

Core Content (Topics, Materials, Resources)	Performance Indicator	Enabling and Process/Thinking Skills	Technology/Integration	Products/Assessments
August/September				
There are 25 Performance Indicators missing from this Curriculum Map. They are highlighted in yellow on the Bubble Sheet. These PIs need worked into this course.				
<ul style="list-style-type: none"> • Introduction • Geometric Terms • Coordinate Plane • Segment Relationships • Angle Relationships • Basic Proofs • Constructions • Inductive Reasoning • Deductive Reasoning 	<p>III A 3 Recognize and explain the necessity for certain terms to remain undefined; [“a description is provided but not a definition”], such as point, line and plane. [G.10.3.2; G. Benchmark: A; Math Processes: F, G]</p> <p>III A 4 Make, test and establish the validity of conjectures about geometric properties and relationships using counterexample, inductive and deductive reasoning, and paragraph or two-column proof, including:</p> <ol style="list-style-type: none"> a. prove the Pythagorean Theorem; b. prove theorems involving triangle similarity and congruence; c. prove theorems involving properties of lines, angles, triangles and quadrilaterals; d. test a conjecture using basic constructions made with a compass and straightedge or technology. <p>[G.10.3.3; G. Benchmark: H; Math Processes: D]</p>	<ul style="list-style-type: none"> - Know and follow the classroom rules - Use and define the geometric terms - Graph on the coordinate plane - Identify and operate with segments - Identify and operate with angles - Identify the form of proof, and use it to prove basic geometric theorems - Use pencil, straightedge, and compass to do basic geometric constructions - Identify and make conjectures base on inductive reasoning - Define deductive reasoning and apply in proofs 	<p>Technology: Geometer’s Sketchpad (points, segments, lines, constructions)</p>	<ul style="list-style-type: none"> - Homeworks –Worth 100% (Show All Work) - Mid-Chapter Test - Chapter Test - (Test Every Week or Two)
October				
<ul style="list-style-type: none"> • Deductive Reasoning • Proofs: <ul style="list-style-type: none"> - Algebra - Segment Relationships - Angle Relationships - Parallel and Perpendicular Lines • Parallel and Perpendicular Lines • Slopes • Spherical Geometry • Constructions 	<p>III A 4 Make, test and establish the validity of conjectures about geometric properties and relationships using counterexample, inductive and deductive reasoning, and paragraph or two-column proof, including:</p> <ol style="list-style-type: none"> a. prove the Pythagorean Theorem; b. prove theorems involving triangle similarity and congruence; c. prove theorems involving properties of lines, angles, triangles and quadrilaterals; d. test a conjecture using basic constructions made with a compass and straightedge or technology. <p>[G.10.3.3; G. Benchmark: H; Math Processes: D]</p>	<ul style="list-style-type: none"> - Apply deductive reasoning in proofs - Prove basic geometric theorems - Identify parallel and perpendicular lines, and use to find related angles - Define, find, and use slope - Compare and contrast basic properties of plane and spherical geometry - Do basic geometric constructions 	<p>Technology: Geometer’s Sketchpad (parallel and perpendicular lines, shapes, slopes, symbols, constructions)</p> <p>Integration: Social Studies – spherical geometry with latitude and longitude</p>	<p>-</p>

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November				
<ul style="list-style-type: none"> • Parallel and Perpendicular Lines • Congruent Triangles • Constructions • Special Segments in Triangles 	<p>III A 4 Make, test and establish the validity of conjectures about geometric properties and relationships using counterexample, inductive and deductive reasoning, and paragraph or two-column proof, including:</p> <ol style="list-style-type: none"> a. prove the Pythagorean Theorem; b. prove theorems involving triangle similarity and congruence; c. prove theorems involving properties of lines, angles, triangles and quadrilaterals; d. test a conjecture using basic constructions made with a compass and straightedge or technology. <p>[G.10.3.3; G. Benchmark: H; Math Processes: D]</p> <p>III B 2 Construct congruent or similar figures using tools, such as compass, straightedge, and protractor or geometry software. [G.10.3.5; G. Benchmark: E, B; Math Processes: A, D]</p> <p>III A 2 Formally define and explain key aspects of geometric figures, including:</p> <ol style="list-style-type: none"> a. interior and