

TOWNSHIP OF UNION PUBLIC SCHOOLS



Geometry/Honors Geometry

Adopted: December 19, 2023

Unit Title: Geometry – Geometric Constructions and Congruence – Unit 1 – Module A

Grade level:10

Timeframe: 18 days

Guiding Questions

1. How can you describe the attributes of a segment of angle?
 2. What are the building blocks of Geometry?
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Standards

Standards (Taught and Assessed):

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

Key: ■ Major Cluster □ Supporting Cluster ⊙ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9. Model integrity, ethical leadership and effective management.

CRP11. Use technology to enhance productivity.

Career Awareness, Exploration, and Preparation Content Area: 21st Century Life and Careers Strand

9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

9.2.8.B.4 Evaluate how traditional and nontraditional careers have evolved regionally, nationally, and globally.

9.2.8.B.5 Analyze labor market trends using state and federal labor market information and other resources available online.

9.2.8.B.7 Evaluate the impact of online activities and social media on employer decisions.

Career & Technical Education Content Area: 21st Century Life and Careers Standards

9.3.ST.2 Use technology to acquire, manipulate, analyze and report data.

9.3.ST-SM.4 Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.

9.3.ST-SM.3 Analyze the impact that science and mathematics has on society.

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies



Self-Awareness

- Recognize one's feelings and thoughts
- Recognize the impact of one's feelings and thoughts on one's own behavior
- Recognize one's personal traits, strengths, and limitations
- Recognize the importance of self-confidence in handling daily tasks and challenges



Self-Management

- Understand and practice strategies for managing one's own emotions, thoughts, and behaviors
- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to overcome barriers through alternative methods to achieve one's goals



Social Awareness

- Recognize and identify the thoughts, feelings, and perspectives of others
- Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds
- Demonstrate an understanding of the need for mutual respect when viewpoints differ
- Demonstrate an awareness of the expectations for social interactions in a variety of settings



Responsible Decision-Making

- Develop, implement, and model effective problem-solving and critical thinking skills
- Identify the consequences associated with one's actions in order to make constructive choices
- Evaluate personal, ethical, safety, and civic impact of decisions



Relationship Skills

- Establish and maintain healthy relationships
- Utilize positive communication and social skills to interact effectively with others
- Identify ways to resist inappropriate social pressure
- Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways
- Identify who, when, where, or how to seek help for oneself or others when needed


Instructional Plan

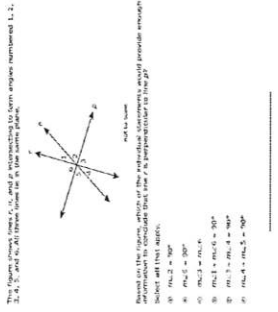
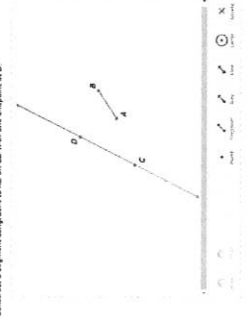
Pre-Assessment and Reflection :

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Teacher-made exam on identifying and naming lines, segments, rays, points, and planes.	<u>ELL/Gifted/SPED/ATRisk/504 Modifications</u>

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p>We are learning to/that</p> <p>G.CO.A.1 - WALT define line segment based on some or all of the undefined notions of point, line, distance along a line, and distance around a circular arc (2 days)</p>	<ul style="list-style-type: none"> Create a model/3D model or what your understanding of a point and a line is. 	<p>Teachers will give students a paper exit card in which they will have to identify points, lines, rays and segments based on a picture. Students will also have to provide one or more characteristics of each geometric term.</p> <p><u>Exit Card Sample</u></p>	<p>Enmath - Unit 1 - Lesson 1 - Points Lines and Planes</p> <p>Partner Activity: One student is provided a picture containing multiple geometric terms. Using vocabulary he/she must explain the picture to their partner and their partner must draw it.</p>	<p>ELL/Gifted/Sped/504/At Risk</p>

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p>G.CO.A.1 - WALT define angle based on some or all of the undefined notions of point, line, distance along a line, and distance around a circular arc (1 day)</p>	<ul style="list-style-type: none"> Three students stretch two strings from a common vertex point in different directions to understand the sides of the angle and space in-between as the angle. 	<ul style="list-style-type: none"> Students create a journal reflection on the description of an angle supported by a picture representation. Teacher will circulate to monitor student understanding and performance. 	<ul style="list-style-type: none"> <i>Emath - Unit 1 - Lesson 2 - Lines Rays & Angles</i> <i>IXL C.1 on angle vocabulary</i> 	<ul style="list-style-type: none"> <u>ELL/Gifted/Sped/504/At Risk</u>
<p>G.CO.A.1 - WALT define parallel lines based on some or all of the undefined notions of point, line, distance along a line, and distance around a circular arc. (1 day)</p>	<ul style="list-style-type: none"> Students walk side-by-side without intersecting each other. 	<ul style="list-style-type: none"> Students look at architecture designs and maps of Union/NYC to determine if roads, beams, or walls are built parallel based on characteristics of the angles. <p>NJSLA Question</p>  <p><small>The diagram represents a portion of a road grid. Which streets and lines are parallel to the west. Oak Avenue runs east/west to the north, 1st or 2nd Ave run north/south.</small></p> <p>Which intersections meet the criteria, based only on the given information? Select all that apply.</p> <ul style="list-style-type: none"> 1st Street and Oak Avenue intersect at right angles. Main Street and Park Street are parallel. If any of the map is shown, Oak Street and Oak Avenue will be parallel. Park Street intersects both 1st Street and 2nd Street. Oak Avenue and Maple Street are perpendicular. 	<ul style="list-style-type: none"> <i>IXL Mini Lesson on Parallel and perpendicular lines</i> 	<ul style="list-style-type: none"> <u>ELL/Gifted/Sped/504/At Risk</u>

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p>G.CO.A.1 - WALT define perpendicular lines based on some or all of the undefined notions of point, line, distance along a line, and distance around a circular arc</p>	<ul style="list-style-type: none"> Students identify cross-sections of wall and ceiling of buildings with square or rectangular designs. 	<p>NJSLA Question</p>  <p>The figure shows lines l and k intersecting at point P. Angles are numbered 1, 2, 3, and 4. Select all that apply.</p> <p>Based on the figure, which of the following statements about possible angles is true? Select all that apply.</p> <p>and to have</p> <p>A) $m\angle 2 = 90^\circ$ B) $m\angle 3 = m\angle 4$ C) $m\angle 1 = m\angle 4$ D) $m\angle 4 = m\angle 3 = 90^\circ$</p>	<ul style="list-style-type: none"> IXL Mini Lesson on Parallel and perpendicular lines 	<p>ELL/Gifted/Sped/504/At Risk</p>
<p>G.CO.D.12 - WALT make formal geometric constructions with a variety of tools and methods (i.e. paper folding)</p> <p>G.CO.D.12 - WALT use a variety of geometric tools and methods to copy a segment</p> <p>G.CO.D.12 - WALT use a variety of geometric tools and methods to copy an angle</p> <p>G.CO.D.12 - WALT use a variety of geometric tools and methods to bisect a</p>	<ul style="list-style-type: none"> Students use compass and straight-edge to perform all constructions based on geometric methods. Students may check work using ruler or protractor. 	 <p>Construct a segment congruent to \overline{AB} on \overleftrightarrow{CD} with one endpoint at D</p> <p>Constructions Exit Card</p>	<ul style="list-style-type: none"> Teacher paced guided notes where students write down the annotated steps for each construction and then perform the construction using a compass and straightedge mimicking the teacher's construction on the SmartBoard. You Tube Links to Step by Step Construction Notes Virtual Construction Creator You Tube - 6 Basic Geometric Constructions 	<p>ELL/Gifted/Sped/504/At Risk</p>

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p>segment</p> <p>G.CO.D.12 - WALT use a variety of geometric tools and methods to construct perpendicular lines, including perpendicular bisectors</p> <p>G.CO.D.12 - WALT use a variety of geometric tools and methods to construct a line parallel to a given line through a point not on the line</p>				
<p>G.CO.D.13 - WALT construct an equilateral triangle inscribed in a circle</p> <p>G.CO.D.13 - WALT construct a regular hexagon inscribed in a circle</p> <p>G.CO.D.13 - WALT construct a square inscribed in a circle</p>	<ul style="list-style-type: none"> Students use compass and straight-edge to create all geometric constructions. Students may check work using a protractor or ruler. 	<ul style="list-style-type: none"> IXL assignment on <u>construct an equilateral triangle inscribed in a circle</u> IXL assignment on <u>Construct a regular hexagon inscribed in a circle</u> IXL assignment on <u>Construct a square inscribed in a circle</u> Group presentation on assigned construction model 	<ul style="list-style-type: none"> <u>You Tube Video on constructing and Equilateral Triangle in a Circle</u> <u>You Tube Video Regular Hexagon Inscribed in a Circle</u> <u>You Tube Video on Constructing a Square inscribed in a circle</u> <u>Step by step virtual proofs. Virtual Construction Creator</u> 	<p><u>ELL/Gifted/Sped/504/At Risk</u></p>

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that		using real-world architecture.		

