High School Course Description for **Geometry**

Course Title: Geometry

Curricular Area: Mathematics

Course Number: MTH 201, 202, 261, 262, 281, 282, 2011, 2012, 2013, 2014

Length: One year

Grade Level: 9-12

Prerequisites: None

Meets a UC a-g Requirement: Yes – C

Meets NCAA Requirement: Pending

Meets High School Graduation Requirement for:
Mathematics

Course Description

This standard first course in geometry covers the required concepts of Euclidean geometry including definitions, postulates, and theorems. Areas of study include angles, parallel lines, congruent and similar triangles, rectilinear figures, polygons, circles and arc, and the Pythagorean Theorem. Special topics covered include coordinate and spatial geometry, introductory trigonometry, and constructions and loci. In addition to including problems which serve to review algebra, the process of "proving" theorems is introduced.

Alignment

This course is aligned to the California Common Core State Standards for Geometry.

Instructional Materials

Required Textbook(s)
1. Holt

Supplemental Materials
2. TBD

Websites
3. www.Illuminations.nctm.org

Software
4. Geogebra

Other Materials
5. TBD

Exit Criteria

Activities	Percentage
Coursework/Participation	20%
Assessments	60%
Final Examination	20%
Total:	100%

Development Team

This course of study was developed in spring 2013 by a District Transition Team comprised of teachers from all 3 high schools.

SEMESTER ONE

Key Assignments:

- **TBD**

Assessments:

- **Common Site Driven Assessments**
- **District benchmarks**
- **District Final**

Week	
	Unit 1 – Foundations of Geometry
1	Transformations (Isometries)
2	Lines and Angles
3	Parallel and Perpendicular Lines and Angle Relationships
4	
5	Constructions
	Unit 2 – Triangle Congruence
6	Understanding Triangles
7	Intro to Proofs
8	Proving Triangles Congruent
9	
10	
	Unit 3 – Polygons
11	Special Segments in Triangles
12	General Polygons/Quadrilaterals
13	
	Unit 4 – Similarity
14	Definition and Dilations
15	Proving Triangles Similar
16	Proving Pythagorean Theorem
17	Review
18	Finals

SEMESTER TWO

Key Assignments:

- **TBD**

Assessments:

- **Common Site Driven Assessments**
- **District benchmarks**
- **District Final**

Week	
	Unit 5 – Special Right Triangles and Trigonometry
1	Special Right Triangles
2	Trigonometry (including coordinate plane)
	Unit 6 – Area and Volume
3	Understanding Area
4	
5	Attributes of Solids (S.A./cross sections/rotations)
6	Volume
7	
8	
	Unit 7 – Circles
9	Segments in a circle/Arc Length/Sector Area
10	Angle and Segment Measure Relationships
11	Coordinate Plane and Radian-Degree Conversion
	Unit 8 – Coordinate Geometry
12	Proving Attributes of Polygons
13	
	Unit 9 – Probability
14	Understanding Probability
15	Independent vs. Dependent
16	Conditional Probability
17	Review
18	Finals

CJUSD Secondary Math Unit Outline

Unit Title: Unit 1 – Foundations of Geometry

Grade Level/Course: High School Geometry Approximate Length of Unit: 5 weeks

Priority Standards	Supporting Standards
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, use the definition of congruence in terms of rigid motions to decide if they are congruent **G-CO.9** Prove theorems about lines and angles.	**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 a long a line, and distance around a circular arc. **G-CO.2** Represent transformations in the plane, 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. **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, draw the transformed figure. Specify a sequence of transformations that will carry a given figure onto another. **G-CO.12** Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). c*opying 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.*

What do students have to know and be able to do in order to meet the targeted standards?	
Students will know:	*Students will be able to do:*
Definitions, notation and theorems of basic units of geometry including point, line, plane, segment, ray, types of angles Definitions and theorems involving parallel and perpendicular lines	Identify and describe angles using academic vocabulary Use appropriate notation to indicate congruence of segments and angles Identify pairs of angles and calculate angle measures formed by perpendicular and parallel lines Find measures of segments or angles using segment/angle addition postulates

Big Ideas/Essential Understanding:	Essential/Guiding Questions:
Isometries Line and angle relationships Basic constructions	What is the affect of transformational isometries? How do we find the missing measures of angles formed by intersecting lines? How do we find the missing measures of segments and angles whether bisected or otherwise dissected?

Summative/ End of Unit Assessment Blueprint (Include question item types)	Distinguish between angle pairs (complementary, supplementary, vertical angles, linear pairs, corresponding angles, alternate interior angles, etc.) Determine the measures of angles in angle pairs Determine if lines are parallel and perpendicular in a coordinate plane
Summative/ End of Unit Performance Task	Project 1: Students will create a mathematical dictionary that they will use for the entirety of the course. This dictionary will begin with listing and defining the key vocabulary from Unit 1. It will also include postulates and theorems that will be used in subsequent formal proof. Each student will then keep his/her dictionary in his/her binder for the remainder of the course and add new vocabulary and theorems to it as they are presented. Students will be required to include a formal definition, a definition written in their own words, a diagram or illustration, and one of the following for each word; counter example, real world example or a non-example.

