

Geometry CP – Curriculum Pacing Guide – 2017 – 2018 First Half of Semester

Unit 1 – Tools of Geometry

- G.GCO.1* Define angle, perpendicular line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.
- G.GCO.11* Construct geometric figures using a variety of tools, including a compass, a straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.
- G.GGPE.6 Given two points, find the point on the line segment between the two points that divides the segment into a given ratio.
- G.GGPE.7* Use the distance and midpoint formulas to determine distance and midpoint in a coordinate plane, as well as areas of triangles and rectangles, when given coordinates.
- G.GM.1* Use geometric shapes, their measures, and their properties to describe real-world objects.
- G.GSRT.7 Explain and use the relationship between the sine and cosine of complementary angles.

Unit 1 – Tools of Geometry			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
<ul style="list-style-type: none"> • order of operations • solving equations • ordered pairs and quadrants 			1
(G.GCO.1, G.GCO.11, G.GM.1) <ul style="list-style-type: none"> • undefined term • point, line, plane • collinear, coplanar • intersection • definition • defined term • space • line segment • betweenness of points • between • congruent segments • congruent segments construction* 	<ul style="list-style-type: none"> • Textbook – 1.1 Lab • Exploring Points and Planes • Planes and Space Activity • Index Cards Plane Intersection • Basic Constructions • Basic Terms Activities • Points, Lines, Planes Lesson Plan • Hands-on Geometry Constructions • Construction Worksheets • The Search for Pythagoras' Treasure • http://jwilson.coe.uga.edu/EMAT6680Fa08/Kuzle/Instructional%20unit/Constructions.html (history of construction & ideas) • http://www.mathsisfun.com/geometry/constructions.html (step by step on constructions) • http://jwilson.coe.uga.edu/EMAT6680Fa08/Kuzle/Instructional%20unit/Constructions.html (history of construction & ideas) 	1.1 1.2	2

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Unit 1 – Tools of Geometry			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.1, G.CO.11, G.GPE.6) <ul style="list-style-type: none"> • distance formula • irrational number • midpoint • perpendicular • segment bisector • perpendicular bisector construction* 	<ul style="list-style-type: none"> • Midpoint of Segment • Angle Additions • Segment Additions • Segment Addition String Activity • Deriving Midpoint and Distance Formula • Stuck in the Middle • http://alex.state.al.us/lesson_view.php?id=26361 (midpoint of a segment) 	1.3	3
(G.GCO.1, G.GCO.11, G.GSRT.7) <ul style="list-style-type: none"> • ray, opposite ray • angle, side, vertex • interior and exterior • degree • right, acute, obtuse angle • angle bisector • adjacent angle • linear pair • vertical angle • complementary and supplementary angles • angle bisector construction* 	<ul style="list-style-type: none"> • Angle Bisectors • Vertical Angles • Teaching Ideas for Angles • Discovering Angles • Discovery Lesson on Angles • http://163.150.89.242/yhs/Faculty/AB/bagg/Geometry/images/Geometry%20txt%20PDFs/2.4.pdf (vertical angles Worksheet) • http://www.superteacherideas.com/math5-geometry-angles.html (vertical angles with macaroni & popcorn) • Constructions including Bisectors 	1.4 1.5	4
(G.GPE.7) <ul style="list-style-type: none"> • polygon • vertex of a polygon • concave and convex • naming polygons through 12 sides • n-gon • equilateral polygon • equiangular polygon • regular polygon • perimeter, circumference and area 	<ul style="list-style-type: none"> • Perimeter, Circumference and Area Practice • Geoboard Area & Perimeter • http://alex.state.al.us/lesson_view.php?id=24037 (Geometry City) • https://sites.google.com/site/salamancamath/MathClasses/graphing/geometry-projects/garden-project (Creating a Garden Project) 	1.6	5

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Unit 1 – Tools of Geometry			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
	Constructions *(can be done daily or one day at the end)		6
	Review		7
	Unit Test		8

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Unit 2 – Reasoning and Proof

- G.GCO.8 Prove and apply in mathematical and real-world contexts, theorems about lines and angles.
- G.GCO.11* Construct geometric figures using a variety of tools, including a compass, a straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.
- G.GM.2 Use geometry concepts and methods to model real-world situations and solve problems using a model.