exterior angles of polygons; b. segments related to triangles (median, altitude, midsegment); c. points of concurrency related to triangles (centroid, incenter, orthocenter, and circumcenter); d. circles (radius, diameter, chord, circumference, major arc, minor arc, sector, segment, inscribed angle). <p>[G.10.3.1; G. Benchmark: A; Math Processes: F]</p>	<ul style="list-style-type: none"> - Use parallel and perpendicular lines to find related angles - Identify and name types of triangles - Find corresponding parts of \cong triangles - Prove \cong triangles - Do geometric constructions - Identify and use medians, altitudes, angle bisectors and perpendicular bisectors in a triangle 	<p>Technology: Geometer's Sketchpad (tests for congruence and segments in triangles)</p>	-
December				
<ul style="list-style-type: none"> • Special Segments in Triangles • Right Triangles • Indirect Proof • Inequalities for One or Two Triangles • Quadrilaterals 	<p>III A 2 Formally define and explain key aspects of geometric figures, including:</p> <ol style="list-style-type: none"> a. interior and exterior angles of polygons; b. segments related to triangles (median, altitude, midsegment); c. points of concurrency related to triangles (centroid, incenter, orthocenter, and circumcenter); d. circles (radius, diameter, chord, circumference, major arc, minor arc, sector, segment, inscribed angle). <p>[G.10.3.1; G. Benchmark: A; Math Processes: F]</p> <p>III A 4 Make, test and establish the validity of conjectures about geometric properties and relationships using counterexample, inductive and deductive reasoning, and paragraph or two-column proof, including:</p> <ol style="list-style-type: none"> a. prove the Pythagorean Theorem; b. prove theorems involving triangle similarity and congruence; c. prove theorems involving properties of lines, angles, triangles and quadrilaterals; d. test a conjecture using basic constructions made with a compass and straightedge or technology. <p>[G.10.3.3; G. Benchmark: H; Math Processes: D]</p> <p>III B 1 Construct right triangles, equilateral triangles, parallelograms, trapezoids, rectangles, rhombuses, squares and kites using compass and straightedge or geometry software. [G.10.3.4; G. Benchmark: E; Math Processes: A, D, E]</p>	<ul style="list-style-type: none"> - Use medians, altitudes, angle bisectors and perpendicular bisectors in a triangle - Recognize and use tests for congruence of right triangles - Identify and use indirect proof to prove geometric theorems - Recognize and apply relationships between sides and angles in a triangle - Identify and find relationships among sides, angles, and diagonals of quadrilaterals 	<p>Technology: Geometer's Sketchpad (special segments in triangles, right triangles, quadrilaterals)</p>	-

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January				
<ul style="list-style-type: none"> • Quadrilaterals • Proportion and Similarity 	<p>III B 1 Construct right triangles, equilateral triangles, parallelograms, trapezoids, rectangles, rhombuses, squares and kites using compass and straightedge or geometry software. [G.10.3.4; G. Benchmark: E; Math Processes: A, D, E]</p> <p>II A 2 Use the ratio of lengths in similar two-dimensional figures or three-dimensional objects to calculate the ratio of their areas or volumes, respectively (e.g., designing scale models, interpreting blueprints, scaling up or down in interior design). [M.9.2.3; M. Benchmark: D; Math Processes: A, B]</p> <p>III A 4 Make, test and establish the validity of conjectures about geometric properties and relationships using counterexample, inductive and deductive reasoning, and paragraph or two-column proof, including:</p> <ol style="list-style-type: none"> prove the Pythagorean Theorem; prove theorems involving triangle similarity and congruence; prove theorems involving properties of lines, angles, triangles and quadrilaterals; test a conjecture using basic constructions made with a compass and straightedge or technology. <p>[G.10.3.3; G. Benchmark: H; Math Processes: D]</p> <p>III B 2 Construct congruent or similar figures using tools, such as compass, straightedge, and protractor or geometry software. [G.10.3.5; G. Benchmark: E, B; Math Processes: A, D]</p>	<ul style="list-style-type: none"> - Identify and find relationships among sides, angles, and diagonals of quadrilaterals - Identify, find, and use ratios and proportions with similar polygons 	<p>Technology: Geometer's Sketchpad (quadrilaterals, similarity)</p>	-
February				