Scoring Criteria for Assessment	Single point items and rubric based scoring.
Scoring Criteria for Performance Task	Rubric based scoring.

What Prior Knowledge Should be Activated?	How Will it be Activated?
Definitions, notation and theorems of basic units of geometry including point, line, plane, segment, ray, types of angles. Definitions and theorems involving parallel and perpendicular lines	Good teaching practices, group activities, pair share activities, direct instruction, avid strategies, modeling, SDAIE instructional strategies,

Key Vocabulary		
Angle	Rectangle	Corresponding angle
Circle	Square	Alternate interior angle
Perpendicular line	Hexagon	Congruent
Parallel line	Triangle	Perpendicular bisector
Line segment	n-gon	Endpoint
Point	Supplementary angles	Perimeter
Line	Complementary angles	Area
Vertical angle	Vertex	Polygon
Transversal	Adjacent	Corresponding Side
Interior angle	Octagon	Diagonal
Segment	Pentagon	
Ray	Decagon	

Unit Sequencing:	
Topic 1: Transformations	**Topic 2: Lines and Angles**
Isometries	Parallel and perpendicular Segment addition postulate Vertical, adjacent, linear pair Supplementary and complementary angles Angle addition postulate Non-parallel lines and angles: corresponding, alternate interior, alternate exterior, same side interior
Topic 3:Parallel and Perpendicular Lines	**Topic 4: Constructions**
Angle relationships Coordinate plane	Copy a segment Copy an angle Bisecting an angle Perpendicular lines (point on line and not on line) Perpendicular bisectors of segments Parallel line through a point not on line

Resources/Tools
Geogebra Geometric tools Online videos Tutorials

Reflection on Best Practices (Feedback Loop)

CJUSD Secondary Math Unit Outline

Unit Title: Unit 2 – Triangle Congruence

Grade Level/Course: High School/Geometry Approximate Length of Unit: 4 weeks

Priority Standards	Supporting Standards
G-CO.10 Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; 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.* **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. **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 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.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, 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. **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; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.* **G-CO.12** Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). c*opying 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.* **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).

	G-GMD.6 Verify experimentally that in a triangle, angles opposite longer sides are larger, sides opposite larger angles are longer, and the sum of any two side lengths is greater than the remaining side length; apply these relationships to solve real-world and mathematical problems.

What do students have to know and be able to do in order to meet the targeted standards?	
Students will know:	*Students will be able to do:*
The relationships among the sides and angles of a triangle including the Pythagorean Theorem. How to prove that triangles are congruent. How to prove that segments or angles are congruent using the corresponding parts of congruent triangles. How to apply the Pythagorean Theorem.	Prove triangles are congruent. Use the corresponding parts of congruent triangles to prove that side lengths or angle measures are congruent. Use the Pythagorean Theorem to find lengths and distances in real-world applications. Classify triangles by angle measure and side length Determine the longest and shortest sides or the largest and smallest angles of a triangle

Big Ideas/Essential Understanding:	**Essential/Guiding Questions:**
Students will use definitions, properties, theorems and postulates to prove triangles are congruent Students will prove side lengths or angle measures of triangles and/or polygons are congruent. Students will use the Pythagorean Theorem to find the lengths and distances.	What is congruence? How do you prove geometric theorems? How do we find the corresponding sides of congruent figures? How do you know that two given triangles are congruent? How can you prove that two given triangles are congruent? What are the lengths of segments and measures of angles in a given figure? How will you solve right triangles given 2 lengths?

Summative/ End of Unit Assessment Blueprint (Include question item types)	Find missing sides or angles using triangle theorems (ext. angle theorem, isosceles triangle, angle-side relationships thm.) Prove triangles are congruent (using SSS, SAS, ASA, AAS, HL) Find lengths and/or distances using the Pythagorean Theorem and/or corresponding parts of congruent figures Apply the triangle sum theorem and its corollaries Apply the triangle inequality theorem and triangle angle-side relationships
Summative/ End of Unit Performance Task	Performance Task: Students will use only a compass, ruler, and protractor to construct equilateral, isosceles, right, acute, and obtuse triangles. The students will attend to precision and use appropriate tools strategically to complete this assignment. Project: Students will do a performance task finding the special points/segments within a triangle (median, midsegment, etc.) measuring a cardboard or paper triangle side lengths. Students will also use their side measures to classify the triangle using Pythagorean's Inequalities. Within this project, the students will demonstrate mathematical precision, show their use of appropriate tools strategically, and look for and make use of structure.

Scoring Criteria for Assessment	Single point items and rubric based scoring.
Scoring Criteria for Performance Task	Rubric based scoring.

What Prior Knowledge Should be Activated?	**How Will it be Activated?**
8-G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. **8-G.5** Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so. **8-G.2** Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. **8-G.3** Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	Pre-test Discuss through Explicit Direct Instruction of basic topics. Whole class discussions. Examples. Brainstorming.

