**COURSE DESCRIPTION**

**Course Title:** Geometry Honors

**Course Number:** 00251

**Course Prerequisites:** 80% or higher in Algebra II Honors

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| **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](https://www.education.pa.gov/Educators/Certification/Staffing%20Guidelines/Pages/default.aspx)

**Certification verified by the WCSD Human Resources Department:** [x] Yes [ ] No

**WCSD STUDENT DATA SYSTEM INFORMATION**

**Course Level:** Honors (.5) GPA +3%

**Mark Types:** Check all that apply.

[x] F – Final Average [x] MP – Marking Period [x] EXM – Final Exam

**GPA Type**: [ ]  GPAEL-GPA Elementary [ ]  GPAML-GPA for Middle Level [x]  NHS-National Honor Society

[x]  UGPA-Non-Weighted Grade Point Average [x]  GPA-Weighted Grade Point Average

**State Course Code**: 02072

To find the State Course Code, go to [State Course Code](https://nces.ed.gov/forum/sced.asp), 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**

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| --- | --- | --- |
| **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 | SeptemberChoose an item. |
| Sketch and name intersections lines and planes. | A.1 | SeptemberChoose an item. |
| Solve real-life problems involving lines and planes. | A.1 | SeptemberChoose an item. |
| Compare segments for congruence. | A.1, D.2 | SeptemberChoose an item. |
| Use the Segment Addition Postulate to determine lengths of segments. | A.1, D.2 | SeptemberChoose an item. |
| Determine the Midpoint of a segment using the Midpoint Formula. | D.12, B.7 | SeptemberChoose an item. |
| Calculate the length of a segment using the Distance Formula. | D.12, B.7 | SeptemberChoose an item. |
| Find lengths using midpoints and bisectors. | D.12, B.7 | SeptemberChoose an item. |
| Classify polygons according the number of sides and whether they are concave or convex. | B.7, A.1 | SeptemberChoose an item. |
| Find the perimeters and areas of polygons in the coordinate plane. | B.7, A.1 | SeptemberChoose an item. |
| Name, measure, and classify angles. | A.1., D.12 | SeptemberChoose an item. |
| Find the measures of angles using the Angle Addition Postulate. | A.1, D.12 | SeptemberChoose 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 | SeptemberChoose an item. |
| Identify complementary, supplementary, and vertical angles as well as linear pairs. | A.1, D.12 | SeptemberChoose an item. |
| Write conditional statements. | C.9, C.10, C.11, B.4 | OctoberChoose 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 | OctoberChoose an item. |
| Write biconditional statements. | C.9, C.10, C.11, B.4 | OctoberChoose an item. |
| Construct truth tables. | C.9, C.10, C.11, B.4 | OctoberChoose an item. |
| Use inductive and deductive reasoning to draw conclusions. | C.9, C.10, C.11, B.4 | OctoberChoose an item. |
| Sketch and interpret diagrams. | C.9, C.10, C.11, B.4 | OctoberChoose an item. |
| Identify methods of determining a plane. | C.9, C.10, C.11, B.4 | OctoberChoose an item. |
| Use Algebraic Properties of Equality to justify the steps in solving an equation. | C.9, C.10, C.11, B.4 | OctoberChoose an item. |
| Write two-column proofs to prove statements about segments and angles. | C.9 | OctoberChoose an item. |
| Use two-column proofs and paragraph proofs to prove geometric relationships. | C.9 | OctoberChoose an item. |
| Use the congruent complements theorem and the congruent supplements theorem to identify congruent angles and prove geometric relationships. | C.9 | OctoberChoose an item. |
| Identify parallel planes. | A.1 | OctoberNovember |
| Identify pairs of angles formed by transversals. | A.1 | OctoberNovember |
| Find measures of missing angles using properties of parallel lines. | C.9 | OctoberNovember |
| Prove theorems about parallel lines using angle theorems and their converses. | C.9, C.12 | OctoberNovember |