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Points/Lines/And Planes/Measuring Segments/Measuring Angles/Exploring angle pairs	Calculator use <ul style="list-style-type: none"> • Read/clarify directions • Modify questions • Extra time • Specific other accommodations/modifications per a student's IEP or 504 plan. • Challenge questions

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Basic Constructions/Midpoint and Distance in the Coordinate Plane/Classifying polygons.	Calculator use <ul style="list-style-type: none"> • Read/clarify directions • Modify questions • Extra time • Specific other accommodations/modifications per a student's IEP or 504 plan. • Challenge questions

Summative Assessments (add rows as needed)

<p>Summative Assessment</p>	<p>Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections</p>
<p>Points/Lines/And Planes/Measuring Segments/Measuring Angles/Exploring angle pairs/Basic Constructions/Midpoint and Distance in the Coordinate Plane/Classifying polygons.</p>	<p>Calculator use</p> <ul style="list-style-type: none"> • Read/clarify directions • Modify questions • Extra time • Specific other accommodations/modifications per a student's IEP or 504 plan. • Challenge questions

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Math/Geography - Students can use/name points to find capitals and cities. Students can use line segments and the scale of the map to find the actual distance between towns in Union, nationwide, and globally.	<u>ELL/Gifted/SPED/ATRISK/504 Modifications</u>

Unit Title: Geometry – Geometric Constructions and Congruence – Unit 1 – Module B

Grade level: 10

Timeframe: 20 days

Guiding Questions

1. How can you change a figure's position without changing its size and shape?
2. How can you change a figure's size without changing its shape?
3. How can you represent transformation in the coordinate plane?
4. How do you recognize symmetry in a figure?

Standards

Standards (Taught and Assessed):

- G.CO.A.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.A.3** Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.
- G.CO.A.4** Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
- G.CO.A.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.B.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.

Key: Major Cluster

Supporting Cluster

Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9. Model integrity, ethical leadership and effective management.

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Career Awareness, Exploration, and Preparation Content Area: 21st Century Life and Careers Strand

9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

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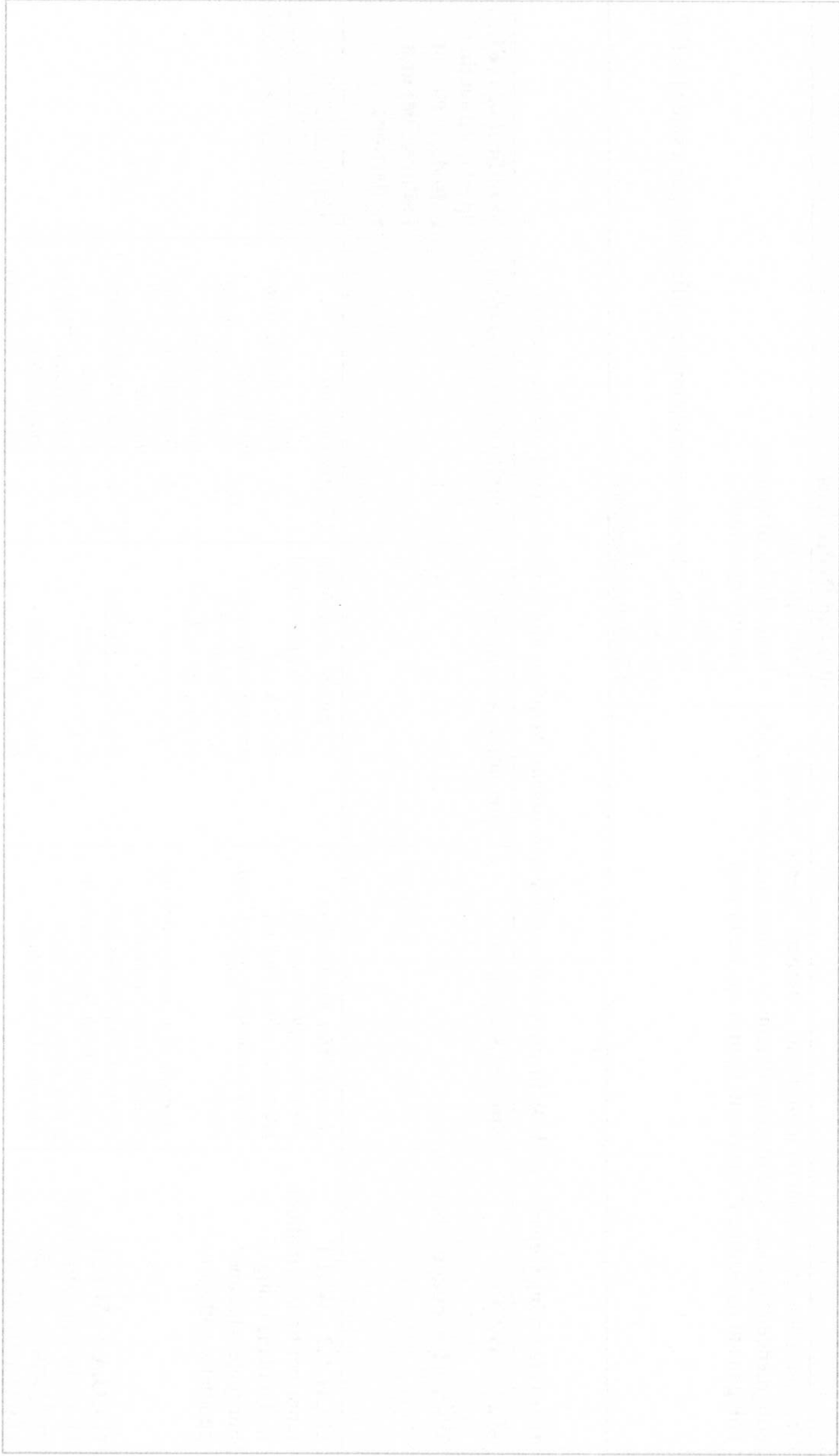
Career & Technical Education Content Area: 21st Century Life and Careers Standards

9.3.ST.2 Use technology to acquire, manipulate, analyze and report data.

9.3.ST-SM.4 Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.

9.3.ST-SM.3 Analyze the impact that science and mathematics has on society.

Social-Emotional Learning Competencies



Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Teacher-made assessment on identifying congruent figures, writing a congruence statement, and drawing diagonals within quadrilaterals and polygons to determine if congruent figures can be formed.	<ul style="list-style-type: none"> • Calculator use • Read/clarify directions • Modify questions • Extra time • Specific other accommodations/modifications per a student's IEP or 504 plan • Challenge questions

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p>G.CO.A.2 - WALT represent transformations in the plane using transparencies and geometry software</p> <p>G.CO.A.2 - WALT Describe transformations as functions that take points in the plane as inputs and give other points as outputs</p>	<p>Access Prior Knowledge: Students explain real life scenarios where they see objects translate, reflect, and rotate.</p> <p>Students can create words on slips of a paper and then change the orientation or order of each letter to create a new work. Have them describe the movement.</p>	<p>1. Circulate as students use tracing paper and the rules of transformations to see if students are coming up with the correct image.</p> <p><u>Discovery Tracing Paper Activity</u></p> <p>2. Station Activity - Students focus on a specific transformation in each station.</p>	<p><i>IXL Assignments</i></p> <ol style="list-style-type: none"> 1. <i>Translations: Graph the image</i> 2. <i>Translations: Find the coordinates</i> 3. <i>Translations: Write the rule</i> 4. <i>Reflections: Graph the image</i> 5. <i>Reflections: Find the coordinates</i> 6. <i>Rotations: Graph the image</i> 	<p><u>Google Doc with ELL/Sped/504/Gifted/At Risk Student Modifications</u></p>

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p>We are learning to/that</p>		<p>Students use the rule first and confirm their answer is correct with tracing paper.</p>	<p>7. Rotations: Find the coordinates</p>	
<p>G.CO.A.2 - WALT compare transformations that preserve distance and angle to those that do not</p>		<p>1. <u>Transformation Review Sheet</u></p>	<p><u>IXL Assignments:</u></p> <ol style="list-style-type: none"> 1. <i>Rotate polygons about a point</i> 2. <i>Rotations: Graph the image.</i> <p><u>Rotation Packet</u> - Packet Include, Note Taking Guide, Practice Problems, and Discovering the Rule Activities</p> <p><u>Reflections Packet</u> - Packet Include, Note Taking Guide, Practice Problems, and Discovering the Rule Activities</p> <p><u>Translations Packet</u> - Packet Include, Note Taking Guide, Practice Problems, and Discovering the Rule Activities</p>	<p>ELL/Gifted/Sped/504/At Risk</p>
<p>G.CO.A.3 - WALT describe rotations that carry a given rectangle, parallelogram, trapezoid, or regular polygon onto itself.</p>	<p>1. Visualize a blue disk with shapes on it and a red disk with holes in the shape of those shapes. Place the blue disk on top of the red disk and rotate the blue disk. Which shapes will fit in the holes of the red disk?</p> <p>2. Refer to prior definitions of rotations and change in direction.</p>			
<p>G.CO.A.4 - WALT develop the definition of rotations in terms of angles, circles, perpendicular lines, parallel lines, and/or line segments.</p>				
<p>G.CO.A.5 - WALT given a figure and a rotation, draw the transformed figure using graph paper, tracing paper, or geometry software.</p>				