Key Vocabulary		
Corresponding parts	Base	Special Right Triangles
Equilateral	Leg	Point of concurrency
Scalene	Vertex Angle	Midsegment
Isosceles	Base Angles	Median
Congruent	Transformation	Altitude
Rigid motion	Proportional	

Unit Sequencing:	
Topic 1: Understanding Triangles	**Topic 2: Introduction to Proofs**
Acute, right, obtuse Isosceles, equilateral/equiangular Angle side relationships theorems Triangle inequalities Triangle sum Exterior angle theorems Pythagorean Theorem Pythagorean Identities Base angle theorems	Algebraic proofs Counterexample Pythagorean proofs (area methods)
Topic 3: Proving Triangles Congruent	
Understand a congruent triangle as the image of a triangle after a transformation. Prove angles or sides are congruent using corresponding parts of congruent triangles. Prove triangles are congruent using SSS, SAS, AAS, ASA, and HL.	

Resources/Tools
Straight edges, compasses, and protractors Patty paper Computer lab Geogebra software Measuring devices (tape measures, rulers, etc.)

Unit Specific Modifications/Enrichment Opportunities	
Advanced Learners	Understanding and extending the Euler line. Other centers in triangles. (web-based research) Additional methods for proving the Pythagorean Theorem.

Reflection on Best Practices (Feedback Loop)

CJUSD Secondary Math Unit Outline

Unit Title: Unit 3 – Polygons

Grade Level/Course: High School/Geometry Approximate Length of Unit: 4 weeks

Priority Standards	Supporting Standards
G-CO.11 Prove theorems about parallelograms **G-CO.10** Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; 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.*	**G-CO.3** Given a rectangle parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself. **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; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.* **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). **G-CO.13** Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

What do students have to know and be able to do in order to meet the targeted standards?	
Students will know:	*Students will be able to do:*
Special segment properties in triangles Definitions and properties of polygons Definitions and properties of parallelograms and trapezoids	Identify special segments in triangles and find their measures Prove theorems about parallelograms Identify and describe polygons and quadrilaterals using academic vocabulary supported by appropriate theorems and properties. Use linear algebra to find missing side lengths and angle measures of polygons and quadrilaterals.

Big Ideas/Essential Understanding:	**Essential/Guiding Questions:**
Special segments within triangles Properties of parallelograms	How to use properties to identify quadrilaterals and polygons? How do we classify quadrilaterals based on properties?

Summative/ End of Unit Assessment Blueprint (Include question item types)	Identify medians and midsegments and use their theorems to find lengths Prove properties of quadrilaterals Find the measures of interior angles and exterior angles of polygons Apply the properties of midsegments of triangles and perpendicular bisectors
Summative/ End of Unit Performance Task	Project: Students will use their initials or three assigned letters to investigate the geometry of the alphabet. They will produce posters or reports showing the relationships between segments, angles, and arcs; the measures of segments and angles; and any rotational or reflective symmetry displayed in the letter. Their work will demonstrate an understanding of the concepts of measurement, congruence, and symmetry.

Scoring Criteria for Assessment	Single point items and rubric based scoring.
Scoring Criteria for Performance Task	Rubric based scoring.

What Prior Knowledge Should be Activated?	**How Will it be Activated?**
Definitions and properties of polygons Definitions and properties of quadrilaterals	Pre-test Discuss through Explicit Direct Instruction of basic topics. Whole class discussions. Examples. Brainstorming.

Key Vocabulary		
Corresponding parts	Base	Special Right Triangles
Equilateral	Leg	Point of concurrency
Scalene	Vertex Angle	Midsegment
Isosceles	Base Angles	Median
Congruent	Transformation	Altitude
Rigid motion	Proportional	

Topic 1: Special Segments of Triangles	**Topic 2: General Polygons and Quadrilaterals**
Median Centroid Midsegments	Polygon angle sum theorem Parallelograms and their properties Trapezoids Proofs of parallelograms Coordinate plane applications with no variable coordinates

Resources/Tools
Straight edges, compasses, and protractors Patty paper Computer lab Geogebra software Measuring devices (tape measures, rulers, etc.)

Unit Specific Modifications/Enrichment Opportunities	
Advanced Learners	Understanding and extending the Euler line. Other centers in triangles (orthocenter, incenter, circumcenter). (web-based research) Additional methods for proving the Pythagorean Theorem.