Unit 2 – Reasoning and Proof			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.8) <ul style="list-style-type: none"> • algebraic proof • two column proof • formal proof 	<ul style="list-style-type: none"> • Textbook – Chapter 2 – Introduction to Proofs activity • Create a Proof Project • Proof Practice • Proof Activity • Practice LOD and LOS 	2.6	9
(G.GCO.8, G.GCO.11) <ul style="list-style-type: none"> • ruler postulate • segment addition • congruent segments 		2.7	10
(G.GCO.8) <ul style="list-style-type: none"> • protractor postulate • angle addition • angle congruence • supplementary, complementary and vertical and right angles 	<ul style="list-style-type: none"> • http://163.150.89.242/yhs/Faculty/AB/bagg/Geometry/images/Geometry%20text%20PDFs/2.4.pdf (vertical angles Worksheet) • http://www.superteacherideas.com/math5-geometry-angles.html (vertical angles with macaroni & popcorn) 	2.8	11

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Unit 2 – Reasoning and Proof			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GM.2) <ul style="list-style-type: none"> • postulate • axiom • proof • theorem • deductive argument • paragraph proof • informal proof 	<ul style="list-style-type: none"> • http://mathforum.org/sanders/exploringandwritinggeometry/proof.htm 	2.5	12
Review			13
Unit Test			14

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Unit 3 – Parallel Lines and Transversals

- G.GCO.1* Define angle, perpendicular line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.
- G.GCO.8* Prove and apply in mathematical and real-world contexts, theorems about lines and angles, including the following:
- G.GCO.8a* vertical angles are congruent;
- G.GCO.8b* when a transversal crosses parallel lines, alternate interior angles are interior angles are congruent, alternate exterior angles are congruent, and consecutive interior angles are supplementary;
- G.GCO.8c* any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment;
- G.GCO.8d* perpendicular lines form four right angles.
- G.GCO.11* Construct geometric figures using a variety of tools, including a compass, a straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.
- G.GGPE.5* Analyze slopes of lines to determine whether lines are parallel, perpendicular, or neither. Write the equation of a line passing through a given point that is parallel or perpendicular to a given line. Solve geometric and real-world problems involving lines and slopes.
- G.GM.2 Use geometry concepts and methods to model real-world situations and solve problems using a model.

Unit 3 – Parallel Lines and Transversals			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.1, G.GCO.11, G.GM.2) <ul style="list-style-type: none"> • parallel lines • skew lines • parallel planes • transversal • interior angle • exterior angle 	<ul style="list-style-type: none"> • Textbook – Chapter 3 – Writing on desk activity • Discovering Parallel Lines • Parallel Lines Practice • Common Core Activities for Parallel and Perpendicular • http://alex.state.al.us/lesson_view.php?id=24037 (Geometry City) • https://sites.google.com/site/salamancamath/MathClasses/graphing/geometry-projects/garden-project (Creating a Garden Project) 	3.1	15
(G.GCO.1, G.GCO.8, G.CO.8a, G.CO.8b, G.CO.8c, G.CO.8d, G.GCO.11) <ul style="list-style-type: none"> • corresponding angles • alternate interior angles • consecutive interior angles • alternate interior • construction parallel lines using congruent corresponding angles 	<ul style="list-style-type: none"> • City Project • Write on Desk • http://lessonplanspage.com/mathanglerelationshipsandparallellinespaperfolding/activity810-htm/ (paper folding activity for angles) • http://alex.state.al.us/lesson_view.php?id=24037 (Geometry City) • https://sites.google.com/site/salamancamath/MathClasses/graphing/geometry-projects/garden-project (Creating a Garden Project) 	3.2 3.5	16

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Unit 3 – Parallel Lines and Transversals			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GGPE.5) <ul style="list-style-type: none"> ● slope ● rate of change ● slope-intercept form ● point-slope form ● equations of parallel and perpendicular lines ● parallel, perpendicular or neither 	<ul style="list-style-type: none"> ● Worksheet on Parallel and Perpendicular Equations ● What’s Slope Got to Do With It ● Slope Intercept String Art Project ● http://www.wyzant.com/help/math/geometry/lines_and_angles/parallel_and_perpendicular (teach it) ● http://www.math-play.com/Slope-Intercept/Slope_Intercept.html (Write the equation) ● http://illuminations.nctm.org/LessonDetail.aspx?id=L782 (equations) 	3.3 3.4	17
Review			18
Unit Test			19

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Unit 4 – Congruent Triangles

- G.GCO.6* Demonstrate that triangles and quadrilaterals are congruent by identifying a combination of translations, rotations, and reflections in various representations that move one figure onto the other.
- G.GCO.7* Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions.
- G.GCO.9* Prove, and apply in mathematical and real-world contexts, theorems about the relationship within and among triangles, including the following:
- G.GCO.9a* measures of interior angles of a triangle sum to 180° ;
- G.GCO.9b* base angles of isosceles triangles are congruent;
- G.GCO.9c* the segment joining midpoints of two sides of a triangle is parallel to the third side of half the length;
- G.GCO.9d* the medians of a triangle meet at a point.
- G.GCO.10 Prove, and apply in mathematical and real-world contexts, theorems about parallelograms.
- G.GCO.11* Construct geometric figures using a variety of tools, including a compass, a straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.
- G.GGPE.4* Use coordinates to prove simple geometric theorems algebraically.
- G.GSRT.5* Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
- G.GSRT.8* Solve right triangles in applied problems using trigonometric ratios and the Pythagorean Theorem.

