COURSE DESCRIPTION

Course Title: Geometry Honors
Course Number: 00251
Course Prerequisites: 80% or higher in Algebra II Honors

Course Description: Geometry Honors is an academic course designed for the accelerated mathematics student planning on pursuing higher education; particularly those individuals whose primary interests are in mathematics. This course helps students recognize how algebra and geometry complement each other. In this course, students will learn various proof techniques and apply them to topics ranging from the basic elements of geometry to the areas and volumes of solids. Problems in this course will require higher level thinking skills and in-depth knowledge of the course content. This course is recommended for students planning on taking Calculus before graduating high school.

Suggested Grade Level: Grade 10
Length of Course: Two Semesters
Units of Credit: 1
PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:
CSPG#50 Mathematics
To find the CSPG information, go to CSPG
Certification verified by the WCSD Human Resources Department: ☒Yes   ☐No

WCSD STUDENT DATA SYSTEM INFORMATION

Course Level: Honors (.5) GPA +3%
Mark Types: Check all that apply.
                        ☒F – Final Average   ☒MP – Marking Period   ☒EXM – Final Exam

GPA Type: ☐ GPAEL-GPA Elementary ☐ GPAML-GPA for Middle Level ☒ NHS-National Honor Society
                        ☒ UGPA-Non-Weighted Grade Point Average   ☒ GPA-Weighted Grade Point Average

State Course Code: 02072
To find the State Course Code, go to State Course Code, download the Excel file for *SCED*, click on SCED 6.0 tab, and chose the correct code that corresponds with the course.

TEXTBOOKS AND SUPPLEMENTAL MATERIALS

Board Approved Textbooks, Software, and Materials:
   Title: Geometry – A Common Core Curriculum
   Publisher: Big Ideas Math
   ISBN #:   978-1-64208-762-8
   Copyright Date: 2019
   WCSD Board Approval Date: 6/29/2020

Supplemental Materials: Geometry for Enjoyment and Challenge, McDougal and Littell
Kutasoftware.com

Curriculum Document

WCSD Board Approval:
   Date Finalized: 6/5/2020
   Date Approved: 6/29/2020
   Implementation Year: 2020-2021

SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

SCOPE AND SEQUENCE OF CONTENT, CONCEPTS, AND SKILLS

Performance Indicator	PA Core Standard and/or Eligible Content	Month Taught and Assessed for Mastery
Identify and name points, lines, planes, segments, and rays in a geometric diagram.	A.1	September Choose an item.
Sketch and name intersections lines and planes.	A.1	September Choose an item.
Solve real-life problems involving lines and planes.	A.1	September Choose an item.
Compare segments for congruence.	A.1, D.2	September Choose an item.
Use the Segment Addition Postulate to determine lengths of segments.	A.1, D.2	September Choose an item.
Determine the Midpoint of a segment using the Midpoint Formula.	D.12, B.7	September Choose an item.
Calculate the length of a segment using the Distance Formula.	D.12, B.7	September Choose an item.
Find lengths using midpoints and bisectors.	D.12, B.7	September Choose an item.
Classify polygons according the number of sides and whether they are concave or convex.	B.7, A.1	September Choose an item.
Find the perimeters and areas of polygons in the coordinate plane.	B.7, A.1	September Choose an item.
Name, measure, and classify angles.	A.1., D.12	September Choose an item.
Find the measures of angles using the Angle Addition Postulate.	A.1, D.12	September Choose an item.
Convert between degrees and degrees, minutes, and seconds forms.	A.1, D.12	September
Bisect and trisect angles to find missing measures.	A.1, D.12	September Choose an item.
Identify complementary, supplementary, and vertical angles as well as linear pairs.	A.1, D.12	September Choose an item.
Write conditional statements.	C.9, C.10, C.11, B.4	October Choose an item.
Write the converse, inverse, and contrapositive of a conditional statement and determine their truth values.	C.9, C.10, C.11, B.4	October Choose an item.
Write biconditional statements.	C.9, C.10, C.11, B.4	October Choose an item.
Construct truth tables.	C.9, C.10, C.11, B.4	October Choose an item.
Use inductive and deductive reasoning to draw conclusions.	C.9, C.10, C.11, B.4	October Choose an item.
Sketch and interpret diagrams.	C.9, C.10, C.11, B.4	October Choose an item.
Identify methods of determining a plane.	C.9, C.10, C.11, B.4	October Choose an item.
Use Algebraic Properties of Equality to justify the steps in solving an equation.	C.9, C.10, C.11, B.4	October Choose an item.
Write two-column proofs to prove statements about segments and angles.	C.9	October Choose an item.

