

SWEETWATER UNION HIGH SCHOOL DISTRICT

DIVISION OF ADULT EDUCATION

High School Subjects

<u>VI</u>	<u>Geometry - Formal 1, 2</u>	<u>9033</u>
Level	2015	<u>9034</u>
		Code

DURATION: Approximately 60 hours for each semester course, extended if necessary until all required work is satisfactorily completed

GRADE LEVEL: 9-12

PREREQUISITES: Successful completion of Algebra 2 or its equivalent, Extended Algebra 2a, 2b.

CREDIT: One (1) unit of high school math credit may be earned for each semester course.

PROGRAM DESCRIPTION:

Students will develop geometric skills and concepts and the ability to construct formal logical arguments and proofs in a geometric setting. The curriculum is weighted heavily in favor of plane Euclidean geometry, however, there is room for placing special emphasis on coordinated geometry and its transformations. Students should be encouraged to draw many pictures to develop a geometric sense and to amass a wealth of geometric data in the process.

STUDENT LEARNER OUTCOMES:

- Students will establish personal, academic and/or workforce goals and demonstrate progress toward them
- Students will solve problems
- Students will communicate clearly and collaborate with others
- Students will use resources, including technology, to research, organize and communicate information

GOALS:

Through the principles and practice presented in this course, students will

- 1.0 Know, derive, and solve problems involving perimeter, area, volume, and surface area of common geometric figures (CS GEOM 8.0).
- 2.0 Construct and judge the validity of logical arguments, including geometric proofs, coordinate geometry proofs, and proof by contradiction, and give counter-examples to disprove statements. Apply the related postulates and theorems to solve problems (CS Geom 2.0, 3.0).
- 3.0 Know and apply right triangle trigonometry (CS GEOM 19.0).
- 4.0 Understand, describe, and perform transformations (CS GEOM 22.0).

5.0 Perform basic constructions with a straightedge compass (CS GEOM 16.0).

OBJECTIVES:

Students who successfully complete this course will be able to:

- 1.0 With respect to knowing, deriving, and solving problems involving perimeter, area, volume, and surface area of common geometric figures,
 - 1.1 Solve problems involving perimeter and area of plane figures such as rectangles, parallelograms, triangles, rhombuses, trapezoids, circles, and regular polygons (CS GEOM 8.0, 10.0).
 - 1.2 Solve problems involving surface area and volume of solids, including prisms, pyramids, cylinders, cones, and spheres (CS GEOM 9.0).
 - 1.3 Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids (CS GEOM 11.0) .
- 2.0 With respect to constructing and judging the validity of logical arguments, including geometric proofs, coordinate geometry proofs, and proof by contradiction, and giving counterexamples to disprove statements, as well as applying the related postulates and theorems to solving problems,
 - 2.1 Use logical reasoning to construct and to prove or disprove arguments (CS GEOM 3.0).
 - 2.2 Prove and use theorems involving congruence and similarity of triangles (CS GEOM 5.0).
 - 2.3 Prove and use theorems involving properties of parallel lines cut by a transversal and properties of quadrilaterals (CS GEOM 7.0).
 - 2.4 Prove and use theorems involving relationships between sides and between angles (both interior and exterior) in polygons, including properties of complementary, supplementary, vertical, and exterior angles, and the triangle inequality theorem (CS GEOM 4.0, 6.0, 12.0).
 - 2.5 Prove and use theorems involving the properties of circles, including relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons (CS GEOM 21.0).
 - 2.6 Prove and apply theorems in coordinate geometry by using the midpoint of a line segment formula, the distance formula, slopes of lines, and various forms of equations of lines and circles (CS GEOM 17.0).
- 3.0 With respect to knowing and applying right triangle trigonometry,
 - 3.1 Know and are able to use angle and side relationships in problems with

special right triangles (CS GEOM 20.0).

- 3.2 Know the definitions of the basic trigonometric functions defined by the sides and angles of a right triangle, and are able to use them to solve for an unknown length of a side or an angle of a right triangle (CS GEOM 18.0, 19.0).
- 4.0 With respect to understanding, describing, and performing transformations,
 - 4.1 Know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections (CS GEOM 22.0) .
- 5.0 With respect to performing basic constructions with a straightedge compass,
 - 5.1 Construct congruent angles and angle bisectors (CS GEOM 4.0, 16.0).
 - 5.2 Construct congruent segments and perpendicular bisectors of segments and construct a line parallel to a given line through a point off the line (CS GEOM 16.0).

INSTRUCTIONAL STRATEGIES AND TIMES:

Individual work on assignments	65%
Teacher/student evaluation of student practice	15%
Assessment	20%

EVALUATION:

1. Satisfactory completion of written assignments as evaluated by the instructor.
2. Satisfactory completion of teacher-made and/or standardized test as evaluated by the instructor.
3. Satisfactory progress and participation in classroom activities as evaluated by the instructor.

CONDITIONS FOR REPETITION:

Students who have failed to meet the objectives because of insufficient attendance or inability to master content may repeat the course.

Approved: BOARD OF TRUSTEES
January 21, 1988

Revised:
May 20, 2002
August 21, 2006
May 17, 2011
May 26, 2015
October 26, 2015