Unit 4 – Congruent Triangles			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.6, G.GCO.7, G.GCO.10, G.GCO.11, G.GSRT.8) <ul style="list-style-type: none"> • acute, obtuse, right, and equiangular • equilateral, isosceles, scalene triangle • legs of an isosceles triangle • vertex angle • base angles 	<ul style="list-style-type: none"> • Textbook – 4.2 Lab 	4.1 4.6	20

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Unit 4 – Congruent Triangles			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.9, G.CO.9a, G.CO.9b G.CO.9c, G.CO.9d) <ul style="list-style-type: none"> • auxiliary line • exterior angles • remote interior angles • flow proof, corollary 	<ul style="list-style-type: none"> • Triangle Sum Activity • Triangle Sum with Algebra • Triangle Sum Theorem • http://www.mathsteacher.com.au/year7/ch09_polygons/02_anglesum/sum.htm (Sum of Triangles) • http://www.regentsprep.org/Regents/math/geometry/GP5/TRTri.htm (Discover Triangle Sum) • http://illuminations.nctm.org/ActivityDetail.aspx?ID=9 (Triangle Sums) 	4.2	21
(G.GCO.7, G.GCO.9, G.CO.9a, G.CO.9b G.CO.9c, G.CO.9d, G.GSRT.5) <ul style="list-style-type: none"> • congruent • congruent polygons • corresponding parts • included angle • included side 	<ul style="list-style-type: none"> • Building Congruent Triangles • Congruent Triangle Patty • Congruent Triangle Project • Triangle Congruency Practice • Lesson on Congruent Triangles • Discovering Congruent Triangles • Discovering Congruent Triangles Lab • Worksheet on Congruent Triangles • Lesson on Discovering Triangle Congruence • http://mste.illinois.edu/courses/ci303fa01/students/kethoms1/unitplan/day4.html (Fetticini and Congruent Triangles) • http://www.k12.hi.us/~mathappl/im12tri.htm (idea for teaching congruent triangles) • https://sites.google.com/site/salamancamath/MathClasses/graphing/geometry-projects/ch4-tri-tri-again-project (Build a Bridge) • http://illuminations.nctm.org/ActivityDetail.aspx?ID=4 (Activities for CPCTC) 	4.3 4.4 4.5	22-23

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Unit 4 – Congruent Triangles			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.9, G.CO.9a, G.CO.9b G.CO.9c, G.CO.9d, G.GPE.4) <ul style="list-style-type: none"> • coordinate proof 	<ul style="list-style-type: none"> • Triangle Congruency Proofs • Triangle Congruency Proofs Quiz • Fill in the Blank Triangle Proofs 1 • Fill in the Blank Triangle Proofs 2 • Triangle Congruency Quiz (1 and 2) • http://www.regentsprep.org/Regents/math/geometry/GCG4/Coordinateresource.htm (coordinate challenge) • http://www.regentsprep.org/Regents/math/geometry/GCG4/CoordinatepRACTICE.htm (practice proofs) • http://www.atlanta.k12.ga.us/cms/lib/GA01000924/Centricity/Domain/262/Math_1_APS_Teacher_Edition_Unit_6.v5.pdf (several activities) 	4.8	24
Proof Practice & Review			25
Unit Test			26

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Unit 5 – Relationships in Triangles

- G.GCO.9* Prove, and apply in mathematical and real-world contexts, theorems about the relationship within and among triangles.
 G.GM.2 Use geometry concepts and methods to model real-world situations and solve problems using a model.

Unit 5 – Relationships in Triangles			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.9, G.GM.2) <ul style="list-style-type: none"> • Triangle Inequality 	<ul style="list-style-type: none"> • Triangle Inequalities Exploring Activity • Triangle Angle and Side Ordering Activity • http://www.ck12.org/geometry/Inscribed-Quadrilaterals-in-Circles/ (videos and other things) 	5.3 5.5 5.6	27
(G.GCO.9, G.GM.2) <ul style="list-style-type: none"> • median • centroid 		5.2	28
(G.GCO.9) <ul style="list-style-type: none"> • Pythagorean Theorem • Converse of Pythagorean Theorem • Pythagorean Triple 	<ul style="list-style-type: none"> • Developing the Pythagorean Theorem • Pythagorean Theorem Activities • Pythagorean Theorem Game • Pythagorean Theorem with Algebra • Pythagorean Theorem and Converse • Pythagorean Spiral Project • http://www.nbclearn.com/nfl/cuecard/51220 (Geometry & the NFL) • http://www.math-play.com/Pythagorean-Theorem-Jeopardy/Pythagorean-Theorem-Jeopardy.html (Jeopardy) • http://www.nbclearn.com/nfl/cuecard/51220 (Geometry & the NFL) • http://www.math-play.com/Pythagorean-Theorem-Jeopardy/Pythagorean-Theorem-Jeopardy.html (Jeopardy) 	8.2	29
Review			30
Unit Test			31

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Unit 6 - Quadrilaterals

- G.GCO.10* Prove, and apply in mathematical and real-world contexts, theorems about parallelograms, including the following:
- G.GCO.10a opposite sides of a parallelogram are congruent;
 - G.GCO.10b opposite angles of a parallelogram are congruent;
 - G.GCO.10c diagonals of a parallelogram bisect each other;
 - G.GCO.10d rectangles are parallelograms with congruent diagonals;
 - G.GCO.10e a parallelogram is a rhombus if and only if the diagonals are perpendicular.
- G.GGPE.4* Use coordinates to prove simple geometric theorems algebraically.
- G.GM.1* Use geometric shapes, their measures, and their properties to describe real-world objects.

