? • What are the connections between two-dimensional and three-dimensional figures? • What does the dissection of a three dimensional figure produce? • When is it appropriate to use the formulas for area, surface area and	• Guided Notes • Group Work • Manipulatives (tactile and web-based) • Exploratory learning • Graphic Organizers • Edit and Assess • Peardeck • Deltamath • Desmos • Geogebra • Carousel Activities • Edulastic • Quizizz • Kahoot • Edpuzzle • Blooket • CK-12 • Illustrative Math • Project based learning	• Warmups • Exit Slips • Quizzes • Department Unit Assessments • Department Common Tasks

and use them to solve problems. **G-GMD.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.* **G-GMD.3.** Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.★ **Content to be learned:** • Develop and apply formulas for areas and perimeters of parallelograms, trapezoids, triangles, rhombuses, and kites • Develop and apply formulas for circumference and area of a circle • Develop and apply formulas for volume of prisms, cylinders,	volume of geometric figures? • What are the differences between units of area and units of length?	• Center-based learning	

pyramids, and cones • Develop and apply formulas for volumes and surface areas of spheres			

Resources:
- McGraw Hill/REVEAL

Common Core Standards Curriculum Map - Mathematics/Geometry
QUARTER 4

Unit 8: Relationships in Circles

Vision of the Graduate:
Collaboration
Communication
Content Knowledge

Common Core Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
CCSS Standards for this unit: **Understand and apply theorems about circles.** **G-C.1.** Prove that all circles are similar. **G-C.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*	• What is the relationship between central angles, arc length and circumference? • What is the relationship between the circumference and diameter of a circle? • What are the properties of circles and their relationships among angles, lines, and line segments in and around circles? • How can the area of a circle be used to find the area of a sector?	• Guided Notes • Group Work • Manipulatives (tactile and web-based) • Exploratory learning • Graphic Organizers • Edit and Assess • Peardeck • Deltamath • Desmos • Geogebra • Carousel Activities • Edulastic • Quizizz • Kahoot • Edpuzzle • Blooket • CK-12 • Illustrative Math	• Warmups • Exit Slips • Quizzes • Department Unit Assessments • Department Common Tasks

where the radius intersects the circle. **Find arc lengths and areas of sectors of circles** ***[Radian introduced only as unit of measure].*** **G-C.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 to be learned:** • Identify the relationship between chords, secants, tangents, point of tangency, central angle, minor arc, major arc, semicircle, adjacent arcs and congruent arcs • Develop and apply the formula for area of a		• Project based learning • Center-based learning	

sector, area of a segment and arc length • Identify and apply segment relationship theorems in circles			

Resources:
- McGraw Hill/REVEAL