<ul style="list-style-type: none"> • Proportion and Similarity • Fractals • Right Triangles • Basic Trigonometry • Circles 	<p>II A 2 Use the ratio of lengths in similar two-dimensional figures or three-dimensional objects to calculate the ratio of their areas or volumes, respectively (e.g., designing scale models, interpreting blueprints, scaling up or down in interior design). [M.9.2.3; M. Benchmark: D; Math Processes: A, B]</p> <p>III B 2 Construct congruent or similar figures using tools, such as compass, straightedge, and protractor or geometry software. [G.10.3.5; G. Benchmark: E, B; Math Processes: A, D]</p> <p>I A 4 Solve multi-step problems involving rational and irrational numbers (e.g., the height of a flagpole, the distance between two ships, etc.) using several operations; use an illustration to show the relationships among the numbers involved and the sequence of steps to arrive at solutions. [NS.10.1.1; NS Benchmark: G; Math Processes: A]</p> <p>III A 4 Make, test and establish the validity of conjectures about geometric properties and relationships using counterexample, inductive and deductive reasoning, and paragraph or two-column proof, including:</p> <ol style="list-style-type: none"> prove the Pythagorean Theorem; prove theorems involving triangle similarity and congruence; prove theorems involving properties of lines, angles, triangles and quadrilaterals; test a conjecture using basic constructions made with a compass and straightedge or technology. <p>[G.10.3.3; G. Benchmark: H; Math Processes: D]</p> <p>IV B 7 Use algebraic representations and functions to describe and generalize geometric properties and relationships (e.g., Pythagorean Theorem as Distance Formula, area and volume formulas). [A.10.4.4; A Benchmarks: D; Math Processes: C, A]</p>	<ul style="list-style-type: none"> - Identify, find, and use ratio and proportions with similar polygons - Identify and use the Pythagorean Theorem and its converse to solve problems - Identify and find the trigonometric ratios using right triangles and use them to solve problems - Find the degree and linear measures of arcs - Find the measures of angles in circles - Use properties of chords, tangents and secants to solve problems - Write equations of circles 	<p>Technology: Basic calculator activities</p> <p>www.sisweb.com/math/table_s.html (trigonometry, circles)</p> <p>Geometer's Sketchpad (right triangles, circles, fractals, similarity)</p>	-

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February, continued				
	<p>IV C 3 Describe the relationship between slope of a line (tangent of the angle of inclination) through the origin and the tangent function of the angle created by the line and the positive x-axis (e.g., pitch of a road up the hill, handicap ramp, etc.). [A.10.4.12; A Benchmarks: C, J; Math Processes: C]</p> <p>II A 3 Use right triangle trigonometry and scale drawings to solve problems that involve unknown distances and angle measures (e.g., survey problems, height of poles or trees.) [M.9.2.4; M. Benchmark: A, F; Math Processes: D]</p> <p>III A 1 Draw a diagram of a right triangle (ABC); label sides and angles as to appropriate measures and define sine, cosine, and tangent in terms of one of the acute angles. [G.9.3.1; G. Benchmark: H, A; Math Processes: F, H]</p> <p>II A 6 Explain the relationship between the measures of central and inscribed angles and their major and minor arcs. [M.10.2.5; M. Benchmark: E; Math Processes: G]</p> <p>III D 3 Solve problems involving the relationships among chords, radii, and arcs within the same circle (e.g., the various ‘paths’ of a tether-ball; the ‘paths’ worn around a pole by a pet; determining the circumference of a sphere at a point other than the equator). (e.g., latitude – finding the circumference at a place on the globe other than the equator [middle]) [G.10.3.10; G. Benchmark: A, C; Math Processes: A]</p> <p>IV B 10 Graph the quadratic relationship that defines circles (e.g., how many miles can the beam of a lighthouse be seen; resizing rings; the epicenter of an earthquake) [A.10.4.8; A Benchmarks: D; Math Processes: E]</p>			-
March				
