COURSE TITLE

Honors Geometry

LENGTH

Full Year

DEPARTMENT

STEM Department

SCHOOL

Rutherford High School

DATE

September 10, 2018

Initial BOE Approval Date (Born on): 6/15/2015

Honors Geometry

I. Introduction/Overview/Philosophy

In Honors Geometry, the instructional time will focus on seven critical areas: (1) developing an understanding the basic terms of Geometry and the skill of writing a geometric proof; (2) transformations of geometric figures; (3) understand, apply and prove theorems about congruent triangles; (4) understand and apply theorems about similarity and right triangles; (5) understand and apply theorems about quadrilaterals; (6) understand and apply theorems about circles; (7) calculate area, surface area and volume of geometric figures; and (8) factoring, quadratic equations, linear equations, and simplifying radicals. Throughout the course, mathematical concepts will be taught with an emphasis on enduring understandings, essential questions, real-world application, technology, and cross-curricular interaction.

II. Objectives

Course Outline:

1. Study of Right Triangles
    a. Pythagorean Theorem
    b. Pythagorean Triples
    c. Converse of Pythagorean Theorem
    d. Classify Triangles
    e. Altitudes Inside Right Triangles
    f. Identify Similar Triangles
    g. Special Right Triangles
    h. (45-45-90;30-60-90)
    i. Applying the Tangent Ratio
    j. Apply the Sine and Cosine Ratio
    k. Using the Inverse of Sine, Cosine, and Tangent Ratio
    l. Angles of Elevation and Depression
2. Quadrilaterals
    a. Angle measures in polygons
    b. Sum of the measure of all interior angles
    c. Measure of exterior angles of a polygon
    d. Use properties of a Parallelogram
    e. Proving Quadrilaterals are Parallelograms.
    f. Use properties of rectangles, rhombus, and squares
    g. Use properties of trapezoids and kites
    h. Use the Hierarchy of Quadrilaterals
    i. Find Mid segments of a Trapezoid
3. Properties of Circles
    a. Define and understand parts of a circle

b. Use Properties of Tangents
c. Verify a tangent to a circle
d. Use minor arcs, major arcs, and semi circles
e. Compare congruent circles and congruent arcs
f. Use chords to find arc measures
g. Use Inscribed Angles to find Angle Measures
h. Use inscribed polygons circumscribed in a circle
i. Angles inside a circle theorem
j. Angles outside a circle theorem
k. Find lengths of chords using Segments of Chords Theorem
l. Find lengths using Segments of Secants Theorem
m. Find lengths using Segments of Secants and Tangents Theorem
n. Find lengths using Tangents Theorem
o. Write the standard equation of a circle

4. Measuring Length and Area
    a. Find the perimeter and area of the following shapes:
        i. Rectangle
        ii. Triangle
        iii. Parallelogram
        iv. Trapezoids
        v. Kite
        vi. Rhombus
        vii. Circles
        viii. Sectors of Circles
        ix. Irregular shapes
        x. Regular Polygons
    b. Find the perimeter and area of similar figures
    c. Find Circumference and Arc Length
    d. Find Geometric Probabilities
5. Surface Area and Volumes of Solids
    a. Identify and name polyhedra
    b. Euler's Theorem
    c. Define cross section
    d. Explore nets
    e. Find Surface Area and Volume of: prisms, cylinders, pyramids, cones, spheres, regular polygons, spheres
    f. Find surface area and volume of irregular figures
    g. Explore similar solids
    h. Find scale factors.
6. Transformations
    a. Identify transformations
    b. Define rigid/non-rigid and image/pre-image

c. Translate figures in a coordinate plane
d. Transformation Notation
e. Reflections over x and y axis
f. Dilations : reduction and enlargement
g. Scale factors
h. Define vector, initial point, terminal point
i. Use Vector Component Form
j. Use vectors to translate figures
k. Reflect figures over any given line
l. Perform rotations 90, 180, and 270 degrees.
m. Define positive and negative rotations
n. Glide reflections