Reflection on Best Practices (Feedback Loop)

CJUSD Secondary Math Unit Outline

Unit Title: Unit 4 – Similarity

Grade Level/Course: 9-12/Geometry | Approximate Length of Unit: 4 weeks

Priority Standards	Supporting Standards
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 sides. **G-SRT.3** Use the properties of similarity transformations to establish the Angle-Angle (AA) criterion for two triangles to be similar. **G-SRT.5** Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	**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). **G-SRT.1** Verify experimentally the properties of dilations given by a center and a scale factor: **G-SRT.1.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. **G-SRT.1.b** The dilation of a line segment is longer or shorter in the ratio given by the scale factor. **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-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-GMD.5** Know that the effect of a scale factor k greater than zero on length, area, and volume is to multiply each by k, k^2, and k^3, respectively; determine length, area and volume measures using scale factors. (revised)

What do students have to know and be able to do in order to meet the targeted standards?	
Students will know:	*Students will be able to:*
How to apply theorems and properties of similar polygons in real life situations. Properties and relationships among similar polygons. Similarity transformations	Apply the definition of similar polygons to identify similar figures Use ratios to find measurements and to determine the perimeter and area of figures Prove triangles and polygons are similar Prove the Pythagorean Theorem using triangle similarity Use relationships in similar right triangles to solve problems Find the scale factor of a dilation

Big Ideas/Essential Understanding:	**Essential/Guiding Questions:**
Students prove and solve problems regarding similar polygons. Students understand similarity in terms of similarity transformations.	What are the properties and relationships among similar polygons? How can you apply theorems and properties of similar polygons in real life situations?

Summative/ End of Unit Assessment Blueprint (Include question item types)	Prove triangles are similar Solve problems using similar polygons Prove and solve problems involving trigonometric ratios and right triangles
Summative/ End of Unit Performance Task	Project: Students will take measurements of a real life room and make a scale drawing appropriate to a given size paper. They will show evidence of their measurements through proportions using an appropriate scale factor. Students will model with mathematics, attend to precision, make use of structure, and express regularity in repeated reasoning with their proportions.

Scoring Criteria for Assessment	Single-point items and rubric-based scoring.
Scoring Criteria for Performance Task	Rubric-based scoring.

What Prior Knowledge Should be Activated?	**How Will it be Activated?**
Knowledge of or the ability to: Ratio and proportion Transformations Similarity Pythagorean Theorem Classify triangles Angle relationships (complementary, supplementary) Triangle Sum Theorem Altitude and height of triangles Parallel and perpendicular lines Inverse functions	Pre-Test Direct Instruction Whole Class Discussion Examples Brainstorming

Key Vocabulary		
Ratio	Similarity Ratio	Sine
Proportion	Indirect Measurement	Cosine
Extremes	Scale	Tangent
Means	Scale Drawing	Dilation
Cross Products	Scale Factor	Center of Dilation
Similar	Geometric Mean	Enlargement
Similar Polygons	Trigonometric Ratio	Reduction

Unit Sequencing:		
Topic 1: Similarity	**Topic 2: Prove Triangles Similar**	**Topic 3: Pythagorean Theorem**
Define similarity using dilations	Prove the Pythagorean Theorem using triangle similarity – AA (ASA/AAS), SSS, SAS Triangle Prop. Theorem	Prove the Pythagorean Theorem

Resources/Tools
Straight edge, compass, protractor Computer lab Geogebra software Measuring devices (tape measures, rulers, etc.)

Reflection on Best Practices (Feedback Loop)

CJUSD Secondary Math Unit Outline

Unit Title: Unit 5 – Trigonometry and Special Right Triangles

Grade Level/Course: 9-12/Geometry | Approximate Length of Unit: 4 weeks

Priority Standards	Supporting Standards
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. **G-SRT.8.1** Derive and use the trigonometric ratios for special right triangles (30°,60°,90°and 45°,45°,90°). (revised)	**G-SRT.9** (+) 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. **G-SRT.10** (+) Prove the Laws of Sines and Cosines and use them to solve problems. **G-SRT.11** (+) 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).

What do students have to know and be able to do in order to meet the targeted standards?	
Students will know:	*Students will be able to:*
Trigonometric ratios Properties of special right triangles Law of sines and law of cosines	Define sine, cosine, and tangent of an acute angle of a right triangle Define trigonometric ratios for angel measures greater than or equal to ninety degrees Use the law of sines and the law of cosines to solve triangles

Big Ideas/Essential Understanding:	**Essential/Guiding Questions:**
Students prove and solve problems involving trigonometric ratios and right triangles.	How can you apply theorems and properties of special right triangles in real life situations?

Summative/ End of Unit Assessment Blueprint (Include question item types)	Prove triangles are similar Solve problems using similar polygons Prove and solve problems involving trigonometric ratios and right triangles

Summative/ End of Unit Performance Task	Performance Task: Students will model with mathematics by making clinometers with a protractor and straw to calculate the height of an object (the flagpole, height of a building, etc.) using angles of elevation and depression. They will use precision and appropriate use of tools, and construct viable arguments and critique the reasoning of other students with varying heights.

Scoring Criteria for Assessment	Single-point items and rubric-based scoring.
Scoring Criteria for Performance Task	Rubric-based scoring.