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p>G.CO.A.5 - WALT describe reflections that carry a given rectangle, parallelogram, trapezoid, or regular polygon onto itself</p> <p>G.CO.A.5 - WALT develop the definition of translations and reflections in terms of angles, circles, perpendicular lines, parallel lines, and/or line segments</p> <p>G.CO.A.5 - WALT given a figure and a reflection, draw the transformed figure using graph paper, tracing paper, or geometry software</p>	<ol style="list-style-type: none"> 1. Visualize a shape with one side traced in yellow. Imagine that shape being flipped over its yellow side. 2. Refer to prior knowledge of reflections 3. Recall real life situations where students can see examples of reflections. 	<ol style="list-style-type: none"> 2. <u>Transformation Rules Exit Card</u> 	<p>Collaborative Station Activity:</p> <p><u>Transformation Stations - Stations Include All transformations.</u></p>	<p><u>ELL/Gifted/Sped/504/At Risk</u></p>
<p>G.CO.A.5 - WALT specify a sequence of transformations that will carry a given figure onto another</p>	<ol style="list-style-type: none"> 1. Students can take regular words and rearrange the letters to form new words. Students can perform this as many times as possible and describe their process. 	<ol style="list-style-type: none"> 1. Flash a series of transformations on the board, provide students with individual white boards and have them decide if the transformation carries onto itself. 	<p>IXL:</p> <ol style="list-style-type: none"> 1. Translations: Graph the image 2. Sequences of congruence transformations: Graph the image 3. Sequence of congruence 	<p><u>ELL/Gifted/Sped/504/At Risk</u></p>

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
			<p><i>transformations: Find the rules</i></p> <p>4. <i>Transformations that carry a polygon onto itself.</i></p>	
<p>G.CO.B.6 - WALT use geometric descriptions of rigid motions to transform figures.</p> <p>G.CO.B.6 - WALT predict the effect of a given rigid motion on a given figure using geometric descriptions of rigid motions.</p> <p>G.CO.B.6 - WALT use the definition of congruence in terms of rigid motions to decide if two given figures are congruent</p>	<p>1. <i>Students can write part of an alphabet letter and use transformations to find the other half of the letter</i></p> <p>2. <i>Students can look at a stellar rotation about a star. Students will identify that no matter the rotation or re-location of the object, the object will remain the same in congruence or similarity regardless of position.</i></p>	<p><u>NJSLA Questions Using Rigid Motions</u></p>	<p><u>IXL:</u></p> <p>1. <i>Classify congruence transformations</i></p> <p>2. <i>Congruence transformations: Mixed review</i></p>	<p><u>ELL/Gifted/Sped/504/At Risk</u></p>

Benchmark Assessment 1

<p>Benchmark Assessment</p>	<p>Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections</p>
<p><i>Translations/Reflections/Rotations/Symmetry</i></p>	<ul style="list-style-type: none"> • <i>Calculator use</i> • <i>Read/clarify directions</i> • <i>Modify questions</i> • <i>Extra time</i> • <i>Specific other accommodations/modifications per a student's IEP or 504 plan</i> • <i>Challenge questions</i>

Benchmark Assessment 2

<p>Benchmark Assessment</p>	<p>Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections</p>
<p><i>Dilations/Composition of reflections/Tessellations</i></p>	<ul style="list-style-type: none"> • <i>Calculator use</i> • <i>Read/clarify directions</i> • <i>Modify questions</i> • <i>Extra time</i> • <i>Specific other accommodations/modifications per a student's IEP or 504 plan</i> • <i>Challenge questions</i>

Summative Assessments (add rows as needed)

<p>Summative Assessment</p>	<p>Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections</p>
<p><i>Translations/Reflections/Rotations/Symmetry/Dilations/Composition of reflections/Tessellations.</i></p>	<ul style="list-style-type: none"> • <i>Calculator use</i> • <i>Read/clarify directions</i> • <i>Modify questions</i> • <i>Extra time</i> • <i>Specific other accommodations/modifications per a student's IEP or 504 plan</i> • <i>Challenge questions</i>

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Measurement, Interior Design, Construction	<ul style="list-style-type: none">• <i>Calculator use</i>• <i>Read/clarify directions</i>• <i>Modify questions</i>• <i>Extra time</i>• <i>Specific other accommodations/modifications per a student's IEP or 504 plan</i>• <i>Challenge questions</i>

Unit Title: Geometry – Parallel & Perpendicular Lines/Congruent Triangles – Unit 1 – Module C

Grade level: 10

Timeframe: 25 days

Guiding Questions

1. How do you prove that two lines are parallel?
2. What is the sum of the measures of the angles in a triangle?
3. How do you write an equation of a line in the coordinate plane?
4. How do you identify corresponding parts of congruent triangles?
5. How do you show that two triangles are congruent?
6. How can you tell whether a triangle is isosceles or equilateral?
7. How do you use coordinate geometry to find relationships within triangles?
8. How do you solve problems that involve measurements of triangles?
9. How do you write indirect proofs?

Standards

Standards (Taught and Assessed):

- **G.CO.C.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.C.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.B.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.B.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.C.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.C.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.

Key: ■ Major Cluster □ Supporting Cluster ○ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9. Model integrity, ethical leadership and effective management.

CRP11. Use technology to enhance productivity.

Career Awareness, Exploration, and Preparation Content Area: 21st Century Life and Careers Strand

9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

9.2.8.B.4 Evaluate how traditional and nontraditional careers have evolved regionally, nationally, and globally.

9.2.8.B.5 Analyze labor market trends using state and federal labor market information and other resources available online.

9.2.8.B.7 Evaluate the impact of online activities and social media on employer decisions.

Career & Technical Education Content Area: 21st Century Life and Careers Standards

9.3.ST.2 Use technology to acquire, manipulate, analyze and report data.

9.3.ST-SM.4 Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.

9.3.ST-SM.3 Analyze the impact that science and mathematics has on society.

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies



Self-Awareness

- Recognize one's feelings and thoughts
- Recognize the impact of one's feelings and thoughts on one's own behavior
- Recognize one's personal traits, strengths, and limitations
- Recognize the importance of self-confidence in handling daily tasks and challenges



Self-Management

- Understand and practice strategies for managing one's own emotions, thoughts, and behaviors
- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals



Social Awareness

- Recognize and identify the thoughts, feelings, and perspectives of others
- Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds
- Demonstrate an understanding of the need for mutual respect when viewpoints differ
- Demonstrate an awareness of the expectations for social interactions in a variety of settings



Responsible Decision-Making

- Develop, implement, and model effective problem-solving and critical thinking skills
- Identify the consequences associated with one's actions in order to make constructive choices
- Evaluate personal, ethical, safety, and civic impact of decisions



Relationship Skills

- Establish and maintain healthy relationships
- Utilize positive communication and social skills to interact effectively with others
- Identify ways to resist inappropriate social pressure
- Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways
- Identify who, when, where, or how to seek help for oneself or others when needed

*Adopted by the New Jersey State Board of Education in August 2017

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Assessment on how to name angles, lines, and segments with the proper notation, symbol, and correct amount of letters.	Link to ELL, Special Education, Gifted, At-Risk Modifications

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.CO.C.9 - WALT prove theorems about lines and angles.	<i>Students can discuss distance between two points of interest and compare with another set of two points of interests and discuss the relationship between both distances.</i>	Exit Card: Teacher created document where students have to identify ONE PAIR EACH of vertical angles, parallel lines, alternate interior angles, corresponding angles, alternate exterior angles, and same side interior angles.	IXL: <ul style="list-style-type: none"> • Transversals: Name Angle Pairs • Identify Parallel, Intersecting, and Skew Lines 	Link to ELL, Special Education, Gifted, At-Risk Modifications
G.CO.C.9 - WALT prove that when a transversal crosses parallel lines, alternate interior angles are congruent	<i>Students may utilize physical space and objects to create two angles that are in opposite directions of one another.</i>	Rhythmic & Movement Activity: Students will play “Dance Dance Revolution” as different angle pairs appear on the board.	IXL: <ul style="list-style-type: none"> • Find the measures of complementary, supplementary, vertical, and adjacent angles. 	Link to ELL, Special Education, Gifted, At-Risk Modifications

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
G.CO.C.9 - WALT prove that when a transversal crosses parallel lines, corresponding angles are congruent	<i>Students may use a city street map to identify the parallel blocks and identify two unique points of interest where a 3rd block intersects both parallel blocks. Both points must be in the same direction.</i>	Kinesthetic Activity - Create a few giant pairs of parallel lines with masking tape. Have students work with a partner to create the angle relationships you specify.	<i>IXL:</i> <ul style="list-style-type: none"> Transversals of Parallel Lines: Find Angle Measures 	Link to ELL, Special Education, Gifted, At-Risk Modifications
G.CO.C.10 - WALT proves measures of the interior angles of a triangle sum to 180 degrees.	<i>A student can cut out a triangle and then carefully cut out the angles of each triangle. The student can then rearrange the angles to show that it forms a straight line.</i>	Formal Flow Proof of the Triangle Sum Theorem: Proof of the Triangle Angle Sum Theorem	<i>IXL:</i> <ul style="list-style-type: none"> Triangle Angle Sum Theorem 	Link to ELL, Special Education, Gifted, At-Risk Modifications
G.CO.B.7 - WALT show that two triangles are congruent using the definition of congruence in terms of rigid motions if and only if corresponding pairs of sides and corresponding pairs of angles are congruent	<i>A student can create identical cut-outs of a triangle with two sheets of paper on top of the other. The student will confirm that both triangles are the same. The student can take both triangles on a flat surface and move them around to show both shapes maintain their congruency despite a change in position or direction.</i>	Coordinate Plane Activity: Have students graph triangles with corresponding sides and angles and have them rotate, reflect, and translate the shapes. Students can see they overlap and are congruent.	<i>IXL:</i> <ul style="list-style-type: none"> Congruence Statements and Corresponding Parts Solve Problems involving Corresponding Parts Identify Congruent Figures 	Link to ELL, Special Education, Gifted, At-Risk Modifications

