Plainfield Public Schools
Mathematics
Unit Planning Organizer

Grade/Course	Geometry
Unit of Study	Unit 3 Trigonometry
Pacing	7 instructional weeks

Standards for Mathematical Practices
MP1. Make sense of problems and persevere in solving them.
MP2. Reason abstractly and quantitatively.
MP3. Construct viable arguments and critique the reasoning of others.
MP4. Model with mathematics.
MP5. Use appropriate tools strategically.
MP6. Attend to precision.
MP7. Look for and make use of structure.
MP8. Look for and express regularity in repeated reasoning.

Hyperlinks are noted underlined in italics.

UNIT STANDARDS
G.GPE. A.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.GPE. B.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).** **G.GPE. B.5 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).** **G.GPE.6 Find the point on a directed line segment between two given points that partitions the segment in a given ratio.** **G.GPE. B.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.** **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.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. ★**

Hyperlinks are noted underlined in italics.

G.C.A.1 Prove that all circles are similar.
G.C.A.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.A.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
G.C.B.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.

Hyperlinks are noted underlined in italics.

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
FOCUS STANDARD **G.GPE. B.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).**		
Use Prove	Geometric theorem	2

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
FOCUS STANDARD **G.GPE. B.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).**		
Prove	slope	4

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
FOCUS STANDARD **G.GPE.6 Find the point on a directed line segment between two given points that partitions the segment in a given ratio.**		
Find	ratio	1

Hyperlinks are noted underlined in italics.

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
FOCUS STANDARD **G.GPE.B.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula**		
Use	polygons	2

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
FOCUS STANDARD **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*.**		
Prove	Triangle	4

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
FOCUS STANDARD **G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures**		
use Solve Prove	geometric figures	2 3 4

Hyperlinks are noted underlined in italics.

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
FOCUS STANDARD **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.**		
Understand	Right triangle Trigonometric ratios	1

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
FOCUS STANDARD **G.SRT.7 Explain and use the relationship between the sine and cosine of complementary angles.**		
Explain use	sine cosine	2

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
FOCUS STANDARD **G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.★**		
Use	trigonometric ratios Pythagorean Theorem	2

Hyperlinks are noted underlined in italics.

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
SUPPORTING STANDARD **G.GPE.A.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**		
Derive	Equation	4

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
ADDITIONAL STANDARD **G.C.A.1 Prove that all circles are similar.**		
Prove	Similarity	4

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
ADDITIONAL STANDARD **G.C.A.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.**		
Identify describe	Relationship angle, radii, chord	1 1

Hyperlinks are noted underlined in italics.

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
ADDITIONAL STANDARD **G.C.A.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.**		
Construct Prove	Inscribe Circumscribe circle	3 4

"Unwrapped" Skills (students need to be able to do)	"Unwrapped" Concepts (students need to know)	DOK Levels
ADDITIONAL STANDARD **G.C.B.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**		
derive	Similarity	4

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II. New Jersey Student Learning Standards and Mathematical Practices ...Explanation and Examples

Geometry: Expressing Geometric Properties with Equations (G-GPE) **Use coordinates to prove simple geometric theorems algebraically.**		
Standards *Students are expected to:*	*Mathematical Practices*	*Explanations and Examples*
G-GPE.A.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.	*HS.MP.7.* Look for and make use of structure. HS.MP.8. Look for and express regularity in repeated reasoning.	Students may use geometric simulation software to explore the connection between circles and the Pythagorean Theorem. **Examples:** • Write an equation for a circle with a radius of 2 units and center at (1, 3). • Write an equation for a circle given that the endpoints of the diameter are (-2, 7) and (4, -8). • Find the center and radius of the circle $4x^2 + 4y^2 - 4x + 2y - 1 = 0$.
G-GPE.B.4. Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*	*HS.MP.3.* Construct viable arguments and critique the reasoning of others. .	Students may use geometric simulation software to model figures and prove simple geometric theorems. **Example:** • Use slope and distance formula to verify the polygon formed by connecting the points (-3, -2), (5, 3), (9, 9), (1, 4) is a parallelogram.

Hyperlinks are noted underlined in italics.