What Prior Knowledge Should be Activated?	**How Will it be Activated?**
Knowledge of or the ability to: Ratio and proportion Transformations Similarity Pythagorean Theorem Classify triangles Angle relationships (complementary, supplementary) Triangle Sum Theorem Altitude and height of triangles Parallel and perpendicular lines Inverse functions	Pre-Test Direct Instruction Whole Class Discussion Examples Brainstorming

Key Vocabulary		
Ratio	Similarity Ratio	Sine
Proportion	Indirect Measurement	Cosine
Extremes	Scale	Tangent
Means	Scale Drawing	Dilation
Cross Products	Scale Factor	Center of Dilation
Similar	Geometric Mean	Enlargement
Similar Polygons	Trigonometric Ratio	Reduction

Unit Sequencing:	
Topic 1: Special Right Triangles	**Topic 2: Trigonometry**
Properties of special right triangles (30-60-90/45-45-90)	Define sine, cosine, and tangent of an acute angle of a right triangle Define trigonometric ratios for angel measures greater than or equal to ninety degrees Law of sines and law of cosines Use the law of sines and the law of cosines to solve triangles Trigonometric ratios Coordinate plane

Resources/Tools
Straight edge, compass, protractor Computer lab Geogebra software Measuring devices (tape measures, rulers, etc.)

Reflection on Best Practices (Feedback Loop)

CJUSD Secondary Math Unit Outline

Unit Title: Unit 6 – Area and Volume

Grade Level/Course: Geometry – High School | Approximate Length of Unit: 5 weeks

Priority Standards	Supporting Standards
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). **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).	**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. **G-GMD.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. **G-GMD.5** Know that the effect of a scale factor k greater than zero on length, area, and volume is to multiply each by k, k^2, and k^3, respectively; determine length, area and volume measures using scale factors. (revised) **G-SRT.8** Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. **G-SRT.8.1** Derive and use the trigonometric ratios for special right triangles (30°,60°,90°and 45°,45°,90°). (revised) **G-SRT.11** (+) 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).

What do students have to know and be able to do in order to meet the targeted standards?	
Students will know:	*Students will be able to do:*
Perimeter and area formulas for two-dimensional figures Surface area and volume formulas of three-dimensional figures How to describe real-world objects based on their shapes and properties	Computations of perimeter and area of plane figures Computations of surface area and volume of three-dimensional figures Use volume formulas to solve problems Apply surface area and volume to modeling problems Make informal arguments for the formulas of circumference, area and volume formulas

Big Ideas/Essential Understanding:	**Essential/Guiding Questions:**
Use perimeter, area, surface area, and volume of two- and three-dimensional figures to solve modeling applications and design problems	How do real-world companies use volume and surface area in the production of products? How are production costs minimized? What production considerations are used and applied in real-world companies?

Summative/ End of Unit Assessment Blueprint (Include question item types)	Use surface area and volume to solve real-life application problems – ECR
Summative/ End of Unit Performance Task	Performance Task: Students will be given a floor plan comprising of multiple geometric shapes (semi-circle, rectangles, regular polygons, etc.) and calculate the amount of square footage needed to carpet or tile the floor. They will have to construct viable arguments explaining their calculations of each area and the total, look for and make use of structure deciding what fraction of areas to use, make sense of the problem and persevere in solving it calculating the total area needed and (if applicable) the total cost. Project: Students will find the maximum volume of a solid figure (such as a prism) given the net of the solid. To complete this problem, students must make sense of the problem and persevere in solving it as well as reason abstractly and quantitatively to justify their conclusion based on the patterns within their calculations.

Scoring Criteria for Assessment	Single-point items and rubric-based scoring.
Scoring Criteria for Performance Task	Rubric-based scoring.

What Prior Knowledge Should be Activated?	**How Will it be Activated?**
Names of figures Perimeter and area formulas Order of operations Surface area and lateral area Volume	EDI Whole class Pre-test Small groups Guided experiments

Key Vocabulary		
Circumference	Rotation	Radius
Area	Cross-section	Surface Area
Perimeter	Prism	Lateral Area
Volume	Pyramid	Nets
Regular Polygons	Cylinder	Dimensions
Height	Cone	Diagonal
Base	Slant Height	

Unit Sequencing:		
Topic 1 –Area	**Topic 2 – Solids**	**Topic 3 – Volume**
Understanding what area is Scale factor of similar figures	Attributes – j nets, cross-sections, rotations (isometric, plane figure)	Volume of solids Using special right triangles and trigonometry Cavalieri's Principle

Resources/Tools
Models of solids Real-life objects Instruments for measuring (rulers, etc.)

Unit Specific Modifications/Enrichment Opportunities	
Advanced Learners	(+) **G-GMD.2** Give an informal argument using Cavalieri's Principle for the formula for the volume of a sphere and other solid figures.