<ul style="list-style-type: none"> • Circles • Polygons • Tessellations • Area • Geometric Probability 	<p>II A 5 Measure the length, capacity/volume, or angle of an object or quantity and compare it to the theoretical* measure; calculate the absolute* and relative* error, and explain the difference between absolute and relative error in that context (e.g., the amount of humidity in the air; an experiment involving velocity, force, distance; plotting lines on graph paper; lengths of “2 x 4s”, etc.)</p> <ol style="list-style-type: none"> a. “absolute error” defined as: the absolute value of the difference between the measured value of a quantity and its true value (p. 224 of Standards book) b. “relative error” defined as: the error or uncertainty in a measurement expressed as a fraction of the true value (p. 232 of Standards book) c. “theoretical measure” -- measurement of acceleration should always be 9.8 meters per second,² however, instruments are typically not accurate enough to get exactly 9.8, actual measurements are samples whose mean will tend towards 9.8; the use of pi when calculating circumference (see DP.9.5.10 theoretical probability) <p>[M.10.2.2; M.10.2.3; M. Benchmark: E; Math Processes: F, H]</p> <p>III D 3 Solve problems involving the relationships among chords, radii, and arcs within the same circle (e.g., the various ‘paths’ of a tether-ball; the ‘paths’ worn around a pole by a pet; determining the circumference of a sphere at a point other than the equator). (e.g., latitude – finding the circumference at a place on the globe other than the equator [middle]) [G.10.3.10; G. Benchmark: A, C; Math Processes: A]</p> <p>IV B 10 Graph the quadratic relationship that defines circles (e.g., how many miles can the beam of a lighthouse be seen; resizing rings; the epicenter of an earthquake) [A.10.4.8; A Benchmarks: D; Math Processes: E]</p>	<ul style="list-style-type: none"> - Find the degree and linear measures of arcs - Find the measures of angles in circles - Use properties of chords, tangents and secants to solve problems - Write equations of circles - Find measures of interior and exterior angles of polygons - Find areas of polygons and circles - Solve problems involving geometric probability - Identify regular and uniform tessellations 	<p>Technology: www.sisweb.com/math/tables.html (circles, area)</p> <p>Geometer’s Sketchpad (circles, polygons, area, tessellations)</p>	-

Core Content (Topics, Materials, Resources)	Performance Indicator	Enabling and Process/Thinking Skills	Technology/Integration	Products/Assessments
<i>March, continued</i>				
	<p>II A 6 Explain the relationship between the measures of central and inscribed angles and their major and minor arcs. [M.10.2.5; M. Benchmark: E; Math Processes: G]</p> <p>II A 10 Calculate distances, areas, surface areas and volumes of composite three-dimensional objects to a specified number of significant digits. [M.11.2.4; M Benchmark: C; Math Processes:]</p> <p>III A 2 Formally define and explain key aspects of geometric figures, including:</p> <ul style="list-style-type: none"> a. interior and exterior angles of polygons; b. segments related to triangles (median, altitude, midsegment); c. points of concurrency related to triangles (centroid, incenter, orthocenter, and circumcenter); d. circles (radius, diameter, chord, circumference, major arc, minor arc, sector, segment, inscribed angle). <p>[G.10.3.1; G. Benchmark: A; Math Processes: F]</p> <p>IV B 7 Use algebraic representations and functions to describe and generalize geometric properties and relationships (e.g., Pythagorean Theorem as Distance Formula, area and volume formulas). [A.10.4.4; A Benchmarks: D; Math Processes: C, A]</p> <p>V C 4 Model problems dealing with uncertainty with area models (geometric probability). [DP.10.5.7; DP Benchmarks: J; Math Processes: B]</p>	-		-
<i>April</i>				

Core Content (Topics, Materials, Resources)	Performance Indicator	Enabling and Process/Thinking Skills	Technology/Integration	Products/Assessments
<ul style="list-style-type: none"> Surface Area Volume 	<p>II A 5 Measure the length, capacity/volume, or angle of an object or quantity and compare it to the theoretical* measure; calculate the absolute* and relative* error, and explain the difference between absolute and relative error in that context (e.g., the amount of humidity in the air; an experiment involving velocity, force, distance; plotting lines on graph paper; lengths of “2 x 4s”, etc.)