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
G.CO.B.8 - WALT explains how ASA, SAS, and SSS follow from the definition of congruence in terms of rigid motions.	Repeat student strategy above, include identification of parts of the triangle in the order of ASA, SAS, and SSS.	Triangle Cut & Paste Activity: Students will receive a paper with 20 triangles that are labeled with tick marks and angle arcs. Students will cut the triangle and paste it into the appropriate triangle congruence column provided in the document below. <u>Triangle Cut & Paste Activity:</u>	IXL: <ul style="list-style-type: none"> ● SAS & SSS Theorems ● Proving Triangles Congruent by SSS and SAS 	<u>Link to ELL, Special Education, Gifted, At-Risk Modifications</u>
G.CO.B.9 - WALT prove points on a perpendicular bisector of a line segment is exactly those that are equidistant from the segment endpoints	Students can use the visual of a capital “t” symbol. Students may use a ruler to pick a point on the vertical line of the letter, and measure the distance of that point to the end points of the horizontal line of the letter.	Tracing Paper Activity: Using tracing paper, a ruler, and points have students discover that the points on the perpendicular bisector are all equally distance from the segment endpoints.	IXL: <ul style="list-style-type: none"> ● Construct a perpendicular Line 	<u>Link to ELL, Special Education, Gifted, At-Risk Modifications</u>
G.CO.B.9 - WALT prove base angles of an isosceles triangle are congruent G.CO.B.9 - WALT prove theorems about triangles G.CO.B.9 - WALT proves that the segment joining midpoints of two sides of a triangle is parallel to the	Students can recall prior strategies of rigid motion and apply the concept of dilation. Students can take the base of a triangle, shrink the size of the baseline while following the path of the legs of the triangle.	Do Now - High Level Problem involving the concepts of vertical angles, linear pairs, exterior angles, triangle sum theorem, and remote interior angles	IXL: <ul style="list-style-type: none"> ● Congruency in Isosceles and Equilateral Triangles ● Isosceles Triangle Theorem ● Midsegment Theorem 	<u>Link to ELL, Special Education, Gifted, At-Risk Modifications</u>

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that third side of a triangle and half the length. G.CO.B.10 - WALT prove the medians of a triangle meet at a point				

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Lines and angles/Properties and proofs of parallel lines/Parallel lines and perpendicular lines/Parallel lines and triangles.</i>	Link to ELL, Special Education, Gifted, At-Risk Modifications

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Equations of lines, parallel lines, and perpendicular lines.</i>	Link to ELL, Special Education, Gifted, At-Risk Modifications

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Lines and angles/Properties and proofs of parallel lines/Parallel lines and perpendicular lines/Parallel lines and triangles/Equations of lines, parallel lines, and perpendicular lines.</i>	<u>Link to ELL, Special Education, Gifted, At-Risk Modifications</u>

Interdisciplinary Connections

Interdisciplinary Connections

- **English Language Arts: NJSLA.R.4:** Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- **Computer Science & Design Thinking: 8.2.5.ED.2:** Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections

[Link to ELL, Special Education, Gifted, At-Risk Modifications](#)

Unit Title: Geometry – Geometric Constructions and Congruence – Unit 1 – Module D

Grade level: 10**Timeframe: 10 days**

Essential Questions

1. *How can you find the sum of the measures of polygon angles?*
 2. *How can you classify quadrilaterals*
 3. *How can you use coordinate geometry to prove general relationships?*
-

Standards

Standards (Taught and Assessed):

- **G.CO.C.11** Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.

Key: ■ Major Cluster

□ Supporting Cluster

⊙ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CAR_Geometry-Unit 1-Module D August.2019

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9. Model integrity, ethical leadership and effective management.

CRP11. Use technology to enhance productivity.

Career Awareness, Exploration, and Preparation Content Area: 21st Century Life and Careers Strand

9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

9.2.8.B.4 Evaluate how traditional and nontraditional careers have evolved regionally, nationally, and globally.

9.2.8.B.5 Analyze labor market trends using state and federal labor market information and other resources available online.

9.2.8.B.7 Evaluate the impact of online activities and social media on employer decisions.

Career & Technical Education Content Area: 21st Century Life and Careers Standards

9.3.ST.2 Use technology to acquire, manipulate, analyze and report data.

9.3.ST-SM.4 Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.

9.3.ST-SM.3 Analyze the impact that science and mathematics has on society.

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies

 <h3>Self-Awareness</h3> <ul style="list-style-type: none">• Recognize one's feelings and thoughts• Recognize the impact of one's feelings and thoughts on one's own behavior• Recognize one's personal traits, strengths, and limitations• Recognize the importance of self-confidence in handling daily tasks and challenges	 <h3>Self-Management</h3> <ul style="list-style-type: none">• Understand and practice strategies for managing one's own emotions, thoughts, and behaviors• Recognize the skills needed to establish and achieve personal and educational goals• Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals	 <h3>Social Awareness</h3> <ul style="list-style-type: none">• Recognize and identify the thoughts, feelings, and perspectives of others• Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds• Demonstrate an understanding of the need for mutual respect when viewpoints differ• Demonstrate an awareness of the expectations for social interactions in a variety of settings	 <h3>Responsible Decision-Making</h3> <ul style="list-style-type: none">• Develop, implement, and model effective problem-solving and critical thinking skills• Identify the consequences associated with one's actions in order to make constructive choices• Evaluate personal, ethical, safety, and civic impact of decisions	 <h3>Relationship Skills</h3> <ul style="list-style-type: none">• Establish and maintain healthy relationships• Utilize positive communication and social skills to interact effectively with others• Identify ways to resist inappropriate social pressure• Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways• Identify who, when, where, or how to seek help for oneself or others when needed
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Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Understanding and applying properties of parallelograms and special parallelograms.	<u>ELL/Gifted/Sped/504/At Risk</u>

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.CO.C.11 - WALT prove theorems about parallelograms	<i>Students can recall basic polygonal construction through the use of the distance formula to show congruency, along with basic algebraic context of parallel lines to show the connection onto parallelograms.</i>	<u>Parallelogram Packet</u>	<i>Teachers Pay Teachers - Special Parallelogram Scavenger Hunt</i>	<u>ELL/Gifted/Sped/504/At Risk</u>
G.CO.C.11 - WALT prove opposite sides in a parallelogram are congruent		<u>Parallelograms on the Coordinate Plane</u>	<u>Quadrilateral Instagram Project</u>	
G.CO.C.11 - WALT prove opposite angles in a parallelogram are congruent			<u>Quadrilateral Property Foldable</u>	
G.CO.C.11 - WALT prove the diagonals of a parallelogram bisect each other				

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.CO.C.11 - WALT prove rectangles are parallelograms with congruent diagonals				

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Polygons and the angle sum theorem/properties of parallelograms and proofs of parallelograms/properties of rhombuses, rectangles, squares, trapezoids, and kites.</i>	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections ELL/Gifted/Sped/504/At Risk

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Polygons in the coordinate plane/applications of polygons in coordinate geometry/proofs of coordinate geometry of polygons.</i>	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections ELL/Gifted/Sped/504/At Risk

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Polygons and the angle sum theorem/properties of parallelograms and proofs of parallelograms/properties of rhombuses, rectangles, squares, trapezoids, and kites/Polygons in the coordinate plane/applications of polygons in coordinate geometry/proofs of coordinate geometry of polygons.</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Interior Design - Have students read a blurb about Tessellations here . Have them design their own kitchen floor using a tessellation of special parallelograms.	ELL/Gifted/Sped/504/At Risk

Unit Title: Geometry – Similarity and Dilations – Unit 2 – Module A

Grade level: 10

Timeframe: 15 days

Guiding Questions

1. How can you change a figure's position without changing its size and shape? How can you change a figure's size without changing its shape?
 2. How can you represent a transformation in the coordinate plane?
 3. How do you recognize symmetry in a figure?
-

Standards

Standards (Taught and Assessed):

- **G.SRT.A.1** Verify experimentally the properties of dilations given by a center and a scale factor:
 - a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
 - b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
- **G.CO.A.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).

Key: ■ Major Cluster

□ Supporting Cluster

⊙ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9. Model integrity, ethical leadership and effective management.

CRP11. Use technology to enhance productivity.

Career Awareness, Exploration, and Preparation Content Area: 21st Century Life and Careers Strand

9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

9.2.8.B.4 Evaluate how traditional and nontraditional careers have evolved regionally, nationally, and globally.

