**Danville Area School District**
**Course Overview and Scope and Sequence**

**Course Title: Keystone Geometry Honors**
**Content Area: Mathematics**
**Grade Level: Grades 9 - 11**
**Date Developed: June 2023**

COURSE OVERVIEW: Course topics focus on the Pennsylvania state Keystone anchors, as well as selected SAT content domains, and include, but are not limited to, angles and segments, an in-depth study of two-column proofs, parallel lines, triangles and their congruence and similarity, parallelograms and other polygons, circles, area and volume, transformations, and the application of basic trigonometric functions. Students will be required to complete honors level work at a pace designed to prepare them for additional honors caliber and advanced placement coursework. Enrichment will occur through in-depth analysis of all topics as well as acceleration towards trigonometric skills. Prerequisites: Successful completion of Keystone Algebra I. Student data such as CDT's and PVAAS may also be utilized for placement.

ANCHOR STANDARDS:
CC.2.3.HS.A.1 Use geometric figures and their properties to represent transformations in the plane.
CC.2.3.HS.A.2 Apply rigid transformations to determine and explain congruence.
CC.2.3.HS.A.3 Verify and apply geometric theorems as they relate to geometric figures.
CC.2.3.HS.A.5 Create justifications based on transformations to establish similarity of plane figures.
CC.2.3.HS.A.6 Verify and apply theorems involving similarity as they relate to plane figures.
CC.2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles.
CC.2.3.HS.A.8 Apply geometric theorems to verify properties of circles.
CC.2.3.HS.A.9 Extend the concept of similarity to determine arc lengths and areas of sectors of circles.
CC.2.3.HS.A.11 Apply coordinate geometry to prove simple geometric theorems algebraically.
CC.2.3.HS.A.12 Explain volume formulas and use them to solve problems.
CC.2.3.HS.A.13 Analyze relationships between two-dimensional and three-dimensional objects.
CC.2.3.HS.A.14 Apply geometric concepts to model and solve real world problems.

G.1.1.1.1 Identify, determine, and/or use the radius, diameter, segment, and/or tangent of a circle.
G.1.1.1.2 Identify, determine, and/or use the arcs, semicircles, sectors, and/or angles of a circle.
G.1.1.1.3 Use chords, tangents, and secants to find missing arc measures or missing segment measures.
G.1.1.1.4 Identify and/or use the properties of a sphere or cylinder.
G.1.2.1.1 Identify and/or use properties of triangles.
G.1.2.1.2 Identify and/or use properties of quadrilaterals.
G.1.2.1.3 Identify and/or use properties of isosceles and equilateral triangles.
G.1.2.1.4 Identify and/or use properties of regular polygons.
G.1.2.1.5 Identify and/or use properties of pyramids and prisms.
G.1.3.1.1 Identify and/or use properties of congruent and similar polygons or solids.
G.1.3.1.2 Identify and/or use proportional relationships in similar figures.
G.1.3.2.1 Write, analyze, complete, or identify formal proofs (e.g., direct and/or indirect proofs/proofs by contradiction).
G.2.1.1.1 Use the Pythagorean theorem to write and/or solve problems involving right triangles.
G.2.1.1.2 Use trigonometric ratios to write and/or solve problems involving right triangles.
G.2.1.2.1 Calculate the distance and/or midpoint between two points on a number line or on a coordinate plane.
G.2.1.2.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic equations).
G.2.1.2.3 Use slope, distance, and/or midpoint between two points on a coordinate plane to establish properties of a two-dimensional shape.
G.2.2.1.1 Use properties of angles formed by intersecting lines to find the measures of missing angles.
G.2.2.1.2 Use properties of angles formed when two parallel lines are cut by a transversal to find the measures of missing angles.
G.2.2.2.1 Estimate area, perimeter, or circumference of an irregular figure.
G.2.2.2.2 Find the measurement of a missing length, given the perimeter, circumference, or area.
G.2.2.2.3 Find the side lengths of a polygon with a given perimeter to maximize the area of the polygon.
G.2.2.2.4 Develop and/or use strategies to estimate the area of a compound/composite figure.
G.2.2.2.5 Find the area of a sector of a circle.
G.2.2.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, and area (e.g., How does changing the length of the radius of a circle affect the circumference of the circle?).
G.2.3.1.1 Calculate the surface area of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet.
G.2.3.1.2 Calculate the volume of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet.
G.2.3.1.3 Find the measurement of a missing length given the surface area or volume.
G.2.3.2.1 Describe how a change in the linear dimension of a figure affects its surface area or volume (e.g., How does changing the length of the edge of a cube affect the volume of the cube?).

