

Course Outlines

Name of the course:

Geometry Common Core

Course description:

Geometry Common Core takes an inductive approach to the study of geometric topics with an emphasis on the practical applications of those concepts.

Essential Questions:

- When and why should we estimate?
- Is there a pattern?
- How does what we measure influence how we measure?
- How does how we measure influence what we measure or don't measure?
- What do good problem solvers do especially when they get stuck?
- How precise should this solution be?
- What are the limits of this mathematical model and of mathematical modeling in general?

Topics:

Unit 1 Tools of Geometry

Undefined Terms (points, lines, planes), Linear Measure, Betweenness of points, Congruent Segments, Distance Formula, Midpoint Formula, Angle Measure, Classify Angles, Angle Bisector, Special Angle Relationships

Unit 2 Parallel and Perpendicular Lines

Parallel Lines and Transversals, Slope, Equations of Lines, Perpendiculars and Distance

Unit 3 Triangles

Classifying Triangles (by sides and angles), Congruent Triangles (SSS,SAS,ASA, AAS), Bisectors of Triangles, Medians and Altitudes of Triangles, Triangle Inequality

Unit 4 Quadrilaterals

Polygons, Parallelograms, Rectangles, Rombi and Squares, Trapezoids and Kites

Unit 5 Proportions and Similarity

Ratios and Proportions, Similar Polygons, Similar Triangles, Parallel Lines and Proportional Parts, Scale Drawings and Models

Unit 6 Right Triangle Trigonometry

Geometric Mean, Pythagorean Theorem, Special Right Triangles, Sine, Cosine, Tangent, Angles of Elevation and Depression, Laws of Sines and Law of Cosines

Unit 7 Circles

Circumference, Measuring Angles and Arcs,

Unit 8 Area, Surface Area and Volume

Areas of Parallelograms and Triangles, Areas of Circles, Surface Areas of Prisms and Cylinders, Surface Areas of Pyramids and Cones, Volumes of Prisms and Cylinders, Volumes of Pyramids and Cones, Surface Area and Volume of Spheres

Assessment:

Internal Assessments:

Homework
Quizzes
Tests

Common Assessments:

Geometry Terminology common assessment
Geometry Solids common assessment
Trigonometry common assessment

Learning Standards

- *G.CO.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.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.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.9 Prove theorems about lines and angles
- G.CO.10 Prove theorems about triangles.
- G.CO.12 Make formal geometric constructions with a variety of tools and methods
- G.SRT.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.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.5 Use congruence and similarity criteria for triangles to solve problems and prove relationships in geometric figures.
- *G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems
- G.GPE.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.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.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.

*G.GMD.3 Use volume formulas for cylinders, pyramids, cones and spheres to solve problems

* denotes a KHS Mathematics Proficiency Standard

Resources:

Glencoe Geometry textbook
Teaching supplement to Glencoe Geometry
Teacher notes / assessments