Unit 6 - Quadrilaterals			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GM.1) <ul style="list-style-type: none"> • diagonal 	<ul style="list-style-type: none"> • Introduction to Polygons • Notes on making 3D shapes from rotations • Rotate to form solids • Geometry Treats • http://www.ehow.com/info_7891957_ideas-teaching-cross-sections.html (lots of ideas for presenting) • http://ispeakmath.org/2012/05/28/volume-of-3d-shapes-with-play-doh/ (play doh ideas) 	6.1	32

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Unit 6 - Quadrilaterals			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.10, G.GGPE.4) <ul style="list-style-type: none"> • parallelogram 	<ul style="list-style-type: none"> • Textbook – Chapter 6 – Foldable Chart • Parallelogram Jigsaw Activity • Parallelogram Worksheet • Properties of Quadrilaterals • http://www.nsa.gov/academia/files/collected_learning/high_school/geometry/quadrilaterals1.pdf (Lessons on parallelograms with discovery) • http://illuminations.nctm.org/LessonDetail.aspx?id=L350 (discover properties) • http://havefunteaching.com/songs/shape-songs/parallelogram-song/ (parallelogram song) • http://www.learner.org/channel/schedule/printmat.phtml?printmat_id=97 (teaching activities) • http://www.successlink.org/gti/lesson_unit-viewer.asp?lid=3385 (Investigating parallelograms) • http://alex.state.al.us/lesson_view.php?id=3009 (parallelogram mystery) • http://hiregloriagramum.weebly.com/uploads/8/0/1/0/8010192/mathematics_module_assignment_8.pdf (lesson on parallelograms) • https://sites.google.com/site/salamancamath/MathClasses/graphing/geometry-projects/chapter-5-go-fly-a-kite (Making a Kite) 	6.2 6.3	33
(G.GCO.10, G.GCO.10a, G.GCO.10b, G.GCO.10c, G.GCO.10d, G.GCO.10E, G.GGPE.4) <ul style="list-style-type: none"> • rectangle • rhombus • square 	<ul style="list-style-type: none"> • Quadrilateral Activity • http://www.fayar.net/east/teacher.web/math/standards/document/eexamples/chap5/5.3/index.htm (Interactive exploration of rectangles) • http://www.teachmathematics.net/activities/quadrilateral-properties.htm (Quadrilateral Properties) 	6.4 6.5	34

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Unit 6 - Quadrilaterals			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.10, G.GGPE.4) <ul style="list-style-type: none"> • trapezoid • bases • legs of trapezoid • base angles • isosceles trapezoid • Midsegment of trapezoid • kite 	<ul style="list-style-type: none"> • Property Check List • Fill in Properties of Quadrilaterals (with Answers) • Shape Tree Diagram • Trapezoid and Kite Worksheet • Sidewalk Chalk Shapes • https://sites.google.com/site/jonnasutherland100/home/cooperative-learning-lesson-plan (Cooperative Lesson on Trapezoids and Kites) • http://ebookbrowse.com/m-geo-4th-6wks-rsc-discover-properties-kites-trapezoids-worksheet-pdf-d170860873 (Worksheet on Trapezoids and Kites) 	6.6	35
Activity			36
Review			37
Unit Test			38

MIDTERM EXAM

Review, make-up days (for assemblies, testing...), or extra application days

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Unit 7 – Proportions and Similarity

- G.GM.2 Use geometry concepts and methods to model real-world situations and solve problems using a model.
- G.GSRT.2* Use the definition of similarity to decide if figures are similar and justify decision. Demonstrate that two figures are similar by identifying a combination of translations, rotations, reflections, and dilations in various representations that move one figure onto the other.
- G.GSRT.3* Prove that two triangles are similar using the Angle-Angle criterion and apply the proportionality of corresponding sides to solve problems and justify results.
- G.GSRT.4* Prove, and apply in mathematical and real-world contexts, theorems involving similarity about triangles, including the following:
- G.GSRT.4a A line drawn parallel to one side of a triangle divides the other two sides into parts of equal proportion.
- G.GSRT.4b If a line divides two sides of a triangle proportionally, then it is parallel to the third side.
- G.GSRT.4c The square of the hypotenuse of a right triangle is equal to the sum of squares of the other two sides.
- G.GSRT.5* Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Unit 7 – Proportions and Similarity			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GM.2) <ul style="list-style-type: none"> • ratio • proportion • cross product • scale model • scale drawing • scale 	<ul style="list-style-type: none"> • House Project • Dilation and Scale Factor Worksheet • Scale Models • Dilation Project • Almagamation Art (Uses dilations, transformations, and translations) • http://www.lemars.k12.ia.us/webfiles/mboyd/Pre-Algebra%20Textbook%20(e-edition)/Source/J9D13GAD.pdf (Dilations) • http://tellier.edublogs.org/2011/10/24/super-size-me-project-3/ (supersize me project) 	7.1 7.7	46
(G.GSRT.2, G.GSRT.3, G.GSRT.4, G.SRT.4a, G.SRT.4b, G.SRT.4c, G.GSRT.5) <ul style="list-style-type: none"> • similar polygons • similar ratio • scale factor 	<ul style="list-style-type: none"> • Similarity Comic Strip Project • Investigating Ratios Activity • Constructing Midsegments Worksheet • http://handsonmathinhighschool.blogspot.com/2012/07/made4math-geometry-proofs.html (fill in proofs) • http://www.thinkfun.com/smartplayblog/?p=186 (Chocolate Lab for Proofs) • http://www.regentsprep.org/Regents/math/geometry/GP10/MidLineR.htm (Discovering Midsegments) 	7.2 7.3	47

