

Geometry
Course Syllabus
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Course description

The main focus of geometry is on plane and solid figures and their properties. A major emphasis is triangle properties and relationships. Coordinate graphing, slope, and linear equations are also presented. Through the study of geometry, the student will:

- Develop proficiency in using geometry to solve problems in everyday life.
- Expand his/her understanding of mathematical concepts.
- Improve his/her logical thinking skills
- Gain an understanding of geometry as a study of the mathematical relationships of objects in the world around us.
- Gain an appreciation of how mathematics relates to the world of work.

Grade Level: predominately 10th, but open to grades 11-12

Prerequisites: Successful completion of Algebra 1

Topics covered: by section/topic (Glencoe *Geometry: Concepts and Applications* © 2004)

Chapter 1 Reasoning in Geometry

1.1 Patterns and inductive reasoning

1.2 Points lines and planes

1.3 Postulates

1.4 Conditional Statements and Converses

1.4 Tools

A plan for problem solving

Chapter 2 Segment measure and coordinate graphing

2.1 Real numbers and number lines

2.2 Segments and properties of real numbers

2.3 Congruent segments

2.4 The coordinate plane

2.5 Midpoints

Chapter 3 Angles

3.1 Angles

3.2 Angle measure

3.3 Angle addition postulate

3.4 Adjacent angles and linear pairs

3.5 Complementary and supplementary angles

3.6 Congruent angles

3.7 Perpendicular lines

Chapter 4 Parallels

4.1 Parallel lines and planes

4.2 Parallel lines and transversals

4.3 Transversals and corresponding angles

4.4 Proving lines parallel

4.5 Slope

4.6 Equations of lines

Chapter 5 Triangles and congruence

5.1 Classifying triangles

5.2 Angles of a triangle

5.3 Geometry in motion

5.4 Congruent triangles

5.5 SSS and SAS

5.6 ASA and AAS

Chapter 6 More about triangles

6.1 Medians

6.2 Altitudes and perpendicular bisectors

6.3 Angle bisectors of triangles

6.4 Isosceles triangles

6.5 Right Triangles

6.6 Pythagorean theorem

6.7 Distance on the coordinate plane

Chapter 7 Triangle Inequalities

7.1 Segments, angles and inequalities

7.2 Exterior angle theorem

7.3 Inequalities within a triangle

7.4 Triangle inequality theorem

Chapter 8 Quadrilaterals

8.1 Quadrilaterals

8.2 Parallelograms

8.3 Tests for Parallelograms

8.4 Rectangles, Rhombi and squares

8.5 Trapezoids

Chapter 9 Proportions and similarity

9.1 Using ratios and proportions

9.2 Similar polygons

9.3 Similar triangles

9.4 Proportional parts and triangles

9.5 Triangles and parallel lines

9.6 Proportional parts and parallel lines

9.7 Perimeters and similarity

Chapter 10 Polygons and area

- 10.1 Naming polygons
- 10.2 Diagonals and angle measure
- 10.3 Areas of polygons
- 10.4 Areas of triangles and trapezoids
- 10.5 Areas of regular polygons
- 10.6 Symmetry
- 10.7 Tessellations

Chapter 11 Circles

- 11.1 Parts of a circle
- 11.2 Arcs and central angles
- 11.3 Arcs and chords
- 11.4 Inscribed polygons
- 11.5 Circumference of a circle
- 11.6 Area of a circle

Chapter 12 Surface area and volume

- 12.1 Solid figures
- 12.2 Surface areas of prisms and cylinders
- 12.3 Volumes of prisms and cylinders
- 12.4 Surface areas of pyramids and cones
- 12.5 Volumes of pyramids and cones
- 12.6 Spheres
- 12.7 Similarity of solid figures

Chapter 13 Right Triangles and Trigonometry

- 13.1 Simplifying square roots
- 13.2 45-45-90 triangles

13.3 30-60-90 triangles

13.4 Tangent ratio

13.5 Sine and cosine ratios

Chapter 14 Circle Relationships

14.1 Inscribed angles

14.2 Tangents to a circle

14.3 Secant angles

14.4 Secant-tangent angles

14.5 Segment measure

14.6 Equations of circles

Instructional Philosophy:

All students can and should learn geometry. A mathematical way of thinking and problem solving is important for everyone. Geometry connects students mathematically with their world. Students will be provided with as much help and support as possible to ensure success in the course. Students are urged to attend extra help study groups which meet weekly, and to seek extra help from the instructor whenever necessary.

Expectation: Students will be expected to meet all the course goals by demonstrating their understanding of the basic concepts of each unit/area/topic. In order to pass the course, students must attain a minimum grade of 70%.

Delivery Method: Class activities will include lecture presentations, teacher-student discussions, small group instruction, individual instruction, question and answer sessions, demonstrations, hands-on activities, guided practice, and oral exercises. Written assignments will include problem sets, quizzes, test, projects, and short essays.

Assessment: Students will be assessed regularly through the use of homework, daily quizzes, unit tests, and chapter quizzes. Bonus points can be earned through the completion of optional extra-credit projects.

Course Standards- State Standards (9-12 Mathematics)

9-12.A.1 Use procedures to transform algebraic expressions

9-12.A.2 Use a variety of algebraic concepts and methods to solve equations and inequalities

9-12.A.3 Interpret and develop mathematical models

- 9-12.A.4 Describe and use properties and behaviors of relations, functions, and inverses
- 9-12.G.1 Use deductive and inductive reasoning to recognize and apply properties of geometric figures
- 9-12.G.2 Use properties of geometric figures to solve problems from a variety of perspectives
- 9-12.M.1 Apply measurement concepts in practical applications
- 9-12.N.1 Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.
- 9-12.N.2 Apply operations within the set of real numbers.
- 9-12.S.1 Use statistical models to gather, analyze, and display data to draw conclusions
- 9-12.S.2 Apply the concepts of probability to predict events/outcomes and solve problems.

Course projects:

Students will complete a project for each chapter and/or unit. Projects vary according to topic, but will include posters, presentations, construction of models, and scale drawings.

Assessment Plan & Grading Scale

Grading Scale Description of Work

- A 94-100% Consistently demonstrates an exceptional level of quality of work and effort. Has all work in on time and completed to exceed expectations. Shows mastery in evaluating, synthesizing, and applying the knowledge.
- B 87-93% Consistently demonstrates proficient knowledge with a good effort and quality of work. All assignments are completed on time. Demonstrates the ability to evaluate, analyze, synthesize and apply the principles.
- C 80-86% Demonstrates proficient knowledge and the ability to apply knowledge. Work shows average effort. A few assignments may be missing or late.
- D 70-79% Work shows minimal effort and some late assignments. Demonstrates a basic understanding of recalling or comprehending knowledge.
- F 69% and below Understanding is below basic. Work is of poor quality and does not meet standards or expectations.

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