7. Parallel and Perpendicular Lines
   a. Define parallel, perpendicular and skew lines.
   b. Define angles created by parallel lines cut by a transversal: corresponding angles, alternate interior, alternate exterior, consecutive interior
   c. Identify angle relationships
   d. Use properties of parallel lines to find missing angle measures
   e. Prove that lines ate parallel using converse theorems
   f. Transitive Property
   g. Use Theorems about perpendicular lines
   h. Complementary and supplementary angles
   i. Vertical angles
8. Congruent Triangles
   a. Classify triangles by its sides and its angles
   b. Triangle Sum Theorem
   c. Remote Exterior Angle Theorem
   d. Congruent Triangles and corresponding parts
   e. Reflexive, Symmetric, and Transitive Property
   f. 5 Triangle Congruence Postulates : SSS, SAS, ASA, AAS, and HL.
   g. Stable figures
   h. Proofs using CPCTC
   i. Find missing measures of Isosceles and Equilateral Triangles
9. Relationships within Triangles
   a. Midsegment of a triangle
   b. Apply variable coordinates
   c. Define perpendicular and angle bisector
   d. Perpendicular Bisector Theorem (Converse)
   e. Angle Bisector Theorem (Converse)
   f. Define median and altitude
   g. Define centroid and find missing measures using centroids
   h. Relate side lengths to opposite angle measures

i. Triangle Inequality Theorem
j. Find the possible side lengths of the third side of a triangle.
k. Hinge Theorem (Converse)

10. Similarity
    a. Define and simplify ratios/extended ratios
    b. Solve proportions
    c. Find geometric means
    d. Properties of Proportions
    e. Scale drawings
    f. Use proportions to find missing measures of geometric figures
    g. Define similar polygons, corresponding angles, and sides.
    h. Find scale factors of similar figures
    i. 3 Triangle Similarity Postulates: AA, SSS, and SAS

Student Outcomes:

After successfully completing this course, the student will:

- Experiment with transformations in the plane
- Understand congruence in terms of rigid motions
- Make geometric constructions
- Understand similarity in terms of similarity transformations
- Prove geometric theorems.
- Prove theorems involving similarity
- Use coordinates to prove simple geometric theorems
- Define trigonometric ratios and solve problems involving right triangles
- Translate between the geometric description and the equation for a conic section
- Understand and apply theorems about circles
- Find arc lengths and areas of sectors of circles
- Explain volume formulas and use them to solve problems.
- Visualize relationships between two dimensional and three-dimensional objects
- Apply geometric concepts in modeling situations

New Jersey Student Learning Standards

CAREER READY PRACTICES

CRP1 Act as a responsible and contributing citizen and employee.

Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

CRP2 Apply appropriate academic and technical skills.

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world

applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation

CRP4 Communicate clearly and effectively and with reason.
Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

CRP6. Demonstrate creativity and innovation.
Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

CRP7. Employ valid and reliable research strategies.
Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

CRP11. Use technology to enhance productivity.
Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.

TECHNOLOGY
Standard 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
Strand B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
8.1.12.B.2- Apply previous content knowledge by creating and piloting a digital learning game or tutorial.
Standard 8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Strand C. Design: The design process is a systematic approach to solving problems.

8.2.12.C.3- Analyze a product or system for factors such as safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, and human factors engineering (ergonomics).

8.2.12.C.5- Create scaled engineering drawings of products both manually and digitally with materials and measurements labeled.

Strand E. Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

8.2.12.E.1- Demonstrate an understanding of the problem-solving capacity of computers in our world.

21ST CENTURY LIFE AND CAREERS

9.2 Career Awareness, Exploration, and Preparation

Strand C: Career Preparation

9.2.12.C.1 Review career goals and determine steps necessary for attainment.

9.2.12.C.3 Identify transferable career skills and design alternate career plans.

NEW JERSEY STUDENT LEARNING STANDARDS- MATH

G.C.A.1. Prove that all circles are similar.

G.C.A.2. Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.

G.C.A.3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.

G.C.B.5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

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.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.