9.2.8.B.5 Analyze labor market trends using state and federal labor market information and other resources available online.

9.2.8.B.7 Evaluate the impact of online activities and social media on employer decisions.

Career & Technical Education Content Area: 21st Century Life and Careers Standards

9.3.ST.2 Use technology to acquire, manipulate, analyze and report data.

9.3.ST-SM.4 Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.

9.3.ST-SM.3 Analyze the impact that science and mathematics has on society.

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies



Self-Awareness

- Recognize one's feelings and thoughts
- Recognize the impact of one's feelings and thoughts on one's own behavior
- Recognize one's personal traits, strengths, and limitations
- Recognize the importance of self-confidence in handling daily tasks and challenges



Self-Management

- Understand and practice strategies for managing one's own emotions, thoughts, and behaviors
- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals



Social Awareness

- Recognize and identify the thoughts, feelings, and perspectives of others
- Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds
- Demonstrate an understanding of the need for mutual respect when viewpoints differ
- Demonstrate an awareness of the expectations for social interactions in a variety of settings



Responsible Decision-Making

- Develop, implement, and model effective problem-solving and critical thinking skills
- Identify the consequences associated with one's actions in order to make constructive choices
- Evaluate personal, ethical, safety, and civic impact of decisions



Relationship Skills

- Establish and maintain healthy relationships
- Utilize positive communication and social skills to interact effectively with others
- Identify ways to resist inappropriate social pressure
- Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways
- Identify who, when, where, or how to seek help for oneself or others when needed

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Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Congruent Figures</i> <i>Regular Polygons</i> <i>Quadrilaterals</i> <i>Scale Drawing</i>	<u>ELL, Special Education, Gifted, At Risk of Failure, 504 Modifications</u>

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.SRT.A.1 – WALT verify experimentally, given a center and scale factor, that the dilation of a line segment is longer or shorter in the ratio given by the scale factor	<i>Students can recall prior knowledge of ratios, proportions, and similar figures in a space and the necessary properties that all similar figures should have when it comes to any transformation.</i>	<u>Dilating Figures with a center at (0,0) and a center other than the origin worksheet</u> <u>Dilation & Scale Factor Practice</u>	<u>NJSLA Dilation Stations</u>	<u>ELL Special Education, Gifted, At Risk of Failure, 504 Modifications</u>
G.SRT.A.1 – WALT verify experimentally, given a center and scale factor, that a dilation leaves a line passing through the center of the dilation unchanged				
G.SRT.A.1 – WALT verify experimentally, given a				

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that center and scale factor, that a dilation takes a line not passing through the center of the dilation to a parallel line				
G.SRT.A.1 – WALT represent dilations in the plane using transparencies and geometry software				
G.CO.A.2- WALT compare transformations, including dilations, that preserve distance and angle to those that do not	<i>Students can utilize scaled drawings of maps versus actual distance to show direction and proportional distance.</i>	<i>Guided Practice Problems comparing Dilations with other Rigid Transformations</i>	<i>Activity - Have students rotate, translate, reflect, and dilate a pre-image. Students will see that the only transformation that results in the preimage being non-congruent to the image is through a dilation.</i>	<u>ELL Special Education, Gifted, At Risk of Failure, 504 Modifications</u>

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Translations/Reflections/Rotations/Symmetry.</i>	<u>ELL Special Education, Gifted, At Risk of Failure, 504 Modifications</u>

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Dilations/Compositions of Reflections.</i>	<u>ELL Special Education, Gifted, At Risk of Failure, 504 Modifications</u>

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Translations/Reflections/Rotations/Symmetry/Dilations/Compositions of Reflections.</i>	<u>ELL Special Education, Gifted, At Risk of Failure, 504 Modifications</u>

Interdisciplinary Connections

Interdisciplinary Connections

- **English Language Arts: NJSLA.R4:** Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- **Computer Science & Design Thinking: 8.2.5.ED.2:** Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections

Unit Title: Geometry – Similarity and Dilations – Unit 2 – Module B

Grade level: 10

Timeframe: 12 days

Guiding Questions

1. How do you use proportions to find side lengths in similar polygons?
2. How do you show two triangles are similar?
3. How do you identify corresponding parts of similar triangles?

Standards

Standards (Taught and Assessed):

- **G.SRT.A.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.A.3** Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.
- **G.SRT.B.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.B.5** 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.

Key: ■ Major Cluster

Supporting Cluster

Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies

 <h3>Self-Awareness</h3> <ul style="list-style-type: none">• Recognize one's feelings and thoughts• Recognize the impact of one's feelings and thoughts on one's own behavior• Recognize one's personal traits, strengths, and limitations• Recognize the importance of self-confidence in handling daily tasks and challenges	 <h3>Self-Management</h3> <ul style="list-style-type: none">• Understand and practice strategies for managing one's own emotions, thoughts, and behaviors• Recognize the skills needed to establish and achieve personal and educational goals• Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals	 <h3>Social Awareness</h3> <ul style="list-style-type: none">• Recognize and identify the thoughts, feelings, and perspectives of others• Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds• Demonstrate an understanding of the need for mutual respect when viewpoints differ• Demonstrate an awareness of the expectations for social interactions in a variety of settings	 <h3>Responsible Decision-Making</h3> <ul style="list-style-type: none">• Develop, implement, and problem-solve and critical thinking skills• Identify the consequences associated with one's actions in order to make constructive choices• Evaluate personal, ethical, safety, and civic impact of decisions	 <h3>Relationship Skills</h3> <ul style="list-style-type: none">• Establish and maintain healthy relationships• Utilize positive communication and social skills to interact effectively with others• Identify ways to resist inappropriate social pressure• Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways• Identify who, when, where, or how to seek help for oneself or others when needed
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Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Properties of parallel lines</i> <i>Naming congruent Parts</i> <i>Triangle Congruence</i> <i>Midsegments of Triangles</i>	ELL/Gifted/Sped/504/At Risk

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.SRT.A.2 - WALT use the definition of similarity in terms of similarity transformations to decide if two figures are similar	<i>Students can compare basic shapes shown through a visual and compare them to real world objects that resemble that same shape to show similarity. These comparisons have to be precisely identical in shape but not necessarily in size.</i>	<u>Guided Practice Problems with Printed Notes on Proving Figures Similar</u>	<u>Around the Room Activity on Similarity</u> <u>Student Recording Sheet</u>	ELL/Gifted/Sped/504/At Risk
G.SRT.A.2 - WALT use similarity transformations to explain the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides				

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
G.SRT.A.3 - WALT use the properties of similarity transformations to establish the conditions for triangle similarity through the AA criterion				<u>ELL/Gifted/Sped/504/At Risk</u>
G.SRT.A.4 - WALT prove that a line parallel to one side of a triangle divides the other two sides of the triangle proportionally	Students can recall properties of segment cross-sections and bisectors to show divisions of multiple segments in a space.	Pearson Workbook - Section 8.1	Discovery Activity - Students can prove the midsegment theorem using the midpoint, distance and slope formulas on the slide below. <u>Midsegment Discovery Activity</u>	<u>ELL/Gifted/Sped/504/At Risk</u>
G.SRT.A.4 - WALT prove that a line that divides two sides of a triangle proportionally is parallel to the third side				
G.SRT.A.4 - WALT prove, using triangle similarity, the Pythagorean Theorem				
G.SRT.B.5 - WALT use the definition of similarity in terms of similarity transformations to decide if two given figures are similar	Students can compare model size objects to their actual size and compare height and size differences, making sure to compare each side to its corresponding part to the other object.	Exit Card - Have students dilate a figure and determine if their sides are proportional and angles are congruent	Station Activity with QR codes on Similar Figures	<u>ELL/Gifted/Sped/504/At Risk</u>
G.SRT.B.5 - WALT explain, using similarity				

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that 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				

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Ratios and proportions/Similar polygons/Proving triangles similar</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Similarity in right triangles/Proportions in triangles</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Ratios and proportions/Similar polygons/Proving triangles similar/Similarity in right triangles/Proportions in triangles</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<ul style="list-style-type: none">• English Language Arts: NJLSA.R4: Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.• Computer Science & Design Thinking: 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.	ELL/Gifted/Sped/504/At Risk

Unit Title: Geometry – Right Triangle Trigonometry – Unit 2 – Module C

Grade level: 10

Timeframe: 15 days

Guiding Questions

1. *How do you find a side length or angle measure in a right triangle?*
 2. *How do trigonometric ratios relate to similar right triangles?*
-

Standards

Standards (Taught and Assessed):

- **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.
- **G.SRT.C.7** Explain and use the relationship between the sine and cosine of complementary angles.
- **G.SRT.C.8** Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. ★ (modeling standard)

Key: ■ Major Cluster □ Supporting Cluster ○ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies



Self-Awareness

- Recognize one's feelings and thoughts
- Recognize the impact of one's feelings and thoughts on one's own behavior
- Recognize one's personal traits, strengths, and limitations
- Recognize the importance of self-confidence in handling daily tasks and challenges



Self-Management

- Understand and practice strategies for managing one's own emotions, thoughts, and behaviors
- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals



Social Awareness

- Recognize and identify the thoughts, feelings, and perspectives of others
- Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds
- Demonstrate an understanding of the need for mutual respect when viewpoints differ
- Demonstrate an awareness of the expectations for social interactions in a variety of settings