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Unit 7 – Proportions and Similarity			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GSRT.2) • midsegment of a triangle	<ul style="list-style-type: none"> • How Tall is the Wall Activity • Worksheet on Proving Triangles Similar 	7.4	48
(G.GSRT.4, G.GSRT.5)	<ul style="list-style-type: none"> • Similar Triangles Project • Similar Triangles and Heights • Investigating Similar Triangles • Investigating Similar Right Triangles 	7.5	49
Review			50
Unit Test			51

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Unit 8 – Right Triangles and Trigonometry

G.GGPE.6	Given two points, find the point on the line segment between the two points that divides the segment into a given ratio.
G.GM.2	Use geometry concepts and methods to model real-world situations and solve problems using a model.
G.GSRT.4*	Prove, and apply in mathematical and real-world contexts, theorems involving similarity about triangles, including the following:
G.GSRT.4a	A line drawn parallel to one side of a triangle divides the other two sides into parts of equal proportion.
G.GSRT.4b	If a line divides two sides of a triangle proportionally, then it is parallel to the third side.
G.GSRT.4c	The square of the hypotenuse of a right triangle is equal to the sum of squares of the other two sides.
G.GSRT.5*	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
G.GSRT.6*	Understand how the properties of similar right triangles allow the trigonometric ratios to be defined and determine the sine, cosine, and tangent of an acute angle in a right triangle.
G.GSRT.7	Explain and use the relationship between the sine and cosine of complementary angles.
G.GSRT.8*	Solve right triangles in applied problems using trigonometric ratios and the Pythagorean Theorem.

Unit 8 – Right Triangles and Trigonometry			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GSRT.4, G.SRT.4a, G.SRT.4b, G.SRT.4c, G.GSRT.5, G.GSRT.8, G.GM.2) <ul style="list-style-type: none"> ● Pythagorean theorem review 	<ul style="list-style-type: none"> ● Pythagorean Theorem Activities ● Pythagorean Theorem Game ● Pythagorean Theorem and Converse 	8.2	52
(G.GSRT.6) <ul style="list-style-type: none"> ● trigonometry ● trigonometric ratio ● sine ● cosine ● tangent ● inverse sine ● inverse cosine ● inverse tangent 	<ul style="list-style-type: none"> ● Is the Handicap Ramp Legal? ● A Day at the Park ● Measuring Height with Trigonometry ● Water Balloon Launch ● Trigonometry Word Problems ● Trigonometry Practice ● Investigating Trigonometry Ratios ● Trigonometry Activities ● Building Bridges Task ● Building Bridges Lesson <ul style="list-style-type: none"> ● http://www.curriculumsupport.education.nsw.gov.au/secondary/mathematics/years7_10/teaching/trig.htm (Same shape lesson to explore trig ratios) ● http://blogs.warwick.ac.uk/emmacooke/entry/discovering_the_trig/ (discovering trig ratios) 	8.4	53-55

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Unit 8 – Right Triangles and Trigonometry			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
	Test Review		56
	Mid-Unit Test		57
(G.GSRT.6, G.GSRT.8) <ul style="list-style-type: none"> • angle of elevation • angle of depression 	<ul style="list-style-type: none"> • http://illuminations.nctm.org/LessonDetail.aspx?id=L785 (Discover relationships of trig functions) • http://illuminations.nctm.org/LessonDetail.aspx?ID=L383 (trig ratios) • http://www.teachengineering.org/view_activity.php?url=http://www.teachengineering.org/collection/cub_/activities/cub_navigation/cub_navigation_lesson03_activity2.xml (Trig River Activity) 	8.3 8.5	58
(G.GSRT.7) <ul style="list-style-type: none"> • law of sines • law of cosines 	<ul style="list-style-type: none"> • http://illuminations.nctm.org/LessonDetail.aspx?ID=L703 (Develop law of sines) • http://illuminations.nctm.org/LessonDetail.aspx?ID=L704 (Develop law of cosines) • http://www.regentsprep.org/Regents/math/algtrig/ATT12/derivelawofsines.htm (develop both) • http://www.algebralab.org/lessons/lesson.aspx?file=Trigonometry_TrigLawSines.xml (Sines) • https://www.teachingchannel.org/videos/laws-of-sines-cosines-lesson (applying laws of sine and cosine) • http://hilbertshotel.wordpress.com/2013/01/27/a-better-law-of-sines-cosines-project/ (Project) • http://www.regentsprep.org/Regents/math/algtrig/ATT12/rescuelab.htm (Rescue Team Project) • http://www.foresthills.edu/userfiles/161/Classes/5071/6.1-6.2%20Applications%20Worksheet.pdf (Worksheet) • http://www.emathinstruction.com/sitebuildercontent/sitebuilderfiles/U9L5TrigonometricApplications.pdf (Worksheet with applications) 	8.6	59