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.
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.
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.
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.
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.
G.GPE.A.1. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
G.GPE.B.4. Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ 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.
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.
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).
G.SRT.A.1. Verify experimentally the properties of dilations given by a center and a scale factor:

G.SRT.A.1a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.

G.SRT.A.1b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.

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. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
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.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

III. Proficiency Levels

Honors Geometry is appropriate for students that have met the established criteria.

IV. Methods of Assessment

Student Assessment
The teacher will provide a variety of assessments during the course of the year. The assessment may include but is not limited to: chapter and unit tests and quizzes, teacher observations, open-ended problems, cooperative work, and homework.

Curriculum/Teacher Assessment
The teacher will provide the subject area supervisor with suggestions for changes on an ongoing basis.

V. Grouping

Honors Geometry is a heterogeneously grouped freshman/sophomore level course

VI. Articulation/Scope & Sequence/Time Frame

Course length is one year.

VII. Resources

Texts/Supplemental Reading/References

Geometry. McDougall Littell, 2008.

VIII. Suggested Activities

Appropriate activities are listed in the curriculum map.

IX. Methodologies

The following methods of instruction are suggested: teacher guided explorations, working in groups/working with a partner, working with manipulatives and discovery activities.

X. Interdisciplinary Connections

At this grade level, connections to many other disciplines are appropriate and natural. Reading and writing become an integral part of the mathematics process. Connections with science are frequent throughout the curricula. Technology plays an important part in learning mathematics as well.

XI. Differentiating Instruction for Students with Special Needs: Students with Disabilities, Students at Risk, English Language Learners, and Gifted & Talented Students

Differentiating instruction is a flexible process that includes the planning and design of instruction, how that instruction is delivered, and how student progress is measured. Teachers recognize that students can learn in multiple ways as they celebrate students' prior knowledge. By providing appropriately challenging learning, teachers can maximize success for all students.

Differentiating in this course includes but is not limited to:

Differentiation for Support (ELL, Special Education, Students at Risk)

- Peer mentoring on problems
- Differentiated teacher feedback on assignments
- Modeling out problems on whiteboard
- Visual aids as we project problems on whiteboard
- Study guides
- Tiered assignments
- Scaffolding of materials and assignments
- Re-teaching and review
- Guided note taking
- Exemplars of varied performance levels
- Multi-media approach to accommodating various learning styles

Differentiation for Enrichment

- Supplemental reading material for independent study
- Flexible grouping
- Tiered assignments
- Topic selection by interest
- Enhanced expectations for independent study
- Elevated questioning techniques using Webb's Depth of Knowledge matrix

XII. Professional Development

The teacher will continue to improve expertise through participation in a variety of professional development opportunities.

XII. Curriculum Map/Pacing Guide

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
STUDY OF RIGHT TRIANGLES • Pythagorean Theorem • Pythagorean Triples • Converse of Pythagorean Theorem • Classify Triangles • Altitudes Inside Right Triangles • Identify Similar Triangles • Special Right Triangles • (45-45-90;30-60-90) • Applying the Tangent Ratio • Apply the Sine and Cosine Ratio • Using the Inverse of Sine, Cosine, and Tangent Ratio • Angles of Elevation and Depression	5 weeks	*For Support:* • Visual Modeling with Mathematics • Provide Notes • Khan Academy Video • Use of Calculator • IXL *For Enhancement:* • Solving Real Life Pythagorean Problems • Multi-Step Area Problems Using the Pythagorean Theorem • SAT and ACT Flipped Classroom Videos • Open Ended Questions • Coordinate Geometry	HSG-SRT.B.4 HSG-SRT.C.8 HSG-SRT.B.5 HSG-MG.A.1 HSG-SRT.B.5 HSG-SRT.C.6 HSG-SRT.C.7 HSG-MG.A.3 CRP1,4,6,7,8,11 9.2.12.C.3	*Formative Assessment:* • Homework • Questioning • IXL • Classwork • LABS • Quizlet Live • Open Ended SAT/ACT *Summative Assessment* Quizzes -Pythagorean Theorem -Altitudes in Triangles -Special Right Triangles -Sine, Cosine, Tangent Unit Test on Right Triangle Geometry
QUADRILATERALS • Angle measures in polygons • Sum of the measure of all interior angles • Measure of exterior angles of a polygon • Use properties of a Parallelogram	4 weeks	*For Support:* • Use of Calculator • Provided notes • Provided formulas • IXL • Alternative Methods	HSG-CO.C.11 HSG-SRT.B.5 HSG-MG.A-1 HSG-MG.A-3 CRP1,4,6,7,8,11	*Formative Assessment:* • Homework • Questioning • IXL • Classwork • LABS