Responsible Decision-Making

- Develop, implement, and model effective problem-solving and critical thinking skills
- Identify the consequences associated with one's actions in order to make constructive choices
- Evaluate personal, ethical, safety, and civic impact of decisions



Relationship Skills

- Establish and maintain healthy relationships
- Utilize positive communication and social skills to interact effectively with others
- Identify ways to resist inappropriate social pressure
- Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways
- Identify who, when, where, or how to seek help for oneself or others when needed

*Adopted by the New Jersey State Board of Education in August 2017

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Solving proportions</i> <i>Proving triangles similar</i> <i>Similarity in right triangles</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.SRT.C.6- WALT similarity in right triangles leads to proportional relationships which produce the trigonometric ratios for the acute angles in the right triangle	<i>Students can recall prior knowledge of similarity and the conditions required for two shapes to be considered similar.</i>	<u>Guided Practice Problems</u> with teacher provided notes	<u>Trigonometry Flip Book</u>	<u>ELL/Gifted/Sped/504/At Risk</u>
G.SRT.C.6 - WALT side ratios in right triangles are properties of the angles in the triangle as a result of properties of triangle similarity				
G.SRT.C.6 - WALT define trigonometric ratios for acute angles				

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.SRT.C.7 – WALT explain and use the relationship between the sine and cosine of complementary angles	Students can relate understanding of Sine and Cosine to the concept of complementary angles to understand that one side is a cofunction of the other.	Google Form Exit Card - Sin 30 = cos ? Cos 25 = sin ? Sin x = Cos ?	Quizizz on Cofunction Angle Relationships. Quizizz Link	ELL/Gifted/Sped/504/At Risk
G.SRT.C.8 - WALT use trigonometric ratios to solve right triangles in applied problems G.SRT.C.8 - WALT use Pythagorean Theorem to solve right triangles in applied problems	Students can utilize the distance formula to determine distance of the two endpoints of a right angle.	Exit Slip on Pythagorean Theorem and Application Problems	Kahoot on solving for missing sides and angles using the knowledge of the Pythagorean Theorem, Special Right Triangles, Trigonometry, and Angles of Elevation and Depression Kahoot Link	ELL/Gifted/Sped/504/At Risk

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>The Pythagorean Theorem and its converse/Special right triangles/Trigonometry</i>	ELL/Gifted/Sped/504/At Risk

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Angles of elevation and depression</i>	ELL/Gifted/Sped/504/At Risk

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>The Pythagorean Theorem and its converse/Special right triangles/Trigonometry/Angles of elevation and depression</i>	ELL/Gifted/Sped/504/At Risk

Interdisciplinary Connections

Interdisciplinary Connections

Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections

ELL/Gifted/Sped/504/At Risk	<ul style="list-style-type: none">• English Language Arts: NJLSA.R4: Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.• Computer Science & Design Thinking: 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
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Unit Title: Geometry – Geometric Properties and Equations – Unit 3 – Module A

Grade level: 10

Timeframe: 14 days

Guiding Questions

1. *What are the building blocks of Geometry*
 2. *How can you represent a three-dimensional figure with a two-dimensional drawing?*
 3. *How can you make a conjecture and prove that it is true?*
 4. *How do you prove that two lines are parallel?*
 5. *How do you write an equation of a line in the coordinate plane?*
-

Standards

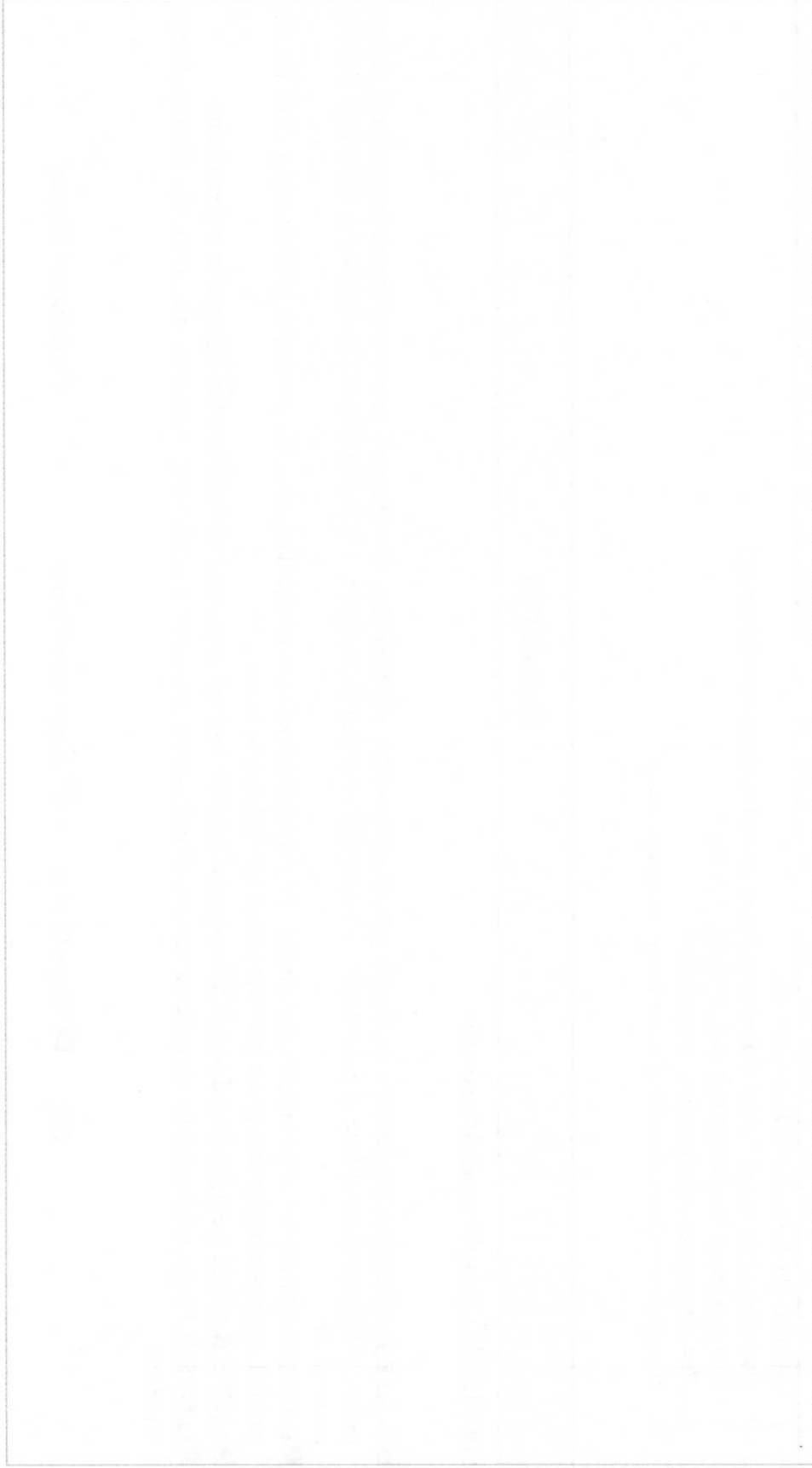
Standards (Taught and Assessed):

- **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 $(1, \sqrt{3})$ 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.B.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. ★ (modeling standard)

Key: ■ Major Cluster □ Supporting Cluster ⊙ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

Social-Emotional Learning Competencies



Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Justify statements Solving equations Finding Distances in the Coordinate Plane</i>	ELL/Gifted/Sped/504/At Risk

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.GPE.B.4 - WALT prove simple geometric theorems algebraically using coordinates	Students can graph basic quadrilateral shapes such as squares and rectangles to prove congruent opposite sides lengths through the distance formula.	<i>Exit Slip: Students will determine the length of a segment on a graph and confirm this length using the distance formula.</i>	<u>Interactive Google Slide Activity for Students to determine whether lines are parallel, perpendicular or neither</u>	ELL/Gifted/Sped/504/At Risk
G.GPE.B.5 - WALT prove the slope criteria for parallel lines G.GPE.B.5 - WALT use the slope criteria for parallel lines to solve geometric problems	Use pictorial diagrams that show examples of parallel and perpendicular lines objects that follow the criteria for those relationships to show the necessities of those relationships.	<i>Have students calculate the slope of two graphed parallel (vertical, horizontal, and diagonal) lines to discover the slopes of parallel lines are equal.</i>	<u>Parallel & Perpendicular Line Activity</u>	ELL/Gifted/Sped/504/At Risk

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p>G.GPE.B.5 - WALT prove the slope criteria for perpendicular lines</p> <p>G.GPE.B.5 – WALT use the slope criteria for perpendicular lines to solve geometric problems</p>		<p><i>Hands on Activity - Have students calculate the slope of a real life item (stairway railing) and determine if both sides are parallel</i></p>		
<p>G.GPE.B.6 – WALT find the point that is between two given points on a directed line segment that partitions the segment in a given ratio</p>	<p><i>Students can take multiple different pieces of a particular line segment and measure using a 12-inch ruler to determine proportional length.</i></p>	<p><u>Partitioning a Line Segment</u> <u>NYS Regents Questions</u></p>	<p><u>You Tube Video on Partitioning a Line Segment</u></p>	<p><u>ELL/Gifted/Sped/504/At Risk</u></p>
<p>G.GPE.B.7 - WALT compute perimeter of polygons using coordinates</p> <p>G.GPE.B.7 - WALT compute areas of rectangles using coordinates</p> <p>G.GPE.B.7 - WALT compute area of triangles using coordinates</p>	<p><i>Students can practice their knowledge of the distance formula for single line segments, determining length and applying this principle to shapes on a coordinate plane utilizing criteria for area and perimeter.</i></p>	<p><i>IXL's on Calculating Areas of Rectangles and Triangles in the Coordinate Plane</i></p>	<p>Scavenger Hunt Maze - Midpoint, Distance, endpoint, and partitioning a line segment.</p>	<p><u>ELL/Gifted/Sped/504/At Risk</u></p>