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Unit 8 – Right Triangles and Trigonometry			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GGPE.6) • vector • magnitude • direction • standard position • component form • resultant	<ul style="list-style-type: none"> • Vector Treasure Hunt • http://www.teachmathematics.net/activities/dancing-vectors.htm (Dancing Vectors) • http://www.teachengineering.org/view_activity.php?url=collection/cub_/activities/cub_navigation/cub_navigation_lesson02_activity1.xml (Vector Voyage) • http://illuminations.nctm.org/LessonDetail.aspx?ID=L484 (Properties of vectors) 	8.7	60-61
Review			62
Unit Test			63

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Unit 9 - Circles

- G.GCI.1 Prove that all circles are similar.
- G.GCI.2* Identify and describe relationships among inscribed angles, radii, and chords; among inscribed angles, central angles, and circumscribed angles; and between radii and tangents to circles. Use those relationships to solve mathematical and real-world problems.
- G.GCI.3 Construct the inscribed and circumscribed circles of a triangle using a variety of tools, including a compass, a straightedge, and dynamic geometry software, and prove properties of angles for a quadrilateral inscribed in a circle.
- G.GCI.4 Construct a tangent line to a circle through a point on the circle, and construct a tangent line from a point outside a given circle to the circle; justify the process used for each construction.
- G.GCI.5* Derive the formulas for the length of an arc and the area of a sector in a circle and apply these formulas to solve mathematical and real-world problems.
- G.GCO.1* Define angle, perpendicular line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.
- G.GCO.2* Represent translations, reflections, rotations, and dilations of objects in the plane by using paper folding, sketches, coordinates, function notation, and dynamic geometry software, and use various representations to help understand the effects of simple transformations and their compositions.
- G.GCO.11* Construct geometric figures using a variety of tools, including a compass, a straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.
- G.GGPE.1* Understand that the standard equation of a circle is derived from the definition of a circle and the distance formula.
- G.GGPE.6 Given two points, find the point on the line segment between the two points that divides the segment into a given ratio.
- G.GM.2 Use geometry concepts and methods to model real-world situations and solve problems using a model.

Unit 9 - Circles			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.1, G.GCO.2, G.GCI.1, G.GCI.5) <ul style="list-style-type: none"> • center • circle • chord • diameter • radius • concentric circles • circumference • pi • inscribed • circumscribed • central angle • arc 	<ul style="list-style-type: none"> • Properties of Chords Worksheet • Intersecting Chords Worksheet • Circle Intro/Printable Circle Intro/Circle Intro Answer • Goat Farmer • Pizza Problem • Worksheet on Circles and Similarity • Circles • Similarities in Circles and Arcs • http://middleschoolatsage.weebly.com/uploads/5/2/5/8/5258770/g.c.1_g.c.5_copy.pdf (Activities) • http://www.geom.uiuc.edu/~dwiggins/conj44.html (Arcs) • http://alex.state.al.us/lesson_view.php?id=26412 (Sector Area) 	10.1 10.2	64

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Unit 9 - Circles			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
<ul style="list-style-type: none"> • minor arc • major arc • semicircle • congruent arcs • adjacent arcs • arc length 			
(G.GCO.2, G.GCO.11, G.GCI.4, G.GM.2) <ul style="list-style-type: none"> • tangent • point of tangency • common tangent 	<ul style="list-style-type: none"> • Tangents and Circles • Tangent and Chord Properties 	10.3 10.5	65
(G.GCI.2, G.GCI.3, G.GGPE.1, G.GGPE.6) <ul style="list-style-type: none"> • inscribed angle • intercepted arc • compound locus 	<ul style="list-style-type: none"> • Properties of Intercepted Arcs Worksheet • Exploring Inscribed Angles • Circle Review • Circle Review 2 • Broken Pottery Activity • Circle Worksheet • Discovering the Properties of an Inscribed Quadrilateral • Points of Concurrency • Constructions including Bisectors • Circle Conjectures • http://freemotionquilting.blogspot.com/2010/01/day-123-angles-and-circles.html (Quilt Project) • http://www.ck12.org/geometry/Inscribed-Quadrilaterals-in-Circles/ (videos and other things) 	10.4 10.6	66
		10.7	67
		10.8	68

