

**Instructor:** Frank Fields  
**School:** Mt. Tabor Middle School  
**School year:** 2011-12

**Course number:** 2034  
**Course title:** Geometry 1-2  
**Subject:** Mathematics  
**Grade level(s):** 8  
**Credits:** 1

**Course description:**

In this course students study 2- and 3-dimensional shapes and their relationships in plane and space. It is a visual as well as analytical subject, integrating spatial and numerical concepts. Students classify and describe shapes in terms of congruence, similarity and transformations. The course introduces students to different forms of mathematical logic, including inductive and deductive reasoning. Students solve measurement and algebraic problems using properties, proportions, and trigonometric relationships. First-year Algebra and probability topics are reviewed with geometric applications. Students deepen their understanding of key ideas with hands-on activities and by using the software available with the TI-84 calculator and/or Geometer's Sketchpad.

Homework is required in this course.

**Prerequisites:**

Successful completion of Algebra 1/2.

**Priority standards and final proficiencies:**

- H.1G.1. Identify, apply, and analyze angle relationships among two or more lines and a transversal to determine if lines are parallel, perpendicular, or neither.
- H.1G.2. Apply theorems, properties, and definitions to determine, identify, and justify congruency or similarity of triangles and to classify quadrilaterals.
- H.1G.3. Apply theorems of corresponding parts of congruent and similar figures to determine missing sides and angles of polygons.
- H.1G.4. Use trigonometric ratios (sine, cosine and tangent) and the Pythagorean Theorem to solve for unknown lengths in right triangles.
- H.1G.5. Determine the missing dimensions, angles, or area of regular polygons, quadrilaterals, triangles, circles, composite shapes, and shaded regions.
- H.1G.6. Determine if three given lengths form a triangle. If the given lengths form a triangle, classify it as acute, right, or obtuse.
- H.1G.7. In problems involving circles, apply theorems and properties of chords, tangents, and angles; and theorems and formulas of arcs and sectors.
- H.2G.1. Identify, classify, model, sketch, and label representations of three-dimensional objects from nets and from different perspectives.
- H.2G.2. Identify and apply formulas for surface area and volume of spheres; right solids, including rectangular prisms and pyramids; cones; and cylinders; and compositions thereof. Solve related context-based problems.
- H.2G.3. Identify and apply formulas to solve for the missing dimensions of spheres and right solids, including rectangular prisms and pyramids, cones, and cylinders, both numerically and symbolically.
- H.3G.1. Recognize and identify line and rotational symmetry of two-dimensional figures.
- H.3G.2. Identify and perform single and composite transformations of geometric figures in a plane, including translations, origin-centered dilations, reflections across either axis or  $y = \pm x$ , and rotations about the origin in multiples of  $90^\circ$ .
- H.3G.3. Apply a scale factor to determine similar two- and three-dimensional figures, are similar. Compare and compute their respective areas and volumes of similar figures.
- H.3G.4. Apply slope, distance, and midpoint formulas to solve problems in a coordinate plane.
- H.2S.1. Identify, analyze, and use experimental and theoretical probability to estimate and calculate the probability of simple events.

H.2S.2. Determine the sample space of a probability experiment.

H.2S.3. Compute and interpret probabilities for independent, dependent, complementary, and compound events using various methods (e.g., diagrams, tables, area models, and counting techniques).

**Schedule of topics/units covered:**

Shapes and Transformations, Angles and Measurement, Justification and Similarity, Trigonometry, Congruent Triangles, Proofs, Solids and Constructions, Circles, and Conics.

**Academic vocabulary:**

Investigate, examine, reason, justify, visualize, choose a strategy

**District adopted materials:**

College Preparatory Mathematics: Geometry Connections

**Supplemental resources:**

**Differentiation/accessibility strategies and support (TAG, ELL, SpEd, other):**

The differentiation strategies used in this course are based on the evidence (data) received through multiple forms of pre, ongoing, and formative assessments. Described here are the types of assessments used and specific differentiation strategies in place to meet the needs of ALL learners (including TAG, ESL, Special Ed...)

Differentiated assignments.

Extended time by request for any assignment or test.

Using technology like graphing calculators.

Study groups.

Test corrections.

**Career-related learning experiences (CRLEs):**

**Essential Skills and required Work Samples:**

- Apply mathematics  
Required Work Samples: 1 Geometry Work Sample

**Assessment/evaluation/grading policy:**

Tests and work samples are 60% of the grade. Homework, classwork, and notes are 20% of the grade.

Projects and quizzes are 20%. A = 90% and up, B = 80%-89%, C = 70% - 79%, D = 60%- 69%, F = up to 59%. To earn high school credit a C or better is required.

**Behavioral expectations:**

Be a safe, responsible and respectful student. Homework is usually assigned 4 days a week.