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Basic constructions/Midpoint and distance in the coordinate plane/perimeter, circumference, and area/Patterns and inductive reasoning</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Properties of parallel lines/proving lines parallel/parallel and perpendicular lines/ equations of lines in the coordinate plane/slopes of parallel and perpendicular lines</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Basic constructions/Midpoint and distance in the coordinate plane/perimeter, circumference, and area/Patterns and inductive reasoning/Properties of parallel lines/proving lines parallel/parallel and perpendicular lines/ equations of lines in the coordinate plane/slopes of parallel and perpendicular lines</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Interdisciplinary Connections

Interdisciplinary Connections

Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections

- **English Language Arts: NJLSA.R.4:** Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- **Computer Science & Design Thinking: 8.2.5.ED.2:** Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

ELL/Gifted/Sped/504/At Risk

Unit Title: Geometry – Geometric Properties and Equations – Unit 3 – Module B

Grade level: 10

Timeframe: 15 days

Guiding Questions

1. *How do you find the area of a polygon or find the circumference and area of a circle?*
 2. *How do perimeters and areas of similar polygons compare?*
-

Standards

Standards (Taught and Assessed):

- **G.CO.A.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.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.

Key: ■ Major Cluster

□ Supporting Cluster

⊙ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies



Self-Awareness

- Recognize one's feelings and thoughts
- Recognize the impact of one's feelings and thoughts on one's own behavior
- Recognize one's personal traits, strengths, and limitations
- Recognize the importance of self-confidence in handling daily tasks and challenges



Self-Management

- Understand and practice strategies for managing one's own emotions, thoughts, and behaviors
- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals



Social Awareness

- Recognize and identify the thoughts, feelings, and perspectives of others
- Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds
- Demonstrate an understanding of the need for mutual respect when viewpoints differ
- Demonstrate an awareness of the expectations for social interactions in a variety of settings



Responsible Decision-Making

- Develop, implement, and model effective problem-solving and critical thinking skills
- Identify the consequences associated with one's actions in order to make constructive choices
- Evaluate personal, ethical, safety, and civic impact of decisions



Relationship Skills

- Establish and maintain healthy relationships
- Utilize positive communication and social skills to interact effectively with others
- Identify ways to resist inappropriate social pressure
- Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways
- Identify who, when, where, or how to seek help for oneself or others when needed

*Adopted by the New Jersey State Board of Education in August 2017

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Squaring numbers and finding square roots</i> <i>Simplifying radicals</i> <i>Classifying quadrilaterals</i>	ELL/Gifted/Sped/504/At Risk

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.CO.A.1 - WALT define a circle based on some or all of the undefined notions of point, line, distance along a line, and distance around a circular arc	<i>Students may utilize their knowledge on polygonal shapes and how a circle differs by a lack of corners or edges with a point equidistant to all sides of the circle.</i>	<u>Guided Notes on Circles, Parts of a Circle, and Arcs</u>	<i>Teachers Pay Teachers- Arc Measure and Arc Length around the room activity</i>	ELL/Gifted/Sped/504/At Risk
G.GPE.A.1- WALT derive the equation of a circle given the center and radius using Pythagorean Theorem G.GPE.A.1 - WALT complete the square to find the center and radius of a circle given by an equation	<i>Students can use technology to graph a simple circle with its center on the radius and compare its equation to that of a right triangle using the pythagorean theorem to identify common constructions of both equations.</i>	<u>Center, Radius, & Equations of a Circle Exit Card</u>	<i>Teachers Pay Teachers- Equation of a Circle Coloring Activity</i>	ELL/Gifted/Sped/504/At Risk

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Areas of parallelograms and triangles/areas of trapezoids, rhombuses, and kites/Areas of regular polygons/Perimeters and Areas of similar figures</i>	ELL/Gifted/Sped/504/At Risk

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Trigonometry and Area/Circles and Arcs/Areas of Circles and Sectors/Circle Graphs</i>	ELL/Gifted/Sped/504/At Risk

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Areas of parallelograms and triangles/areas of trapezoids, rhombuses, and kites/Areas of regular polygons/Perimeters and Areas of similar figures/Trigonometry and Area/Circles and Arcs/Areas of Circles and Sectors/Circle Graphs</i>	ELL/Gifted/Sped/504/At Risk

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<ul style="list-style-type: none">• English Language Arts: NJLSA.R4: Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.• Computer Science & Design Thinking: 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.	ELL/Gifted/Sped/504/At Risk

Unit Title: Geometry – Circles and Geometric Measurement – Unit 4 – Module A

Grade level: 10

Timeframe: 12 days

Guiding Questions

1. How do you find the area of a polygon or find the circumference and area of a circle?
 2. How do perimeters and areas of similar polygons compare?
 3. How can you prove the relationships between angles and arcs in a circle?
 4. When lines intersect a circle or within a circle, how do you find the measures of resulting angles, arcs, and segments?
 5. How do you find the equation of a circle in the coordinate plane?
-

Standards

Standards (Taught and Assessed):

- Ⓒ 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.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.
- Ⓒ 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.

Key: ■ Major Cluster □ Supporting Cluster Ⓒ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies



*Adopted by the New Jersey State Board of Education in August 2017

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Squaring numbers and finding square roots</i> <i>Simplifying radicals</i> <i>Classifying quadrilaterals</i>	ELL/Gifted/Sped/504/At Risk

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.C.A.1 - WALT prove that all circles are similar	Students can draw circles with different sized protractors and compare measurements of radius, diameter, and circumference.	Partner Activity - Have students watch <u>Proving Circles are Similar</u> and write a short summary explaining why circles are similar. Have partners exchange the summary and discuss if they understand their partner's writing and how to improve upon it.	IXL - Similarity of Circles	ELL/Gifted/Sped/504/At Risk
G.C.A.2 - WALT identify and describe relationships among inscribed angles, radii, and chords	Students can take circles and create angles and lines within the circle to interpret the differences that are shown for each drawing.	Teachers Pay Teachers - Tangent Line Find Someone Who Activity - Explores the ideas of tangent lines, pythagorean theorem, angles made at point of interaction, and intertwines Algebra 1 "FOIL" concepts.	IXL - Inscribed Angles IXL - Parts of a Circle IXL - Arcs and Chords IXL - Central Angles & Arc Measures	ELL/Gifted/Sped/504/At Risk
G.C.A.2 - WALT identify and describe relationships among inscribed angles,				

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p>central angles, and circumscribed angles</p> <p>G.C.A.2 - WALT the radius of a circle is perpendicular to the tangent where the radius intersects the circle</p> <p>G.C.A.2 - WALT inscribed angles on a diameter are right angles</p>		<p>Inscribed Angle Puzzle - Students will combine concepts of central angles, inscribed angles, and properties of quadrilaterals inscribed in a circle</p> <p><u>Inscribed Angle Riddle Activity</u></p>	<p><i>IXL - Tangent Lines</i></p> <p><i>IXL - Angles formed by chords, secants, and tangents</i></p>	
<p>G.C.B.5 - WALT use similarity to derive the fact that the length of the arc intercepted by an angle is proportional to the radius of a circle</p> <p>G.C.B.5 - WALT define the radian measure of an angle as the constant of proportionality between the length of the arc intercepted by an angle and the radius of a circle</p> <p>G.C.B.5 - WALT derive the formula for the area of a sector</p>	<p><i>A student can look at a figure of circular object, divide each part of the circle from its radius, and determine percentages of the space to determine sector area and the proportion of sector area to the area of the entire circle</i></p>	<p>Teachers Pay Teachers - Task Card Activity - Students will become a master at a task card on arc length and arc measure. They will switch their task card with a peer and ensure he/she arrives at the correct answer. The student master will assist with any peer questions and involve the teacher if necessary.</p>	<p><i>IXL - Understand Arc Length and sector area of a circle</i></p> <p><i>IXL - Arc Length</i></p> <p><i>IXL - Degrees and Radians</i></p> <p><i>IXL - Area of Sectors</i></p>	<p><u>ELL/Gifted/Sped/504/At Risk</u></p>

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.C.A.3 – WALT construct the inscribed and circumscribed circles of a triangle	<i>Students can create cutouts of triangles, quadrilaterals, and circles and place them on top of one another to see the construction of an inscribed and circumscribed shape.</i>	Group Performance Task - <i>Combine the skills of the concurrency of perpendicular bisectors theorem and concurrency of angle bisectors theorem to construct the inscribed and circumscribed circles of a triangle.</i>	<i>IXL - Construct the inscribed or circumscribed circle of a triangle</i>	<u>ELL/Gifted/Sped/504/At Risk</u>
G.C.A.3 – WALT prove properties of angles for a quadrilateral inscribed in a circle				

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Circles and Arcs</i> <i>Areas of circles and sectors</i> <i>Tangent lines</i> <i>Chords and arcs</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Inscribed angles</i> <i>Angle measures and segment lengths</i> <i>circles in the coordinate plane</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<p><i>Circles and Arcs</i> <i>Areas of circles and sectors</i> <i>Tangent lines</i> <i>Chords and arcs</i> <i>Inscribed angles</i> <i>Angle measures and segment lengths</i> <i>circles in the coordinate plane</i></p>	<p>ELL/Gifted/Sped/504/At Risk</p>

Interdisciplinary Connections

Interdisciplinary Connections

Architecture - Students can use their knowledge of concurrency to find the center of a triangle they have created out of cardboard. Students will be able to test their work to see if their triangle will balance on the tip of their pencil.

Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections

ELL/Gifted/Sped/504/At Risk

Unit Title: Geometry – Circles and Geometric Measurement – Unit 4 – Module B

Grade level: 10

Timeframe: 12 Days

Guiding Questions

1. *How do you find the area of a polygon or find the circumference and area of a circle?*
 2. *How do perimeters and areas of similar polygons compare?*
 3. *How can you prove the relationships between angles and arcs in a circle?*
 4. *When lines intersect a circle or within a circle, how do you find the measures of resulting angles, arcs, and segments?*
 5. *How do you find the equation of a circle in the coordinate plane?*
-

Standards

Standards (Taught and Assessed):

- **G.GMD.A.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.A.3** Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.* (modeling standard)
- **G.GMD.B.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.

Key: ■ Major Cluster □ Supporting Cluster ○ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies

 <h3>Self-Awareness</h3> <ul style="list-style-type: none">• Recognize one's feelings and thoughts• Recognize the impact of one's feelings and thoughts on one's own behavior• Recognize one's personal traits, strengths, and limitations• Recognize the importance of self-confidence in handling daily tasks and challenges	 <h3>Self-Management</h3> <ul style="list-style-type: none">• Understand and practice strategies for managing one's own emotions, thoughts, and behaviors• Recognize the skills needed to establish and achieve personal and educational goals• Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals	 <h3>Social Awareness</h3> <ul style="list-style-type: none">• Recognize and identify the thoughts, feelings, and perspectives of others• Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds• Demonstrate an understanding of the need for mutual respect when viewpoints differ• Demonstrate an awareness of the expectations for social interactions in a variety of settings	 <h3>Responsible Decision-Making</h3> <ul style="list-style-type: none">• Develop, implement, and model effective problem-solving and critical thinking skills• Identify the consequences associated with one's actions in order to make constructive choices• Evaluate personal, ethical, safety, and civic impact of decisions	 <h3>Relationship Skills</h3> <ul style="list-style-type: none">• Establish and maintain healthy relationships• Utilize positive communication and social skills to interact effectively with others• Identify ways to resist inappropriate social pressure• Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways• Identify who, when, where, or how to seek help for oneself or others when needed
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*Adopted by the New Jersey State Board of Education in August 2017

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Solving equations</i> <i>Distance formula</i> <i>isosceles and equilateral triangles</i> <i>the pythagorean theorem</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.GMD.A.1 - WALT give an informal argument for the formulas for the circumference of a circle, and for the area of a circle, using dissection arguments, Cavalieri's principle, and informal limit arguments	<i>Students can take two different volumetric based shapes of the same height. pick a height for both shapes and find the area of that cross-section. This will help prove that the volumes of both figures are congruent.</i>	Worksheet on Area and Circumference of a Circle - <i>Teacher will circulate/post an answer key to ensure students are engaged an on the right track</i> <i>Pearson Workbook - Student Worksheet - Section 10.6</i>	<i>IXL - Area and Circumference of Circles</i> <i>IXL - Volume of Prisms and Cylinders</i> <i>IXL - Volume of Pyramids and Cones</i>	<u>ELL/Gifted/Sped/504/At Risk</u>
G.GMD.A.1 - WALT give an informal argument for the formula for the volume of a cylinder, pyramid, and cone using dissection arguments, Cavalieri's principle, and informal limit arguments		Station Activity on Volume of 3-Dimensional Figures - <u>Station Activity</u>		

SLO – WALT	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
We are learning to/that				
G.GMD.A.3 - WALT use volume formulas for cylinders, pyramids, cones, and spheres to solve problems	Students can take multiple 2-dimensional formulas that comprise the volume-based formulas to determine solutions for problems	Quizizz - Have students complete a Quizizz utilizing the volume formulas	Khan Academy - Use volume formulas to find the values of variables, segment lengths, height, and radii.	ELL/Gifted/Sped/504/At Risk
G.GMD.B.4 - WALT identify three-dimensional objects generated by rotations of two-dimensional objects G.GMD.B.4 - WALT identify the shapes of two-dimensional cross-sections of three-dimensional objects	Students can take a three-dimensional object and cut it at a particular section from end-to-end to identify the surface shape created from the cut (cross-section). Students can take a rotating ring spinner and visualize the three-dimensional object created from the increased rotation speed.	YouTube Video - Students will watch a YouTube video to visualize how objects are generated by the rotations of two dimensional objects. Predicting 3-D Shapes Video	IXL - Cross Sections and Solids of Revolution	ELL/Gifted/Sped/504/At Risk

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Chords and arcs</i> <i>Inscribed angles</i>	ELL/Gifted/Sped/504/At Risk

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Angle measures and segment lengths</i> <i>Circles in the coordinate plane</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Chords and arcs</i> <i>Inscribed angles</i> <i>Angle measures and segment lengths</i> <i>Circles in the coordinate plane</i>	<u>ELL/Gifted/Sped/504/At Risk</u>

Interdisciplinary Connections

Interdisciplinary Connections

Landscaping/Construction - Have students design their own inground swimming pool for their yard. The dimensions of the pool along with the amount of cubic feet of water should be calculated.

Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections

ELL/Gifted/Sped/504/At Risk

Unit Title: Geometry – Circles and Geometric Measurement – Unit 4 – Module C

Grade level: 10

Timeframe: 12 Days

Guiding Questions

1. How can you determine the intersection of a solid and a plane?
 2. How do you find the surface area and volume of a solid?
 3. How do the surface areas and volumes of similar solids compare?
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Standards

Standards (Taught and Assessed):

- **G.MG.A.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).★ (modeling standard)
- **G.MG.A.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.A.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).★ (modeling standard)

Key: ■ Major Cluster □ Supporting Cluster ⊙ Additional Cluster

Highlighted Career Ready Practices and 21st Century Themes/Skills

Social-Emotional Learning Competencies



New Jersey Social and Emotional Learning Competencies and Sub-Competencies



*Adopted by the New Jersey State Board of Education in August 2017

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>The Pythagorean theorem special right triangles perimeters and areas of similar figures</i>	ELL/Gifted/Sped/504/At Risk

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT We are learning to/that	Student Strategies	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
G.MG.A.1 - WALT describe real-world objects using geometric shapes, their measures, and their properties	Students can look up popular monuments of the world to identify geometric shapes and describe their characteristics of surface area and volume.	Using 3D Shapes - Ask students questions about real life objects that are shaped in these ways and why this shape was selected vs. other shapes.	Group Project - Students will use 3D objects such as toilet paper rolls, paper towel rolls, foam balls etc to create a robot. Students will find the surface area of each object, total it, and then cut out a piece of tin foil in an attempt to cover the surface of every piece. <i>Robot Project Instructions and Rubric</i>	<u>ELL/Gifted/Sped/504/At Risk</u>
G.MG.A.2 - WALT apply concepts of density based on area and volume in modeling situations	Students can take examples of density from real world objects to describe density in its relationship of area and volume.	NJSLA questions on calculating population density	IXL - Calculate mass, density, volume	<u>ELL/Gifted/Sped/504/At Risk</u>
G.MG.A.3 - WALT apply geometric methods to solve design problems	Students can look at potential design flaws and argue improvements that can be made and use calculations to simulate their changes.	White Board Activity - Students will look at design problems and brainstorm geometric methods to solve each problem	IXL - Checkpoint: Geometric modeling and design	<u>ELL/Gifted/Sped/504/At Risk</u>

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Space figures and cross sections</i> <i>Surface areas of prisms and cylinders</i> <i>Surface areas of pyramids and cones</i>	ELL/Gifted/Sped/504/At Risk

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Volumes of prisms and cylinders</i> <i>Volumes of pyramids and cones</i> <i>Surface areas and volumes of spheres</i> <i>Areas and volumes of similar solids</i>	ELL/Gifted/Sped/504/At Risk

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
<i>Space figures and cross sections</i> <i>Surface areas of prisms and cylinders</i> <i>Surface areas of pyramids and cones</i> <i>Volumes of prisms and cylinders</i> <i>Volumes of pyramids and cones</i> <i>Surface areas and volumes of spheres</i> <i>Areas and volumes of similar solids</i>	ELL/Gifted/Sped/504/At Risk

Interdisciplinary Connections

Interdisciplinary Connections

Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections	
ELL/Gifted/Sped/504/At Risk	Event Planning - <u>Population Density at a Concert Venue</u>