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
• Proving Quadrilaterals are Parallelograms. • Use properties of rectangles, rhombus, and squares • Use properties of trapezoids and kites • Use the Hierarchy of Quadrilaterals • Find Mid segments of a Trapezoid		• Quizlet • Geometers Sketchpad • Scaffolding *For Enhancement:* • ACT/SAT Flipped Classroom • Investigate Angle sums in Polygons • Problem Solving Workshop • Isometric Drawings • Orthographic Projection		• Quizlet Live • Open Ended SAT/ACT *Summative Assessment:* Quizzes -Angle measure in polygons/parallelograms -Rectangles, rhombus, squares, trapezoids, kites Unit Test on Quadrilaterals
PROPERTIES OF CIRCLES ● Define and understand parts of a circle ● Use Properties of Tangents ● Verify a tangent to a circle ● Use minor arcs, major arcs, and semi circles ● Compare congruent circles and congruent arcs ● Use chords to find arc measures ● Use Inscribed Angles to find Angle Measures ● Use inscribed polygons circumscribed in a circle ● Angles inside a circle theorem ● Angles outside a circle theorem ● Find lengths of chords using Segments of Chords Theorem ● Find lengths using Segments of	4 weeks	*For Support:* • Use of note cards for formulas • Provide Notes • Khan Academy Video • Use of Calculator • Use of IXL • scaffolding *For Enhancement:* • Use of IXL • MAP Assessment Tasks • SAT and ACT Flipped Classroom Videos • Open Ended Questions • Real World Problems and Activities	HSG-CO.A.1 HSG-C.A.2 HSG-C.A.4 HSG-C.A.1 HSG-MG.A.3 HSG-CO.D.13 HSG-MG.A.1 HSG-GPE.A.1 HSG-GPE.B.4 HSG-C.A.3 CRP1,4,6,7,8,11	*Formative Assessment:* • Homework • Questioning • IXL • Classwork • LABS • Quizlet Live • Open Ended SAT/ACT *Summative Assessment* Quizzes -Minor/major arcs -Central angle -Inscribed angles -Segment measures in a circle 2 Unit Tests -Angle/Arc measure -Segment lengths

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
Secants Theorem ● Find lengths using Segments of Secants and Tangents Theorem ● Find lengths using Tangents Theorem ● Write the standard equation of a circle				
MEASURING LENGTH AND AREA ● Find the perimeter and area of the following shapes: o Rectangle o Triangle o Parallelogram o Trapezoids o Kite o Rhombus o Circles o Sectors of Circles o Irregular shapes o Regular Polygons • Find the perimeter and area of similar figures • Find Circumference and Arc Length • Find Geometric Probabilities	5 weeks	*For Support:* • Use of note cards for formulas • Provide Notes • Khan Academy Video • Use of Calculator • Assistive Technology • Use of prompts • Modification of content *For Enhancement:* • Use of IXL • Extension activities • Curriculum compacting • Open Ended Questions • Higher order thinking skills • Analytical thinking tasks	HSG-GMD.A.1 HSG-C.B.5 HSG-CO.A.1 HSG-MG.A.2 HSG-GMD.A.3 HSG-GPE.B.7 HSG-MG.A.1 HSG-SRT.B.5 CRP1,4,6,7,8,11 9.2.12.C.1 9.2.12.C.3	*Formative Assessment:* • Homework • Questioning • IXL • Classwork • LABS • Quizlet Live • Open Ended SAT/ACT *Summative Assessment* Quizzes -Parallelograms. triangles, squares, trapezoids -Rhombus, kite, irregular shapes, shaded region similar figures -Regular polygons/geometric probability Unit Test -Area of Polygons
SURFACE AREA AND VOLUME OF SOLIDS ● Identify and name polyhedra	4 weeks	*For Support:* • Use of note cards for formulas • Provide Notes	HSG-GMD.B.4 HSG-GMD.A.1 HSG-GMD.A.2 HSG-GMD.A.3	*Formative Assessment:* • Homework • Questioning