Use two-column proofs and paragraph proofs to prove geometric relationships.	C.9	October Choose an item.
Use the congruent complements theorem and the congruent supplements theorem to identify congruent angles and prove geometric relationships.	C.9	October Choose an item.
Identify parallel planes.	A.1	October November
Identify pairs of angles formed by transversals.	A.1	October November
Find measures of missing angles using properties of parallel lines.	C.9	October November
Prove theorems about parallel lines using angle theorems and their converses.	C.9, C.12	October November
Calculate the distance from a point to a line.	C.9, D.12	October November
Prove theorems about perpendicular lines.	C.9, D.12	October November
Solve real-life problems involving perpendicular lines.	C.9, D.12	October November
Identify parallel and perpendicular lines on a coordinate plane.	B.5, B.6	October November
Write equations of parallel and perpendicular lines.	B.5, B.6	October November
Use slope to find the distance from a point to a line.	B.5, B.6	October November
Perform translations and compositions and solve real life problems involving them.	A.2, A.4, A.5, B.6	November December
Perform reflections and glide reflections.	A.2, A.3, A.4, A.5, B.6,	November December
Identify lines of symmetry.	A.2, A.3, A.4, A.5, B.6	November December
Perform rotations and compositions of them.	A.2, A.3, A.4, A.5, B.6	November December
Identify rotational symmetry.	A.2, A.3, A.4, A.5, B.6	November December
Describe congruence transformations and use their theorems to answer questions about a diagram.	A.5, B.6	November December
Identify and perform dilations.	A.5, B.6	November December
Perform and describe similarity transformations.	A.2, A.1	November December
Prove that triangles are similar.	A.2, A.5	November December
Classify triangles by sides and angles.	C.10, A.1	December January
Find interior and exterior angle measures of triangles.	C.10, A.1	December January
Identify and use corresponding parts to find missing measures in a diagram.	B.7	December January
Use the third angles theorem to find missing measures and complete proofs.	B.7	December January
Use the triangle congruence theorems to prove triangles congruent.	A.1, B.8	December January
Use properties of isosceles and equilateral triangles to find missing values and complete proofs.	A.1, C.10, D.13	December January

Use congruent triangles to solve real world application problems.	B.5	December January
Place figures in a coordinate plane.	B.4	December January
Write coordinate proofs.	B.4	December January
Use perpendicular bisectors to find measures.	A.1, C.9	January Choose an item.
Use angle bisectors to find measures and distance relationships.	A.1, C.9	January Choose an item.
Write equations for perpendicular bisectors.	A.1, C.9	January Choose an item.
Use medians and altitudes of triangles.	C.10	January Choose an item.
Use midsegments of triangles in the coordinate plane.	A.1, C.10	January Choose an item.
Use the triangle Midsegment Theorem to find distances.	A.1, C.10	January Choose an item.
Write indirect proofs.	C.10	January Choose an item.
List sides and angles of a triangle in order by size.	C.10	January Choose an item.
Use the Triangle Inequality Theorem to find possible side lengths of triangles.	C.10	January Choose an item.
Compare measures in triangles.	C.10	January Choose an item.
Solve real-life problems using the Hinge Theorem.	C.10	January Choose an item.
Use the interior and exterior angles of polygons to find missing measures.	C.11	February Choose an item.
Use properties to find side lengths and angles of parallelograms.	B.5, C.11	February Choose an item.
Identify and verify parallelograms.	A.1, B.5, C.11	February Choose an item.
Show that a quadrilateral is a parallelogram in the coordinate plane.	A.1, B.5, C.11	February Choose an item.
Use properties of special parallelograms to find side lengths and angles.	A.1, A.3, B.5, C.11	February Choose an item.
Use coordinate geometry to identify special types of parallelograms.	A.1, A.3, B.5, C.11	February Choose an item.
Use properties of trapezoids and kites to find side lengths and angles.	A.1, B.5	February Choose an item.
Use the Trapezoid Midsegment Theorem to find distances.	A.1, B.5	February Choose an item.
Use similarity statements.	A.2, A.3	February March
Find corresponding lengths in similar polygons.	A.2, A.3	February March
Find perimeters and areas of similar polygons.	A.2, A.3	February March
Decide whether polygons are similar.	A.2, A.3	February March
Use the Angle-Angle, Side-Side-Side, and Side-Angle-Side Theorems.	A.1, B.4, B.5	February March
Use the Triangle Proportionality Theorem and its converse.	B.4, B.5, B.6	February March