G-GPE.B.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).	*HS.MP.3.* Construct viable arguments and critique the reasoning of others. *HS.MP.8.* Look for and express regularity in repeated reasoning.	Lines can be horizontal, vertical, or neither. Students may use a variety of different methods to construct a parallel or perpendicular line to a given line and calculate the slopes to compare the relationships.
G-GPE.B.6. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	*HS.MP.2.* Reason abstractly and quantitatively. *HS.MP.8*. Look for and express regularity in repeated reasoning.	Students may use geometric simulation software to model figures or line segments. **Example:** • Given A (3, 2) and B (6, 11), ○ Find the point that divides the line segment AB two-thirds of the way from A to B. The point two-thirds of the way from A to B has *x*-coordinate two-thirds of the way from 3 to 6 and *y* coordinate two-thirds of the way from 2 to 11. So, (5, 8) is the point that is two-thirds from point A to point B. ○ Find the midpoint of line segment AB.
G-GPE.B.7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	*HS.MP.2. Reason abstractly and quantitatively.* *HS.MP.5. Use appropriate tools strategically.* *HS.MP.6. Attend to precision.*	Students may use geometric simulation software to model figures.

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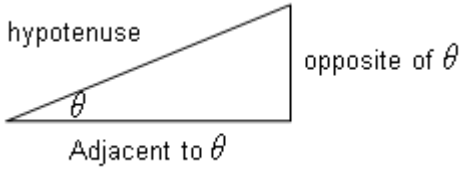
Geometry: Similarity, Right Triangles, and Trigonometry (G-SRT) **Understand similarity in terms of similarity transformations.**		
Standards *Students are expected to:*	*Mathematical Practices*	*Explanations and Examples*
G-SRT.C.6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	*HS.MP.6.* Attend to precision. *HS.MP.8.* Look for and express regularity in repeated reasoning.	Students may use applets to explore the range of values of the trigonometric ratios as θ ranges from 0 to 90 degrees.  $\text{sine of } \vartheta = \sin \vartheta = \frac{\text{opposite}}{\text{hypotenuse}}$ $\text{cosecant of } \vartheta = \text{cask } \vartheta = \frac{\text{hypotenuse}}{\text{opposite}}$ $\text{cosine of } \vartheta = \cos \vartheta = \frac{\text{adjacent}}{\text{hypotenuse}}$ $\text{secant of } \vartheta = \sec \vartheta = \frac{\text{hypotenuse}}{\text{adjacent}}$ $\text{tangent of } \vartheta = \tan \vartheta = \frac{\text{opposite}}{\text{adjacent}}$ $\text{cotangent of } \vartheta = \cot \vartheta = \frac{\text{adjacent}}{\text{opposite}}$
G-SRT.C.7. Explain and use the relationship between the sine and cosine of complementary angles.	*HS.MP.3.* Construct viable arguments and critique the reasoning of others.	Geometric simulation software, applets, and graphing calculators can be used to explore the relationship between sine and cosine.

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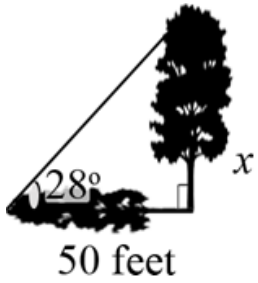
G-SRT.C.8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	*HS.MP.1.* Make sense of problems and persevere in solving them. *HS.MP.4*. Model with mathematics. *HS.MP.5.* Use appropriate tools strategically.	Students may use graphing calculators or programs, tables, spreadsheets, or computer algebra systems to solve right triangle problems. **Example:** • Find the height of a tree to the nearest tenth if the angle of elevation of the sun is 28° and the shadow of the tree is 50 ft. 

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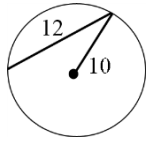
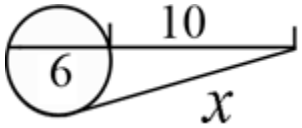
Geometry: Circles (G-C) **Understand and apply theorems about circles.**		
Standards *Students are expected to:*	*Mathematical Practices*	*Explanations and Examples*
G-C.A.1. Prove that all circles are similar.	*HS.MP.3.* Construct viable arguments and critique the reasoning of others. *HS.MP.5.* Use appropriate tools strategically.	Students may use geometric simulation software to model transformations and demonstrate a sequence of transformations to show congruence or similarity of figures.
G-C.A.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.*	*HS.MP.3.* Construct viable arguments and critique the reasoning of others. *HS.MP.5.* Use appropriate tools strategically.	**Examples:** • Given the circle below with radius of 10 and chord length of 12, find the distance from the chord to the center of the circle.  • Find the unknown length in the picture below. 
G-C.A.3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	*HS.MP.3.* Construct viable arguments and critique the reasoning of others. *HS.MP.5*. Use appropriate tools strategically.	Students may use geometric simulation software to make geometric constructions.