</p> <ol style="list-style-type: none"> “absolute error” defined as: the absolute value of the difference between the measured value of a quantity and its true value (p. 224 of Standards book) “relative error” defined as: the error or uncertainty in a measurement expressed as a fraction of the true value (p. 232 of Standards book) “theoretical measure” -- measurement of acceleration should always be 9.8 meters per second,² however, instruments are typically not accurate enough to get exactly 9.8, actual measurements are samples whose mean will tend towards 9.8; the use of pi when calculating circumference (see DP.9.5.10 theoretical probability) <p>[M.10.2.2; M.10.2.3; M. Benchmark: E; Math Processes: F, H] in interior design). [M.9.2.3; M. Benchmark: D; Math Processes: A, B]</p> <p>II A 9 Derive a formula for the surface area of a cone as a function of its slant height and the circumference of its base. [M.11.2.3; M Benchmark: C; Math Processes: A]</p> <p>II A 10 Calculate distances, areas, surface areas and volumes of composite three-dimensional objects to a specified number of significant digits. [M.11.2.4; M Benchmark: C; Math Processes:]</p> <p>III D 4 Identify, sketch and classify the cross sections of three-dimensional objects. [G.11.3.5; G Benchmarks: None; Math Processes: None]</p> <p>IV B 7 Use algebraic representations and functions to describe and generalize geometric properties and relationships (e.g., Pythagorean Theorem as Distance Formula, area and volume formulas). [A.10.4.4; A Benchmarks: D; Math Processes: C, A]</p>	<ul style="list-style-type: none"> Identify and find lateral areas and surface areas in solids, and use to solve problems Identify and find volume in solids, and use to solve problems Identify, find, and use ratio and proportions with similar solids 	<p>Technology: www.sisweb.com/math/tables.html (surface area, volume)</p> <p>Geometer’s Sketchpad (surface area, volume)</p>	-
<i>April, continued</i>				
	<p>II A 2 Use the ratio of lengths in similar two-dimensional figures or three-dimensional objects to calculate the ratio of their areas or volumes, respectively (e.g., designing scale models, interpreting blueprints, scaling up or down)</p>			-
<i>May</i>				
<ul style="list-style-type: none"> Coordinate Geometry LOCI Coordinate Transformations 	<p>III B 3 Represent translations using vectors. [G.11.3.2; G Benchmark: B; Math Processes: G]</p> <p>III C 1 Identify and perform reflections and rotations of two-and three-dimensional figures using compass and straightedge constructions and geometry software to create a design (e.g., a wall-paper pattern, an evacuation route for rooms on opposite sides of the hallway, etc.) [G.10.3.6; G.10.3.7; G. Benchmark: E, E; Math Processes: A, D]</p> <p>III C 2 Derive coordinate rules for translations, reflections, and rotations of geometric figures in the coordinate plane [G.10.3.8; G Benchmarks: F; Math Processes: D, A]</p> <p>III C 3 Show and describe the results of combinations of translations, reflections, and rotations (compositions); e.g., perform compositions and specify the result of a composition as the outcome of a single motion, when applicable [G.10.3.9; G Benchmarks: F; Math Processes: A]</p> <p>III C 4 Use matrices to represent translations, reflections, rotations, dilations and their compositions. [G.12.3.1; G Benchmark:: B Math Processes:]</p>	<ul style="list-style-type: none"> Prove theorems using coordinate proofs Draw, locate, or describe a locus in a plane or in space Draw reflections, translations, rotations, dilations on the coordinate plane 	<p>Technology: Geometer’s Sketchpad (loci, transformations)</p>	- Geometry scavenger hunt (Polaroid or digital)

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<i>June</i>				
<ul style="list-style-type: none"> Coordinate Transformations 	<p>III C 1 Identify and perform reflections and rotations of two-and three-dimensional figures using compass and straightedge constructions and geometry software to create a design (e.g., a wall-paper pattern, an evacuation route for rooms on opposite sides of the hallway, etc.) [G.10.3.6; G.10.3.7; G. Benchmark: E, E; Math Processes: A, D]</p> <p>III C 2 Derive coordinate rules for translations, reflections, and rotations of geometric figures in the coordinate plane [G.10.3.8; G Benchmarks: F; Math Processes: D, A]</p> <p>III C 3 Show and describe the results of combinations of translations, reflections, and rotations (compositions); e.g., perform compositions and specify the result of a composition as the outcome of a single motion, when applicable [G.10.3.9; G Benchmarks: F; Math Processes: A]</p> <p>III C 4 Use matrices to represent translations, reflections, rotations, dilations and their compositions. [G.12.3.1; G Benchmark:: B Math Processes:]</p>	<ul style="list-style-type: none"> - Prove theorems using coordinate proofs - Draw, locate, or describe a locus in a plane or in space - Draw reflections, translations, rotations, dilations on the coordinate plane 	<p>Technology: Geometer's Sketchpad (transformations)</p>	-

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