| Calculate the distance from a point to a line. | C.9, D.12 | OctoberNovember |
| Prove theorems about perpendicular lines. | C.9, D.12 | OctoberNovember |
| Solve real-life problems involving perpendicular lines. | C.9, D.12 | OctoberNovember |
| Identify parallel and perpendicular lines on a coordinate plane. | B.5, B.6 | OctoberNovember |
| Write equations of parallel and perpendicular lines. | B.5, B.6 | OctoberNovember |
| Use slope to find the distance from a point to a line. | B.5, B.6 | OctoberNovember |
| Perform translations and compositions and solve real life problems involving them. | A.2, A.4, A.5, B.6 | NovemberDecember |
| Perform reflections and glide reflections. | A.2, A.3, A.4, A.5, B.6,  | NovemberDecember |
| Identify lines of symmetry. | A.2, A.3, A.4, A.5, B.6 | NovemberDecember |
| Perform rotations and compositions of them. | A.2, A.3, A.4, A.5, B.6 | NovemberDecember |
| Identify rotational symmetry. | A.2, A.3, A.4, A.5, B.6 | NovemberDecember |
| Describe congruence transformations and use their theorems to answer questions about a diagram. | A.5, B.6 | NovemberDecember |
| Identify and perform dilations. | A.5, B.6 | NovemberDecember |
| Perform and describe similarity transformations. | A.2, A.1  | NovemberDecember |
| Prove that triangles are similar. | A.2, A.5 | NovemberDecember |
| Classify triangles by sides and angles. | C.10, A.1 | DecemberJanuary |
| Find interior and exterior angle measures of triangles. | C.10, A.1 | DecemberJanuary |
| Identify and use corresponding parts to find missing measures in a diagram. | B.7 | DecemberJanuary |
| Use the third angles theorem to find missing measures and complete proofs. | B.7 | DecemberJanuary |
| Use the triangle congruence theorems to prove triangles congruent. | A.1, B.8 | DecemberJanuary |
| Use properties of isosceles and equilateral triangles to find missing values and complete proofs. | A.1, C.10, D.13 | DecemberJanuary |
| Use congruent triangles to solve real world application problems. | B.5 | DecemberJanuary |
| Place figures in a coordinate plane. | B.4 | DecemberJanuary |
| Write coordinate proofs. | B.4 | DecemberJanuary |
| Use perpendicular bisectors to find measures. | A.1, C.9 | JanuaryChoose an item. |
| Use angle bisectors to find measures and distance relationships. | A.1, C.9 | JanuaryChoose an item. |
| Write equations for perpendicular bisectors. | A.1, C.9 | JanuaryChoose an item. |
| Use medians and altitudes of triangles. | C.10 | JanuaryChoose an item. |
| Use midsegments of triangles in the coordinate plane. | A.1, C.10 | JanuaryChoose an item. |
| Use the triangle Midsegment Theorem to find distances. | A.1, C.10 | JanuaryChoose an item. |
| Write indirect proofs. | C.10 | JanuaryChoose an item. |
| List sides and angles of a triangle in order by size. | C.10 | JanuaryChoose an item. |
| Use the Triangle Inequality Theorem to find possible side lengths of triangles. | C.10 | JanuaryChoose an item. |
| Compare measures in triangles. | C.10 | JanuaryChoose an item. |
| Solve real-life problems using the Hinge Theorem. | C.10 | JanuaryChoose an item. |
| Use the interior and exterior angles of polygons to find missing measures. | C.11 | FebruaryChoose an item. |
| Use properties to find side lengths and angles of parallelograms. | B.5, C.11 | FebruaryChoose an item. |
| Identify and verify parallelograms. | A.1, B.5, C.11 | FebruaryChoose an item. |
| Show that a quadrilateral is a parallelogram in the coordinate plane. | A.1, B.5, C.11 | FebruaryChoose an item. |
| Use properties of special parallelograms to find side lengths and angles. | A.1, A.3, B.5, C.11 | FebruaryChoose an item. |
| Use coordinate geometry to identify special types of parallelograms. | A.1, A.3, B.5, C.11 | FebruaryChoose an item. |
| Use properties of trapezoids and kites to find side lengths and angles. | A.1, B.5 | FebruaryChoose an item. |