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Standards *Students are expected to:*	*Mathematical Practices*	*Explanations and Examples*
G-C.A.4. Construct a tangent line from a point outside a given circle to the circle.	*HS.MP.3.* Construct viable arguments and critique the reasoning of others. *HS.MP.5.* Use appropriate tools strategically.	Students may use geometric simulation software to make geometric constructions.

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III. Essential Questions …… Corresponding Big Ideas

Essential Questions	Corresponding Big Ideas
How can proportions be used to solve for missing parts of similar triangles	Similar geometric figures have angles that are congruent and segments that are proportional in length.
How can a coordinate grid be used to model and describe trigonometric ratios?	A diagram is a sophisticated mathematical device for thinking and communicating. A diagram is a built geometric artifact, with both a history- a narrative of successive construction- and a purpose. A diagram is not a picture. It needs to be interpreted: learning how to read a diagram can be like learning a new language.
How are the Pythagorean Theorem and special right triangle rules used to find the lengths of the sides of right triangles?	Empirical verification is an important part of the process of proving, but it can never, by itself, constitute a proof. Geometry uses a wide variety of kinds of proofs. The processes of proving include a variety of activities, such as developing conjectures, considering the general case, exploring with examples, looking for structural similarities across cases, and searching for counterexamples. Making sense of others' arguments and determining their validity are proof-related activities. A proof can have many different valid representational forms, including narrative, picture, diagram, two-column presentation, or algebraic form. Underlying any geometric theorem is an invariance- something that does not change while something else does. Similar geometric figures can be created by transformations. All transformations create similar geometric figures
How do trigonometric ratios relate to similar right triangles?	Geometric objects can have different definitions. Some are better than others, and their worth depends on both context and values.

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How do you select the correct trigonometric function ?	Definitions in geometry are of two distinct type: definition by genesis (how you can create the object) and definition by property (how you can characterize the object in terms of certain features) *Source :* *Ellis, A. B., Bieda, K., & Knuth, E. (2012). Developing Essential Understanding of Proof and Proving. Reston, VA: The National Council of Teachers of Mathematics, Inc.* *Pimm, D., Sinclair, N., & Skelin, M. (2012). Developing Essential Understanding of Geometry. Reston, VA: The National Council of Teachers of Mathematics, Inc.*

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IV. Student Learning Goals

Student Learning Goals	Concepts /Skills	***Instructional Clarification for PARCC Mathematical Test Specifications***	Mathematical Practices
Use coordinates to prove simple geometric theorems algebraically. G.GPE.4	**Concept(s):** No new concept(s) introduced **Students are able to:** • Use coordinates to prove geometric theorems including: – prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle (or other quadrilateral); – and prove or disprove that a given point lies on a circle of a given center and radius or point on the circle.	• Use a combination of algebraic and geometric reasoning to construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about geometric figures. • For the Geometry course, we are reaching back to Algebra 1 to help students synthesize across the two subjects.	MP.1 MP.3, MP.6 MP.5
Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems. G.GPE.5	**Concept(s**): No new concept(s) introduced **Students are able to:** • prove the slope criteria for parallel lines (parallel lines have equivalent slopes). • prove the slope criteria for perpendicular lines (the product of the slopes of perpendicular lines equals -1). • solve problems using the slope criteria for parallel and perpendicular lines.		MP.1 MP.3 MP.8
Find the point on a directed line segment between two given points that partitions the segment in a given ratio and use coordinates to compute	**Concept(s):** No new concept(s) introduced **Students are able to:** • locate the point on a directed line segment that creates two segments of a given ratio. • find perimeters of polygons using	• For example, find a missing angle or side in a triangle.	MP.1 MP.2 MP.5 MP.6

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perimeters of polygons and areas of triangles and rectangles. G.GPE.6, G.GPE.7	coordinates, the Pythagorean theorem and the distance formula. • find areas of triangle and rectangles using coordinates.		
Derive the equation of a circle of given the center and radius using the Pythagorean Theorem. Given an equation, complete the square to find the center and radius of the circle. GPE 1	**Concept(s**): No new concept(s) introduced **Students are able to:** • given the center and radius, derive the equation of a circle (using the Pythagorean Theorem). • given an equation of a circle in any form, use the method of completing the square to determine the center and radius of the circle.	• The "derive" part of standard G-GPE.1 is not assessed here	MP.6 MP.7
Show and explain that definitions for trigonometric ratios derive from similarity of right triangles. G.SRT.C.6	**Concept(s):** • Side ratios in right triangles are properties of the angles in the triangle. **Students are able to:** • show and explain that definitions for trigonometric ratios derive from similarity of right triangles.	• Trigonometric ratios include sine, cosine, and tangent only.	MP.7
Explain and use the relationship between the sine and cosine of complementary angles; use trigonometric ratios and the Pythagorean Theorem to compute all angle measures and side lengths of triangles in applied problems. G.SRT.C.7, G.SRT.C.8	**Concept(s):** • Relationship between sine and cosine of complementary angles **Students are able to:** • determine and compare sine and cosine ratios of complementary angles in a right triangle. • solve right triangles (determine all angle measures and all side lengths) using trigonometric ratios and the Pythagorean Theorem.	• • Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. • The task may have a real world or mathematical context. For	MP.1 MP.2 MP.3 MP4 MP.5 MP.6