Reflection on Best Practices (Feedback Loop)

CJUSD Secondary Math Unit Outline

Unit Title: Unit 7 – Circles

Grade Level/Course: 9-12/Geometry Approximate Length of Unit: 4 weeks

Priority Standards	Supporting Standards
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. Convert between degrees and radians. [In Geometry, this standard introduces radians only as units of measure.]	**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 where the radius intersects the circle.* **G-C.3** Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle. **G-C.4** (+) Construct a tangent line from a point outside a given circle to the circle. **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). **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). **G-SRT.8** Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. **G-GPE.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. **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. **G-CO.4** Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

	G-CO.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.* **G-CO.13** Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

What do students have to know and be able to do in order to meet the targeted standards?	
Students will know:	*Students will be able to:*
How to apply theorems and properties of circles in real life situations Properties and relationships among chords, arcs, angles, and tangents of a circle How to find arc lengths and area of sectors of circles.	Identify tangents, secants, chords, arcs, and inscribed angles of circles Find arc lengths and areas of sectors of circles Find the measures of angles formed when lines intersect circles Use the measures and properties of circles to solve problems Locate the center of any circle Explain the relationship between a chord and a diameter of a circle and compare minor and major arcs Use properties of circles to find segment lengths and prove that arcs and chords are congruent Use inscribed angles to find the measures of arcs and other angles

Big Ideas/Essential Understanding:	**Essential/Guiding Questions:**
Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, arc lengths, area of sectors of circles, and inscribed and circumscribed polygons of circles.	What are the properties and relationships among chords, arcs, angles, and tangents of a circle? How will you find arc lengths and area of sectors of circles? How can you apply theorems and properties of circles in real life situations?

Summative/ End of Unit Assessment Blueprint (Include question item types)	Solve properties of circles in real-world applications. (Multiple choice, constructed response, and/or performance task)

Summative/ End of Unit Performance Task	Project: To apply circle concepts to a real world scenario, students will model with mathematics to design and conduct a survey a topic of interest and make circle graph to represent their results of the survey. The graph will be precise containing correct measurements of angles, arc length, and sector area.

Scoring Criteria for Assessment	Single-point items and rubric-based scoring.
Scoring Criteria for Performance Task	Rubric-based scoring.

What Prior Knowledge Should be Activated?	**How Will it be Activated?**
Knowledge of or the ability to: Area Circumference Degree measure in a circle Diameter Distance Formula Equation of a Parabola Locus of a Circle Pi Pythagorean Theorem Triangle Sum Theorem Vertical Angles and Linear Pairs of Angles	Pre-Test Direct Instruction Whole Class Discussion Examples Brainstorming

Key Vocabulary		
Interior of a Circle	Common Tangent	Segment of a Circle
Exterior of a Circle	Central Angle	Arc Length
Chord	Arc	Inscribed Angle
Secant	Minor Arc	Intercepted Arc
Tangent of a Circle	Major Arc	Subtend
Point of Tangency	Semicircle	Secant Segment
Congruence Circles	Adjacent Arcs	External Secant Segment
Concentric Circles	Congruent Arcs	Tangent Segment
Tangent Circles	Sector of a Circle	

Unit Sequencing:	
Topic 1: Understanding Circles	**Topic 2: Arc Length and Sector Area**
Identify tangents, secants, chords, arcs, and inscribed angles of circles Locate the center of any circle Explain the relationship between a chord and a diameter of a circle and compare minor and major arcs	Find arc lengths and areas of sectors of circles Use the measures and properties of circles to solve problems Use properties of circles to find segment lengths and prove that arcs and chords are congruent How to find arc lengths and area of sectors of circles
Topic 3: Angles and Segments	**Topic 4: Coordinate Plane and Radians**
Find the measures of angles formed when lines intersect circles Use inscribed angles to find the measures of arcs and other angles Properties and relationships among chords, arcs, angles, and tangents of a circle	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle

Resources/Tools
Straight edge, compass, protractor Computer lab Geogebra software Measuring devices (tape measures, rulers, etc.)

Reflection on Best Practices (Feedback Loop)

CJUSD Secondary Math Unit Outline

Unit Title: Unit 8 – Coordinate Geometry

Grade Level/Course: Geometry – High School | Approximate Length of Unit: 5 weeks

Priority Standards	Supporting Standards
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, $\sqrt{3}$) 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-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). **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).	**G-SRT.1** Verify experimentally the properties of dilations given by a center and a scale factor: **G-SRT.5** Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. **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. **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.3** Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself. **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, 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. **G-CO.9** Prove theorems about lines and angles. **G-CO.10** Prove theorems about triangles. **G-CO.12** Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).

	G-GPE.6 Find the point on a directed line segment 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 and rectangles, e.g., using the distance formula.

What do students have to know and be able to do in order to meet the targeted standards?	
Students will know:	*Students will be able to do:*
Distance and slope formulas Conditions for parallel and perpendicular lines Transformations of figures in the coordinate plane The formats for equations of lines Coordinate proofs of geometric theorems	Compute and use distance and slope formulas Use coordinates to prove lines parallel or perpendicular Use coordinates to prove geometric theorems Use coordinates to compute perimeters and areas Use scale factors and rations to prove figures congruent or similar Use coordinates to find specific points in geometric problems Identify and find surface area and volume of two-dimensional objects rotated in the coordinate plane

Big Ideas/Essential Understanding:	**Essential/Guiding Questions:**
Students will use coordinates to prove geometric theorems algebraically. Students will use coordinates of lines to prove relationships and solve geometric problems.	How can coordinates be used to prove simple geometric theorems? How are lines in the coordinate plane classified as parallel or perpendicular? How are lines and coordinates used to solve geometric problems?