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
• Euler's Theorem • Define cross section • Explore nets • Find Surface Area and Volume of: prisms, cylinders, pyramids, cones, spheres, regular polygons, spheres • Find surface area and volume of irregular figures • Explore similar solids • Find scale factors.		• Use of Calculator • Assistive Technology • Quizlet • Modification of content *For Enhancement:* • Use of IXL • DESMOS • Curriculum compacting • Open Ended Questions • Investigation Activities • Max/Min Surface Area Activity	HSG-MG.A.1 HSG-MG.A.2 HSG-MG.A.3 CRP1,4,6,7,8,11	• IXL • Classwork • LABS • Quizlet Live • Open Ended SAT/ACT *Summative Assessment* Quizzes -Euler's formula, Surface Area of Prism and Cylinder, spheres -Surface are of cones and pyramids -Volume of prisms, cylinders, spheres -Volume of cones and pyramids Unit Test -Surface area and volume of polyhedras
TRANSFORMATIONS • Identify transformations • Define rigid/non-rigid and image/pre-image • Translate figures in a coordinate plane • Transformation Notation • Reflections over x and y axis • Dilations : reduction and enlargement • Scale factors • Define vector, initial point, terminal point • Use Vector Component Form	2 weeks	*For Support:* • Geometers Sketchpad • Graph Paper Activities • Provide Notes • Use of Calculator • Assistive Technology • Quizlet • Modification of content *For Enhancement:* • Use of IXL • Tesselmania	HSG-CO.A.2 HSG-CO.A.4 HSG-CO.A.5 HSG-CO.B.6 HSG-CO.A.3 HSG-MG.A.3 HSG-CO.A.3 HSG-CO.A.5 HSG-SRT.A.1a HSG-SRT.A.1b HSG-SRT.A.2 CRP1,4,6,7,8,11	*Formative Assessment:* • Homework • Questioning • IXL • Classwork • LABS • Quizlet Live • Open Ended SAT/ACT *Summative Assessment:* 1 Unit Test – Transformations

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
• Use vectors to translate figures • Reflect figures over any given line • Perform rotations 90, 180, and 270 degrees. • Define positive and negative rotations • Glide reflections		• Tangram Activities • Constructions • Curriculum compacting • Open Ended Questions • Investigation Activities		
PARALLEL AND PERPENDICULAR LINES • Define parallel, perpendicular and skew lines. • Define angles created by parallel lines cut by a transversal: corresponding angles, alternate interior, alternate exterior, consecutive interior • Identify angle relationships • Use properties of parallel lines to find missing angle measures • Prove that lines ate parallel using converse theorems • Transitive Property • Use Theorems about perpendicular lines • Complementary and supplementary angles • Vertical angles	3 weeks	*For Support:* • Guided notes • Modified homework assignments • Modified assessments • Use of a calculator • Review guides *For Enhancement:* • Use of IXL • Inquiry based instruction • Real-world problems and scenarios	HSG-CO.A.1 HSG-CO.C.9 HSG-CO.D.12 HSG-GPE.B.5 CRP1,4,6,7,8,11 9.2.12.C.1 9.2.12.C.3	*Formative Assessment:* • Homework • Classwork • IXL • Questioning • PARCC Prep • ACT/SAT Questioning *Summative Assessment* Quizzes -parallel lines cut by a transversal -proving lines are parallel Unit Test Parallel and perpendicular lines
CONGRUENT TRIANGLES • Classify triangles by its sides and its	4 weeks	*For Support:* • Pre-teaching of vocabulary and concepts	HSG-CO.C.10 HSG-MG.A.1 HSG-CO.B.7	*Formative Assessment:* • Homework • Questioning