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		rational solutions, exact values are required. For irrational solutions, exact or decimal approximations may be required. Simplifying or rewriting radicals is not required; however, students will not be penalized if they simplify the radicals correctly. • Tasks may, or may not, require the student to autonomously make an assumption or simplification in order to apply techniques of right triangles. For example, a configuration of three buildings might form a triangle that is nearly, but not quite, a right triangle; then, a good approximate result can be obtained if the student autonomously approximates the triangle as a right triangle.	
Prove that all circles are similar G.C.A.1	**Concept(s):** • Similarity of all circles **Students are able to:** • construct a formal proof of the similarity of all circles.		MP.6 MP.7
Identify and describe relationships among inscribed angles, radii, and chords; use these relationships to solve problems. G.C.A.2	**Concept(s):** No new concept(s) introduced **Students are able to:** • use the relationship between inscribed angles, radii and chords to solve problems. • use the relationship between central, inscribed, and circumscribed angles to solve problems.	• 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. • This does not include angles and	MP.3 MP5 MP.6

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	• identify inscribed angles on a diameter as right angles. • identify the radius of a circle as perpendicular to the tangent where the radius intersects the circle.	segment relationships with tangents and secants. Tasks will not assess angle relationships formed outside the circle using secants and tangents. Tasks may involve the degree measure of an arc.	
Find arc lengths and areas of sectors of circles; use similarity to show that the length of the arc intercepted by an angle is proportional to the radius. Derive the formula for the area of a sector. G.C.B.5	**Concept(s):** • A proportional relationship exists between the length of an arc that is intercepted by an angle and the radius of the circle. **Students are able to:** • use similarity to derive the fact that the length of the arc intercepted by an angle is proportional to the radius. • define radian measure of an angle as the constant of proportionality when the length of the arc intercepted by an angle is proportional to the radius. • derive the formula for the area of a sector. • compute arc lengths and areas of sectors of circles.	• Tasks involve computing arc lengths or areas of sectors given the radius and the angle subtended; or vice versa.	MP.2 MP.3
Prove the properties of angles for a quadrilateral inscribed in a circle and construct inscribed and circumscribed circles of a triangle using geometric tools and geometric software. G.C.A.3	**Concept(s):** No new concept(s) introduced **Students are able to:** • construct the inscribed circle of a triangle. • construct the circumscribed circle of a triangle. • prove properties of the angles of a quadrilateral that is inscribed in a circle.		MP.3 MP.5

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V. Unit Vocabulary

Unit Vocabulary	
Geometric mean	Angle of elevation
Trigonometry	Laws of Cosine
Trigonometric Ratios	Laws of Sines
Sine	Area of Triangle
Cosine	Pythagorean Theorem
Tangent	Perpendicular Lines
Congruent	Right Angles
Angel of depression	Similarity
Angle-Side-Angle (ASA)	Inverse cosine
Side-Angle-Side (ASA)	Inverse sine
Side-Side-Side (SSS)	Inverse tangent

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VI. Differentiated/ Modifications

Research Based Effective Teaching Strategies	Modifications (how do I differentiate instruction?)	Special Education	Strategies for English Language Learners
Task /Activities that solidifies mathematical concepts Use questioning techniques to facilitate learning Reinforcing Effort, Providing Recognition Practice, reinforce and connect to other ideas within mathematics Promotes linguistic and nonlinguistic representations Cooperative Learning Setting Objectives, Providing Feedback Varied opportunities for students to communicate mathematically	**Modifications** Before or after school tutorial program Leveled rubrics Increased intervention Small groups Change in pace Calculators Extended time Alternative assessments Tiered activities/products Color coded notes Use of movements Use any form of technology **Extension:** Student research Pythagoras and the impact the Pythagorean Theorem has on society	Change in pace Calculators Alternative assessments Accommodations as per IEP Modifications as per IEP Use graphic organizer to clarify mathematical functions for students with processing and organizing difficulties'. Constant review of math concepts to strengthen understanding of prior concepts for difficulties recalling facts. Use self-regulations strategies for student to monitor and assess their thinking and performance for difficultly attending to task Cooperative learning (small group, teaming, peer assisted tutoring) to foster communication and strengthen confidence.	*Whiteboards* *Small Group / Triads* *Word Walls* *Partially Completed Solution* *Gestures* *Native Language Supports* *Pictures / Photos* *Partner Work* *Work Banks* *Teacher Modeling* *Math Journals* . ***Students create posters of terms. Examples of terms and formula will be use to assist students.