Summative/ End of Unit Assessment Blueprint (Include question item types)	Analyze figures in a coordinate plane and use coordinates to prove geometric theorems regarding the specified figure. (length, midpoints, slope inclusive) Determine if a point is on a figure in the coordinate plane. Use coordinates to prove a given geometric theorem of specified figures.
Summative/ End of Unit Performance Task	Project: Students will attend to precision by enlarging a small picture (about 3''x3'') to a sheet of paper (8.5''x11'') on a coordinate plane (applying a similarity concept) and then determine parallel lines, perpendicular lines, distance and midpoints of segments within their picture. They will construct viable arguments explaining how perimeter and area are affected by the enlargement.

Scoring Criteria for Assessment	Single-point items and rubric-based scoring.
Scoring Criteria for Performance Task	Rubric-based scoring.

What Prior Knowledge Should be Activated?	**How Will it be Activated?**
Ordered pairs Slope Equations of lines Midpoints Parallel and perpendicular lines Rotation, translation, and reflection Coordinate plane Prior geometric theorems Graphing lines from algebra	Warm-ups Small group Whole class

Key Vocabulary		
x- and y- axes Coordinate Plane Scale Slope Formula Distance Formula	Midpoints Ordered Pairs Dilations Slope-Intercept Form	Point-Slope Form Parallel Perpendicular Intersection

Unit Sequencing: Proving Attributes of Polygons
Midpoint Proving parallel and perpendicular Write equations for parallel and perpendicular Prove properties of parallelograms

Resources/Tools
Technology based activities Geogebra Graph paper Straightedges Patty paper

Reflection on Best Practices (Feedback Loop)

CJUSD Secondary Math Unit Outline

Unit Title: Unit 9 – Probability

Grade Level/Course: High School/Geometry Approximate Length of Unit: 3 weeks

Priority Standards	Supporting Standards
S-CP.4 Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*	**S-CP.1** Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not"). **S-CP.2** Understand that two events *A* and *B* are independent if the probability of *A* and *B* occurring together is the product of their probabilities, and use this characterization to determine if they are independent. **S-CP.3** Understand the conditional probability of *A* given *B* as *P(A* and *B)/P(B)*, and interpret independence of *A* and *B* as saying that the conditional probability of *A* given *B* is the same as the probability of *A*, and the conditional probability of *B* given *A* is the same as the probability of *B*. **S-CP.5** Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. **S-CP.6** Find the conditional probability of *A* given *B* as the fraction of *B*'s outcomes that also belong to *A*, and interpret the answer in terms of the model. **S-CP.7** Apply the Addition Rule, *P(A* or *B) = P(A) + P(B) – P(A* and *B)*, and interpret the answer in terms of the model.

What do students have to know and be able to do in order to meet the targeted standards?	
Students will know:	*Students will be able to do:*
The difference between theoretical and experimental probabilities and how each is calculated. The meaning of disjoint and independent events. Methods for calculating conditional probability	Calculate theoretical and experimental probabilities. Calculate the probability of disjoint events. Calculate the probability of independent events. Calculate conditional probabilities Decide which type of probability is used in solving problems Construct two-way tables and calculate probabilities for events involving the two variables Explain conditional probability

Big Ideas/Essential Understanding:	**Essential/Guiding Questions:**
Students calculate probabilities based on the outcomes of experiments. Students calculate probabilities based on possible theoretical outcomes of a random event.	Is a given probability theoretical or experimental? How do you know? How can you find the probability of two events if they are disjoint? Independent? Not independent? How do you calculate conditional probabilities using two-way tables? What does it mean when we say two events are independent?

Summative/ End of Unit Assessment Blueprint (Include question item types)	Use the results of experiments to estimate the probabilities of disjoint and compound events. (multiple choice, constructed response, and/or performance task) Use a theoretical probability model to calculate the probabilities of disjoint and compound events. (multiple choice, constructed response, and/or performance task) Use a two-way table to estimate probabilities and determine if events are independent. (multiple choice, constructed response)
Summative/ End of Unit Performance Task	Performance Task: Students will work in groups to devise two simple games, one using selection with replacement and one using selection without replacement (using cards, dice, spinners, etc.). They will find the theoretical probabilities of the theoretical outcomes for each game and then perform each game recording their results and explain the differences between the theoretical and experimental probability. In this task, students will model with mathematics finding theoretical probabilities, look for and make use of structure in determining their results, and construct viable arguments for the differences between the theoretical and experimental outcomes.

Scoring Criteria for Assessment	Single-point items and rubric-based scoring.
Scoring Criteria for Performance Task	Rubric-based scoring.