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Unit 9 - Circles			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
	Review		69
	Unit Test		70

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Unit 10 – Area of Polygons and Circles

- G.GCI.5* Derive the formulas for the length of an arc and the area of a sector in a circle and apply these formulas to solve mathematical and real-world problems.
- G.GGMD.1* Explain the derivations of the formulas for the circumference of a circle, area of a circle, and volume of a cylinder, pyramid, and cone. Apply these formulas to solve mathematical and real-world problems.
- G.GGPE.7* Use the distance and midpoint formulas to determine distance and midpoint in a coordinate plane, as well as areas of triangles and rectangles, when given coordinates.
- G.GM.1* Use geometric shapes, their measures, and their properties to describe real-world objects.
- G.GM.2 Use geometry concepts and methods to model real-world situations and solve problems using a model.

Unit 10 – Area of Polygons and Circles			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GPE.7, G.GM.1, G.GM.2) <ul style="list-style-type: none"> ● base of a parallelogram ● height of a parallelogram ● base of a triangle ● height of a triangle ● height of a trapezoid ● population density 	<ul style="list-style-type: none"> ● Textbook – 11.2 Extended Lab ● Island Conquer Game ● Geoboard Area & Perimeter ● http://alex.state.al.us/lesson_view.php?id=24037 (Geometry City) ● https://sites.google.com/site/salamancamath/MathClasses/graphing/geometry-projects/garden-project (Creating a Garden Project) 	11.1 11.2	71
(G.GCI.5, G.GGMD.1) <ul style="list-style-type: none"> ● sector of a circle 	<ul style="list-style-type: none"> ● Worksheet on Circles and Similarity ● Sectors of Pizza ● Circles ● Similarities in Circles and Arcs ● http://middleschoolatsage.weebly.com/uploads/5/2/5/8/5258770/g.c.1_g.c.5_copy.pdf (Activities) ● http://www.geom.uiuc.edu/~dwiggins/conj44.html (Arcs) ● http://alex.state.al.us/lesson_view.php?id=26412 (Sector Area) 	11.3	72

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Unit 10 – Area of Polygons and Circles			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GM.2) <ul style="list-style-type: none"> ● center of a regular polygon ● radius of a regular polygon ● apothem ● central angle of a regular polygon ● composite figure 	<ul style="list-style-type: none"> ● Areas of Regular Polygons ● Area of Polygon Worksheet ● Class Quilt ● Deriving the Formula of a Regular Polygon ● Right Triangles and Area of Regular Polygons ● http://education.ti.com/en/us/activity/detail?id=B6948F1A47744A4DA05AF1FCB12EB045 (Area Activity) 	11.4	73-74
(G.GM.1)		11.5	75
Review			76
Unit Test			77

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Unit 11 – Extending Surface Area and Volume

- G.GGMD.1* Explain the derivations of the formulas for the circumference of a circle, area of a circle, and volume of a cylinder, pyramid, and cone. Apply these formulas to solve mathematical and real-world problems.
- G.GMD.2 Explain the derivation of the formulas for the volume of a sphere and other solid figures using Cavalieri’s principle.
- G.GGMD.3* Apply surface area and volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems and justify results. Include problems that involve algebraic expressions, composite figures, geometric probability, and real-world applications.
- G.GGMD.4* Describe the shapes of two-dimensional cross-sections of three-dimensional objects and use those cross-sections to solve mathematical and real-world problems.
- G.GM.1* Use geometric shapes, their measures, and their properties to describe real-world objects.
- G.GM.2 Use geometry concepts and methods to model real-world situations and solve problems using a model.

Unit 11 – Extending Surface Area and Volume			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GGMD.4, G.GM.1, G.GM.2) <ul style="list-style-type: none"> • isometric view • cross section • lateral face, lateral edge, base edge, • lateral area • slant height • altitude, height 	<ul style="list-style-type: none"> • Making Nets of 3 Dimensional Figures • Crush and Run • 3D Review (1st 2 pages)/3D Review Key • Review Surface Area • Student Formula Sheet • Investigating Surface Area 	12.1 12.2 12.3	78
(G.GGMD.1, G.GMD.2, G.GGMD.3) <ul style="list-style-type: none"> • composite solid • right vs oblique 	<ul style="list-style-type: none"> • Review Volume • Review Surface Area and Volume • Household Item Project 	12.4 12.5	79
(G.GGMD.1, G.GGMD.3) <ul style="list-style-type: none"> • great circle • hemisphere 		12.6	80
Review or Activity			81
Unit Test			82

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Unit 12 – Transformation and Symmetry