Use other proportionality theorems.	B.4, B.5, B.6	February March
Use the Pythagorean Theorem.	B.4, C.8	March April
Use the Converse of the Pythagorean Theorem.	B.4, C.8	March April
Classify triangles.	B.4, C.8	March April
Find side lengths in special right triangles.	A.1, C.8	March April
Solve real-life problems involving special right triangles.	A.1, C.8	March April
Identify similar triangles.	B.5	March April
Solve real-life problems involving similar triangles.	B.5	March April
Use geometric means.	B.5	March April
Use the tangent ratio.	C.6, C.8	March April
Solve real-life problems involving the tangent ratio.	C.6, C.8	March April
Use the sine and cosine of angle measures in special right triangles.	A.1, C.6, C.7, C.8	March April
Solve real-life problems involving since and cosine ratios.	C.6, C.7, C.8	March April
Use inverse trigonometric ratios.	A.1, A.3, C.8	March April
Solve right triangles.	A.1, A.3, C.8	March April
Find areas of triangles.	A.3, D.9, D.10, D.11	March April
Use the law of Sines and the Law of Cosines to solve triangles.	A.3, D.9, D.10. D.11	March April
Identify special segments and lines of circles.	A.1, A.2, A.4	April May
Draw and identify common tangents.	A.1, A.2, A.4	April May
Use properties of tangents.	A.1, A.2, A.4	April May
Find arc measures.	A.1, A.2	April May
Identify congruent arcs.	A.1, A.2	April May
Use chords of circles to find lengths and arc measures.	A.2, A.3	April May
Use inscribed angles.	A.2, A.3, D.13	April May
Use inscribed polygons.	A.2, A.3, D.13	April May
Find angle and arc measures.	A.2	April May
Use circumscribed angles.	A.2	April May
Use segments of chords, tangents, and secants.	A.1, A.2	April May

Write and graph equations of circles.	A.1, B.4	April May
Solve real-life problems using graphs of circles.	A.1, B.4	April May
Use the formula for circumference.	A.1, B.5	May June
Use arc lengths to find measures.	A.1, B.5	May June
Solve real-life problems.	A.1, B.5	May June
Measure angles in radians.	A.1, B.5	May June
Use the formula for area of a circle.	A.1, A.2, B.5	May June
Use the formula for population density.	A.1, A.2, B.5	May June
Find areas of sectors.	A.1, A.2, B.5	May June
Use areas of sectors.	A.1, A.2, B.5	May June
Find areas of rhombuses and kites.	A.3	May June
Find angle measures in regular polygons.	A.3	May June
Find areas of regular polygons.	A.3	May June
Classify solids.	B.4	May June
Describe cross sections.	B.4	May June
Sketch and describe solids of revolution.	B.4	May June
Find volumes of prisms and cylinders.	A.1, A.2, A.3	May June
Use the formula for density.	A.1, A.2, A.3	May June
Use volumes of prisms and cylinders.	A.1, A.2, A.3	May June
Find and use volumes of pyramids	A.1, A.3	May June
Find surface areas of right cones	A.1, A.3	May June
Find and use volumes of cones.	A.1, A.3	May June
Find surface areas and volumes of spheres.	A.1, A.2, A.3	May June

ASSESSMENTS

PSSA Academic Standards, Assessment Anchors, and Eligible Content: The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

Formative Assessments: The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

Effective formative assessments for this course include: Formative assessments can include but are not limited to bell ringers, homework assignments, quizzes, projects, exit tickets, cooperative learning, observations, oral response, self-evaluation, and in-class assignments.

Summative Assessments: The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

Effective summative assessments for this course include: Summative assessments can include but are not limited to performance assessments, projects, tests, quizzes, and final exams.