What Prior Knowledge Should be Activated?	How Will it be Activated?
7-SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. **7-SP.6** Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times **7-SP.7** Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies? **7-SP.8** Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event. c. Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?	EDI Pre-test Guided experiments rolling number cubes Guided experiments for selection with and without replacement

Key Vocabulary		
Theoretical probability	Disjoint events	Outcome
Experimental probability	Mutually exclusive events	Sample Space
Independent events	Conditional Probability	Event
Complementary events	Trial	Experiment
Two-way table	Frequency	Relative Frequency

Unit Specific Instructional Strategies/Instructional Approach/Learning Experiences
Probability experiments with cards, number cubes, markers, and other realia.

Unit Sequencing:		
Topic 1 – Understanding Probability	**Topic 2 – Independent Events**	**Topic 3 – Conditional Probability**
Calculate theoretical probability from descriptions of events and sample spaces Calculate experimental probability using the results of simple experiments	Determine if events are disjoint and find the probability of disjoint events Determine if events are independent and find their probabilities	Construct and interpret two-way tables for two categorical variables Determine whether events are independent based on probabilities Apply the addition rule for finding probability

Resources/Tools
Holt "Algebra II" text book Number cubes (dice) Spinners Playing cards TI calculators

Modifications/Enrichment Opportunities	
Advanced Learners	**S-CP.8** (+) Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B\|A) = P(B)P(A\|B)$, and interpret the answer in terms of the model. **S-CP.9** (+) Use permutations and combinations to compute probabilities of compound events and solve problems. **S-MD.6** (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator). **S-MD.7** (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game). Calculate geometric probabilities.

Reflection on Best Practices (Feedback Loop)

Learning Experiences and Instruction:

Teachers utilize the Direct Interactive Instruction model to introduce new skills and concepts that are essential to the grade level content standards, then reinforce and develop those skills each quarter with the goal of bringing students to mastery by the end of the fourth quarter. All instruction will be based on the "I do, We do, You do" scaffolding model with an emphasis on individual differentiation as needed. Teachers will use a variety of the following:

- Inquiry-based learning
- Engaged reading opportunities
- Think-pair-share
- Reciprocal teaching
- Cloze reading & writing
- Guided reading & writing
- Cognitive modeling
- Questioning strategies
- Graphic organizers/concept attainment
- Student-led groups
- Peer pairing
- Direct instruction
- Collaborative group activities
- Small group activities
- Metacognitive learning: self-regulation, goal-setting, self-monitoring, and self-questioning
- Pair share
- Vocabulary activities
- Modeling
- AVID instructional strategies
- Real life connections
- Hands on activities
- Patty paper exercises
- Check for understanding
- Direct Instruction
- Modeling
- EDI
- Whole Class
- Hands-on/Discovery
- Project Based

Support for English Language Learners:

Extra time or modified versions of assignments will be given. The District will provide a language assistant. Additional strategies will be developed through the Response to Intervention plans –such as:

- SDAIE methods of instruction emphasizing academic vocabulary and increased opportunities to use academic vocabulary in context
- Texts/materials in first language.
- Realia
- Flexible grouping
- Structured engagement
- Geogebra activities
- Supporting textbook materials
- Academic vocabulary development
- Technology based learning activities
- Peer pairing
- Academic vocabulary development
- Online resources (lesson tutorials, videos, self-check quizzes)
- ELL supporting materials from textbook
- Glossary and translation dictionaries
- Academic vocabulary development
- Discovery learning opportunities
- Hands-on measuring

Support for Special Education Students:
Extra time or modified versions of assignments will be given. The District will provide an instructional assistant. Additional strategies will be developed through the Individual Education Plan process – such as:

- Realia
- Texts/materials in first language
- SDAIE strategies
- Flexible grouping
- Peer pairing
- Audio & visual aids
- Individualized academic instruction
- Modified assignments
- Modified texts
- Testing accommodations
- Tutoring (peer & teacher)

Support for Struggling Learners:

- Online resources including tutorials
- Videos
- Self check quizzes
- Geogebra activities
- SDAIE strategies
- Realia
- Academic vocabulary development
- Modified assignments
- Peer pairing
- Tutoring (peer and teacher)
- Graphic organizers
- Online resources
- Technology based learning activities
- Hands-on learning
- Review/re-teach lessons

Stretching the Lesson for GATE Students:
Differentiated curriculum will be provided to challenge the student and provide the student with opportunities to develop their identified talent. Teachers will use a variety of the following:

- Independent study supplemented with mentoring/tutoring
- Compacting
- Acceleration
- Depth & Complexity icons
- Modified texts
- Modified assignments
- Flexible grouping
- Technology based activities
- Enriched materials and learning experiences
- Designed activities for students using geometry software to prove theorems about polygons and quadrilaterals by completing constructions
- Portfolios containing analytical proofs
- Challenge proofs from the text book and from outside resources.
- Challenge problems for problem solving.
- Inquiry-based Learning
- Extend the topic and apply to their own outside interests
- Online resources
- Student lead activities developing other theorems/corollaries with informal proofs written
- Use coordinate geometry to develop additional theorems/corollaries and prove newly discovered theorems algebraically

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