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Use technological and /or physical tools **21st Century Learning Skills:** Teamwork and Collaboration Initiative and Leadership Curiosity and Imagination Innovation and Creativity Critical thinking and Problem Solving Flexibility and Adaptability Effective Oral and Written Communication Accessing and Analyzing Information		Use technology and/or hands on devices to: clarify abstract concepts and process for: 1. Difficulty interpreting pictures and diagram. 2.difficulties with oral communications 3. Difficulty correctly identifying symbols of numeral 4.Difficulty maintaining attentions Simplify and reduces strategies / Goal structure to enhance motivation, foster independence and self-direction for: 1.Difficulty attending to task 2. Difficulty with following a sequence of steps to solution. 3.Difficulty processing and organizing Scaffolding math idea/concepts by guided practice and questioning strategies' to clarify and enhance understanding of math big ideas for: 1.Difficulty with process and organization 2.Difficulty with oral and written	

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		communication Teacher models strategies' and think out aloud strategies to specify step by step process for 1.Difficulties processing and organization 2. Difficulty attending to tasks. Use bold numbers and/or words to draw students' attention to important information. ***Students create posters of terms. Examples of terms and formula will be use to assist students.	

Hyperlinks are noted underlined in italics.

VII . Instructional Resources and Materials

<table>
<tr><th colspan="3">Instructional Resources and Materials</th></tr>
<tr><th>Formative Assessment</th><th colspan="2">Print</th></tr>
<tr><td rowspan="3">Short constructed responses
Extended responses
Checks for Understanding
Exit tickets
Teacher observation
Projects
Timed Practice Test – Multiple Choice & Open-Ended Questions
<u>Performance Tasks:</u>

<u>G.SRT.C.6 Defining Trigonometric Ratio</u>

<u>G.SRT.C.7 Sine and Cosine of Complimentary Angles</u>

<u>Additional Performance Tasks for Class Use:</u>

<u>G.GPE.B.4,5 A Midpoint Miracle</u>
<u>G.GPE.B.5 Slope Criterion for Perpendicular</u>
<u>G.GPE.B.7 Triangle Perimeters</u>
<u>G.SRT.C.8 Constructing Special Angles</u>

<u>G.GPE.A.1 Explaining the equation</u></td><td colspan="2">Glencoe McGraw-Hill (2014): Geometry
Chapter 8 Right Angles and Trigonometry
Chapter 10 Circles</td></tr>
<tr><td colspan="2">Additional Print and Digital Resources</td></tr>
<tr><td>Resources for teachers
<u>Mathematics Assessment Projects</u>
<u>Illustrative Mathematics</u>
<u>Inside Mathmatics.org</u>
<u>Achieve the Core</u>
<u>National Council of Teachers of Mathematics</u>
<u>Asia Pacific Economic Cooperation : :Lesson Study Videos</u>
<u>Genderchip.org</u>
<u>Interactive Geometry</u>
<u>Mathematical Association of America</u>
<u>learner.org</u>
<u>Math Forum : Teacher Place</u>
<u>Shmoop /common core math</u></td><td>Resources for Students
<u>Khan Academy</u>
<u>Math world : Wolfram.com</u>
<u>Webmath.com</u>
<u>sosmath.com</u>
<u>Mathplanet.com</u>
<u>Interactive Mathematics.com</u>
<u>Mathexpression.com.algebra</u>
<u>SparksNotes :Geometry Proofs</u>
<u>Geometer’s Sketchpad</u></td></tr>
</table>

Hyperlinks are noted underlined in italics.

for a circle *G.C.A.1 Similar circles* *G.C.A.2 Right triangles inscribed in circles IG.C.A.3 Circumscribed Triangles* **Project (Optional)** *TEACH 21 PROBLEM BASED LEARNING PROJECT "Project Home"*		

Hyperlinks are noted underlined in italics.