

Grand Island Public Schools GEOMETRY

Course Length: Two semesters

Grade Levels: 9, 10, 11, 12

Prerequisite Courses: Algebra 1-2

Course Description:

This course develops the principles of plane, solid, and coordinate geometry.

Geometry Course Standards

As a result of their participation in this course, students will:

Strand 1: Communicating Mathematical Thinking

- Build new mathematical knowledge through problem solving. (Problem Solving)
- Apply and adapt a variety of appropriate strategies to solve problems. (Problem Solving)
- Recognize and use connections among mathematical ideas and/or apply in contexts outside of mathematics. (Connections)
- Investigate, develop, and evaluate mathematical arguments and proofs. (Reasoning and Proof)
- Select, apply, and move fluently among mathematical representations to solve problems. (Representation)

Strand 2: Number and Operations

- Compute fluently and make reasonable estimates in a geometric context.
- Find, describe, and extend visual and number patterns using inductive reasoning.

Strand 3: Algebraic Concepts

- Use the concept of midpoint and distance to solve problems.
- Use sine, cosine, and tangent ratios to solve right triangles.
- Graph linear inequalities in a coordinate plane.

Strand 4: Geometry, Spatial Concepts, and Measurement

- Apply the Pythagorean Theorem to real life situations.
- Prove the congruence and similarity of triangles.
- Use the properties of similarity and congruence to solve problems.
- Know and use the properties of quadrilaterals.
- Identify the effects of changing dimensions of perimeter, area, and volume.
- Use properties of arcs, angles, and segments in circles to solve problems.
- Use properties of triangles to solve problems including isosceles, equilateral, or right triangles.
- Use the Triangle Inequality Theorem and its resulting properties.
- Use properties of parallel and perpendicular lines.
- Identify and solve problems using angles (such as vertical, complementary, supplementary, interior angles, exterior angles, linear pairs, corresponding angles).
- Use counterexamples to prove statements false.
- Recognize, analyze, and use conditional statements (including converse statements).
- Calculate and label perimeter, circumference, arc length, area, surface area, and volume.
- Convert between metric and standard units of measurements given conversion factors.
- Use deductive reasoning to arrive at an appropriate conclusion.

Strand 5: Data Analysis, Probability, and Statistics

- Apply and use properties of geometric probability.