KEY COURSE TEXT AND MATERIALS: Geometry by Carter, Cuevas, Day, and Malloy (McGraw Hill)

KEY ASSESSMENTS:
Diagnostic: Keystone Algebra I Exam, PVAAS data
Formative: Concept quizzes, exit tickets, graded assignments
Summative: Unit tests, half-chapter quizzes, final exam

| SCOPE AND SEQUENCE | | | | | |
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| Unit | PRIORITY STANDARDS | SUPPORTING STANDARDS | ASSESSMENT | MATERIALS | TIMEFRAME |
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| Unit: Tools of Geometry | CC.2.3.HS.A.11<br>CC.2.3.HS.A.13 | G.1.1.1.1<br>G.2.1.2.1<br>G.2.1.2.3<br>G.2.2.1.1 | Quizzes<br>Homework Checks<br>Graded Assignment<br>Bellringers<br>Exit Tickets | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 19 Days |
| Unit: Parallel & Perpendicular Lines | CC.2.3.HS.A.3 | G.2.1.2.2<br>G.2.2.1.1<br>G.2.2.1.2 | Quizzes<br>Unit Exam<br>Homework Checks<br>Graded Assignment<br>Bellringers<br>Exit Tickets<br>Open Ended Response | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 23 Days |

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| Unit: Congruent Triangles | CC.2.3.HS.A.13 | G.1.2.1.1<br>G.1.2.1.3 | Quizzes<br>Unit Exam<br>Homework Checks<br>Graded Assignment<br>Bellringers<br>Exit Tickets<br>Open Ended Response | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 12 Days |
| Unit: Relationships in Triangles | CC.2.3.HS.A.13 | G.1.2.1.1 | Quizzes<br>Homework Checks<br>Graded Assignment<br>Bellringers<br>Exit Tickets<br>Open Ended Response | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 12 Days |
| Unit: Quadrilaterals | CC.2.3.HS.A.13 | G.1.2.1.2 | Quizzes<br>Unit Exam<br>Homework Checks<br>Graded Assignment<br>Bellringers<br>Exit Tickets<br>Open Ended Response | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 22 Days |
| Unit: Proportions & Similarity | CC.2.3.HS.A.1<br>CC.2.3.HS.A.2<br>CC.2.3.HS.A.5<br>CC.2.3.HS.A.6 | G.1.3.1.1<br>G.1.3.1.2 | Quizzes<br>Chapter Exam<br>Homework Checks<br>Q & A<br>Check Understandings | Textbook assignments, teacher created materials. All materials will be posted on Google | 15 Days |

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| Unit: Right Triangles and Trigonometry | CC.2.3.HS.A.1<br>CC.2.3.HS.A.2<br>CC.2.3.HS.A.5<br>CC.2.3.HS.A.6<br>CC.2.3.HS.A.7<br>CC.2.3.HS.A.9<br>CC.2.3.HS.A.13 | G.1.2.1.1<br>G.1.3.1.2<br>G.2.1.1.1<br>G.2.1.1.2 | Quizzes<br>Chapter Exam<br>Homework Checks<br>Q & A<br>Check Understandings | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 20 Days |
| Unit: Transformation & Symmetry | CC.2.3.HS.A.2 | G.1.3.1.1<br>G.1.3.1.2 | Unit Quiz<br>Homework Checks<br>Bellringers<br>Exit Tickets | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 8 Days |
| Unit: Circles | CC.2.3.HS.A.8<br>CC.2.3.HS.A.9<br>CC.2.3.HS.A.13 | G.1.1.1.1<br>G.1.1.1.2<br>G.1.1.1.3<br>G.2.1.1.1<br>G.2.2.1.1<br>G.2.2.2.2 | Quizzes<br>Unit Exam<br>Homework Checks<br>Graded Assignment<br>Bellringers<br>Exit Tickets<br>SAT Prep Assignment | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 20 Days |
| Unit: Areas of Polygons and Circles | CC.2.3.HS.A.3<br>CC.2.3.HS.A.8<br>CC.2.3.HS.A.9<br>CC.2.3.HS.A.13 | G.1.1.1.2<br>G.1.2.1.1<br>G.1.2.1.4<br>G.2.2.2.2<br>G.2.2.2.4<br>G.2.2.2.5 | Quizzes<br>Unit Exam<br>Homework Checks<br>Bellringers<br>Exit Tickets<br>SAT Prep Assignment | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 12 Days |

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| Unit: Surface Area and Volume | CC.2.3.HS.A.14 | G.1.1.1.4<br>G.1.2.1.4<br>G.1.2.1.5<br>G.2.2.2.4<br>G.2.3.1.1<br>G.2.3.1.3<br>G.2.3.2.1 | Quizzes<br>Unit Exam<br>Homework Checks<br>Graded Assignment<br>Bellringers<br>Exit Tickets<br>Open Ended Response | Textbook assignments, teacher created materials. All materials will be posted on Google Classroom. | 12 Days |