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
angles ● Triangle Sum Theorem ● Remote Exterior Angle Theorem ● Congruent Triangles and corresponding parts ● Reflexive, Symmetric, and Transitive Property ● 5 Triangle Congruence Postulates : SSS, SAS, ASA, AAS, and HL. ● Stable figures ● Proofs using CPCTC ● Find missing measures of Isosceles and Equilateral Triangles		• Guided notes • Modified homework assignments • Modified assessments • Use of a calculator • Review guides *For Enhancement:* • Use of IXL • Inquiry based instruction • Real-world problems and scenarios	HSG-CO.B.8 HSG-CO.D.13 HSG-MG.A.3 HSG-SRT.B.5 HSG-GPE.B.4 HSG-CO.B.8 CRP1,4,6,7,8,11	• IXL • Classwork • LABS • Quizlet Live • Open Ended SAT/ACT *Summative Assessment* Quizzes -Classifying triangles, finding missing interior and exterior angles -Proving triangle congruence using 5 Rules of Triangle Congruence -Isosceles and equilateral triangles Unit Test Triangle Congruence
RELATIONSHIPS WITHIN TRIANGLES ● Midsegment of a triangle ● Apply variable coordinates ● Define perpendicular and angle bisector ● Perpendicular Bisector Theorem (Converse) ● Angle Bisector Theorem (Converse) ● Define median and altitude ● Define centroid and find missing measures using centroids ● Relate side lengths to opposite angle measures ● Triangle Inequality Theorem ● Find the possible side lengths of the	3 weeks	*For Support:* • Pre-teaching of vocabulary and concepts • Guided notes • Modified homework assignments • Modified assessments • Use of a calculator • Review guides *For Enhancement:* • Use of IXL • Inquiry based instruction • Real-world problems and scenarios • Use of Khan Academy	HSG-CO.C.9 HSG-MG.A.1 HSG-CO.D.12 HSG-C.A.3 HSG-MG.A.3 HSG-CO.C.10 CRP1,4,6,7,8,11	*Formative Assessment:* • Homework • Questioning • IXL • Classwork • LABS • Quizlet Live • Open Ended SAT/ACT *Summative Assessment* Quizzes -Segment and angle bisectors, Midsegments of triangles -Centroid, Relationship between angles and sides of a triangle,

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
third side of a triangle. ● Hinge Theorem (Converse)				finding possible lengths of triangle. Unit Test Relationships in Triangles
SIMILARITY ● Define and simplify ratios/extended ratios ● Solve proprtions ● Find geometric means ● Properties of Proportions ● Scale drawings ● Use proportions to find missing measures of geometric figures ● Define similar polygons, corresponding angles, and sides. ● Find scale factors of similar figures ● 3 Triangle Similarity Postulates : AA, SSS, and SAS	4 weeks	*For Support:* • Pre-teaching of vocabulary and concepts • Guided notes • Modified homework assignments • Modified assessments • Use of a calculator • Review guides *For Enhancement:* • Use of IXL • Inquiry based instruction • Real-world problems and scenarios • Use of Khan Academy	HSG-SRT.A.2 HSG-MG.A.3 HSG-SRT.A.3 HSG-SRT.B.5 HSG-SRT.B.4 HSG-GPE.B.5 HSG-MG.A.1 HSG-GPE.B.6 CRP1,4,6,7,8,11 8.1.12.B.2	*Formative Assessment:* • Homework • Questioning • IXL • Classwork • LABS • Quizlet Live • Open Ended SAT/ACT *Summative Assessment* Quizzes -Simplify ratio's, Solving Proportions, Geometric Mean -Scale Factor, Solving for similar triangles, triangles similarity. - Solving for missing sides of proportional figures Unit Test - Similarity