| Use the Trapezoid Midsegment Theorem to find distances. | A.1, B.5 | FebruaryChoose an item. |
| Use similarity statements. | A.2, A.3 | FebruaryMarch |
| Find corresponding lengths in similar polygons. | A.2, A.3 | FebruaryMarch |
| Find perimeters and areas of similar polygons. | A.2, A.3 | FebruaryMarch |
| Decide whether polygons are similar. | A.2, A.3 | FebruaryMarch |
| Use the Angle-Angle, Side-Side-Side, and Side-Angle-Side Theorems. | A.1, B.4, B.5 | FebruaryMarch |
| Use the Triangle Proportionality Theorem and its converse. | B.4, B.5, B.6 | FebruaryMarch |
| Use other proportionality theorems. | B.4, B.5, B.6 | FebruaryMarch |
| Use the Pythagorean Theorem. | B.4, C.8 | MarchApril |
| Use the Converse of the Pythagorean Theorem. | B.4, C.8 | MarchApril |
| Classify triangles. | B.4, C.8 | MarchApril |
| Find side lengths in special right triangles. | A.1, C.8 | MarchApril |
| Solve real-life problems involving special right triangles. | A.1, C.8 | MarchApril |
| Identify similar triangles. | B.5 | MarchApril |
| Solve real-life problems involving similar triangles. | B.5 | MarchApril |
| Use geometric means. | B.5 | MarchApril |
| Use the tangent ratio. | C.6, C.8 | MarchApril |
| Solve real-life problems involving the tangent ratio. | C.6, C.8 | MarchApril |
| Use the sine and cosine of angle measures in special right triangles. | A.1, C.6, C.7, C.8 | MarchApril |
| Solve real-life problems involving since and cosine ratios. | C.6, C.7, C.8 | MarchApril |
| Use inverse trigonometric ratios. | A.1, A.3, C.8 | MarchApril |
| Solve right triangles. | A.1, A.3, C.8 | MarchApril |
| Find areas of triangles. | A.3, D.9, D.10, D.11 | MarchApril |
| Use the law of Sines and the Law of Cosines to solve triangles. | A.3, D.9, D.10. D.11 | MarchApril |
| Identify special segments and lines of circles. | A.1, A.2, A.4 | AprilMay |
| Draw and identify common tangents. | A.1, A.2, A.4 | AprilMay |
| Use properties of tangents. | A.1, A.2, A.4 | AprilMay |
| Find arc measures. | A.1, A.2 | AprilMay |
| Identify congruent arcs. | A.1, A.2 | AprilMay |
| Use chords of circles to find lengths and arc measures. | A.2, A.3 | AprilMay |
| Use inscribed angles. | A.2, A.3, D.13 | AprilMay |
| Use inscribed polygons. | A.2, A.3, D.13 | AprilMay |
| Find angle and arc measures. | A.2 | AprilMay |
| Use circumscribed angles. | A.2 | AprilMay |
| Use segments of chords, tangents, and secants. | A.1, A.2 | AprilMay |
| Write and graph equations of circles. | A.1, B.4 | AprilMay |
| Solve real-life problems using graphs of circles. | A.1, B.4 | AprilMay |
| Use the formula for circumference. | A.1, B.5 | MayJune |
| Use arc lengths to find measures. | A.1, B.5 | MayJune |
| Solve real-life problems. | A.1, B.5 | MayJune |
| Measure angles in radians. | A.1, B.5 | MayJune |
| Use the formula for area of a circle. | A.1, A.2, B.5 | MayJune |
| Use the formula for population density. | A.1, A.2, B.5 | MayJune |
| Find areas of sectors. | A.1, A.2, B.5 | MayJune |
| Use areas of sectors. | A.1, A.2, B.5 | MayJune |
| Find areas of rhombuses and kites. | A.3 | MayJune |
| Find angle measures in regular polygons. | A.3 | MayJune |
| Find areas of regular polygons. | A.3 | MayJune |
| Classify solids. | B.4 | MayJune |
| Describe cross sections. | B.4 | MayJune |
| Sketch and describe solids of revolution. | B.4 | MayJune |
| Find volumes of prisms and cylinders. | A.1, A.2, A.3 | MayJune |
| Use the formula for density. | A.1, A.2, A.3 | MayJune |
| Use volumes of prisms and cylinders. | A.1, A.2, A.3 | MayJune |
| Find and use volumes of pyramids | A.1, A.3 | MayJune |
| Find surface areas of right cones | A.1, A.3 | MayJune |
| Find and use volumes of cones. | A.1, A.3 | MayJune |
| Find surface areas and volumes of spheres. | A.1, A.2, A.3 | MayJune |

**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.