- G.GCO.2* Represent translations, reflections, rotations, and dilations of objects in the plane by using paper folding, sketches, coordinates, function notation, and dynamic geometry software, and use various representations to help understand the effects of simple transformations and their compositions.
- G.GCO.3* Describe rotations and reflections that carry a regular polygon onto itself and identify types of symmetry of polygons, including line, point, rotational, and self-congruence, and use symmetry to analyze mathematical situations.
- G.GCO.4* Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
- G.GCO.5* Predict and describe the results of transformations on a given figure using geometric terminology from the definitions of the transformations, and describe a sequence of transformations that maps a figure onto its image.
- G.GSRT.1 Understand 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. Verify experimentally the properties of dilations given by a center and a scale factor. Understand the dilation of a line segment is longer or shorter in the ratio given by the scale factor.
- G.GSRT.2* Use the definition of similarity to decide if figures are similar and justify decision. Demonstrate that two figures are similar by identifying a combination of translations, rotations, reflections, and dilations in various representations that move one figure onto the other.
- G.GSRT.5* Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Unit 12 – Transformation and Symmetry			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.GCO.2, G.GCO.4, G.GCO.5) <ul style="list-style-type: none"> • line of reflection • translation vector • center of rotation • angle of rotation 	<ul style="list-style-type: none"> • Making a Tessellation with Patty Paper • Exploring Geometric Transformations • Transformation and Translation Lesson • Flips and Turns • Activities on Symmetry and Transformations • http://www.mathsisfun.com/geometry/transformations.html (shows translations and transformations) • http://www.regentsprep.org/Regents/math/geometry/GT2/indexGT2.htm (Translations) • http://www.projectmaths.ie/students/cd-strand1and2/docs4/spongebob.html (Symmetry of Sponge Bob) • http://www.kidsmathgamesonline.com/geometry.html (Transformation Games) • http://staff.argyll.epsb.ca/jreed/math9/strand3/transformations.htm (interactive on computer) • Textbook 9.3 – Explore Lab 	9.1 9.2 9.3	83

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Unit 12 – Transformation and Symmetry			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
<p>(G.GCO.2, G.GCO.3, G.GCO.5, G.GSRT.1, G.GSRT.2, G.GSRT.5)</p> <ul style="list-style-type: none"> • transformation • pre-image • image • congruence transformation • isometric • reflection • translation • rotation • composition of transformations • glide reflections • symmetry • line symmetry • line of symmetry • rotational symmetry • center of symmetry • order of symmetry 	<ul style="list-style-type: none"> • Geometry Rotation and Dilation • Dilation and Scale Factor Worksheet • Scale Models • Penrose Tiles with Answers • http://www.superteacherworksheets.com/geometry/translation-rotation-reflection-1_TZQTQ.pdf (Worksheet) • http://www.superteacherworksheets.com/geometry/translation-rotation-reflection-2_TZQTM.pdf (Worksheet) • http://www.jmap.org/JMAP/RegentsExamsandQuestions/PDF/WorksheetsByPI-Topic/Geometry/Transformational_Geometry/G.G.60.IndentifyingTransformations.pdf (identify transformations) • http://www.lemars.k12.ia.us/webfiles/mboyd/Pre-Algebra%20Textbook%20(e-edition)/Source/J9D13GAD.pdf (Dilations) • http://teller.edublogs.org/2011/10/24/super-size-me-project-3/ (supersize me project) • Wind Chime Project • Dilation Project • Amalgamation Art (Uses dilations, transformations, and translations) • http://www.superteacherworksheets.com/geometry/translation-rotation-reflection-1_TZQTQ.pdf (Worksheet) • http://www.superteacherworksheets.com/geometry/translation-rotation-reflection-2_TZQTM.pdf (Worksheet) • http://www.jmap.org/JMAP/RegentsExamsandQuestions/PDF/WorksheetsByPI-Topic/Geometry/Transformational_Geometry/G.G.60.IndentifyingTransformations.pdf (identify transformations) • http://www.lemars.k12.ia.us/webfiles/mboyd/Pre-Algebra%20Textbook%20(e-edition)/Source/J9D13GAD.pdf (Dilations) • http://teller.edublogs.org/2011/10/24/super-size-me-project-3/ (supersize me project) 	 4.7 7.6 9.4 9.5 9.6	 84
Tesselation Project			85

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Unit 13 – Statistics

- G.SPID.1* Select and create an appropriate display, including dot plots, histograms, and box plots, for data that includes only real numbers.
- G.SPID.2* Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets that include all real numbers.
- G.SPID.3* Summarize and represent data from a single data set. Interpret differences in shape, center, and spread in the context of the data set, accounting for possible effects of extreme data points (outliers).

Unit 13- Statistics			
Essential Tasks/Key Concepts	Resources/Activities	Textbook Reference	Day of Semester
(G.SPID.1) <ul style="list-style-type: none"> • dot plot • histogram • box plot 		Algebra 1 Textbook 12.2	86
(G.SPID.2, G.SPID.3) <ul style="list-style-type: none"> • distribution • negatively skewed distribution • positively skewed distribution • normal • symmetric distribution 		Algebra 1 Textbook 12.3	87
Quiz (may begin review for final)			88
Review			89
Final Exam			90