

Geometry

Instructors:

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This college preparatory course covers plane and solid geometry with a limited focus on proof and analytical method. Basic geometric terms are studied, along with theorems and their applications. Individual topics covered include (but are not limited to): lines, segments, angles, triangle congruence, circles, properties of quadrilaterals, proportion and similarity, and an introduction to right-triangle trigonometry and conic sections.

2 Semesters/1 Credit

Graduation Standards (the number of the standard is referenced in the performance indicators listed in each unit):

- 1- Number & Quantity: Reason and model quantitatively, using units and number systems to solve problems. (addressed through ongoing skills checks)
- 2- Algebra: Interpret, represent, create and solve algebraic expressions.
- 3- Functions: Interpret, analyze, construct, and solve linear, quadratic, and trigonometric functions.
- 4- Geometry: Prove, understand, and model geometric concepts, theorems, and constructions to solve problems.

Unit 1 Basic Definitions

Summary In this unit, students will be introduced to points, lines, and angles. Accuracy of measurement will be explored, and the concept of congruency will be introduced.

Performance Indicators Assessed in Unit

M.2B - Write and solve equations and inequalities

- (A.CED.A) Create equations that describe numbers or relationships.

M.4A - Know Geometry terms and definitions

- (G.CO.A) Know precise definitions of angles, circles, perp.line, parallel line., and line segment, based on undefined notions of point, line, distance along a line, and distance around a circular arc

Unit 2 Lines and Angles

Summary Students will also be able to identify different angle relationships created by parallel lines and a transversal.

Performance Indicators Assessed in Unit

M.2B - Write and solve equations and inequalities

- (A.CED.A) Create equations that describe numbers or relationships.

M.4B - Use properties of parallel lines to determine angle measures

- (G.CO.C) Prove geometric theorems.

Unit 3 Triangles

Summary Students will learn how to use triangles and their properties to model and analyze many real-world situations. They will also learn about relationships in and among triangles, including congruence and similarity.

Performance Indicators Assessed in Unit	<p>M.2B - Write and solve equations and inequalities</p> <ul style="list-style-type: none"> • (A.CED.A) Create equations that describe numbers or relationships. <p>M.4C: Use similarity of triangles in problem solving</p> <ul style="list-style-type: none"> • (G.SRT.A) Understand similarity in terms of similarity transformations. • (G.SRT.B) Prove theorems involving similarity. <p>M.4D: Use congruence of triangles in problem solving.</p> <ul style="list-style-type: none"> • (G.CO.B) Understand congruence in terms of rigid motions. <p>M.4E: Use properties of triangles in problem solving</p> <ul style="list-style-type: none"> • (G.SRT.C). Define trigonometric ratios and solve problems involving right triangles. • (G.CO.C) Prove geometric theorems.
Unit 4 Quadrilaterals and Circles	
Summary	In this unit students focus on quadrilaterals and circles. They learn the properties of the various quadrilaterals and learn the special properties of circles. They also learn about inscribed and circumscribed polygons, tangents, angle and arc measures, and chords.
Performance Indicators Assessed in Unit	<p>M.4F - Identify and use properties of quadrilaterals</p> <ul style="list-style-type: none"> • (G.CO.C) - Prove theorems about parallelograms <p>M.4G - Identify and use properties of circles</p> <ul style="list-style-type: none"> • (G.CO.C.11) Prove geometric theorems. • (G.C.A.1-3) Understand and apply theorems about circles. • (G.C.B) Find arc lengths and areas of sectors of circles. • (G.PE.B) Use coordinates to prove simple geometric theorems algebraically. <p>M.2B - Write and solve equations and inequalities in one variable.</p> <ul style="list-style-type: none"> • (A.CED.A) Create equations that describe numbers or relationships.
Unit 5 Area, Surface Area, and Volume	
Summary	Students will be utilizing formulas for area, surface area, and volume of polygons, circles, and 3-dimensional objects.
Performance Indicators Assessed in Unit	<p>M.2B - Write and solve equations and inequalities in one variable.</p> <ul style="list-style-type: none"> • (A.CED.A) Create equations that describe numbers or relationships. <p>M.4H - Compute perimeter, area, surface area, and volume of geometric shapes</p> <ul style="list-style-type: none"> • (G.MD.A) Explain volume formulas and use them to solve problems. • (G.MD.B) Visualize relationships between two-dimensional and three-dimensional objects. • (G.MG.A) Apply geometric concepts in modeling situations.
Unit 6 Algebra	
Summary	This unit will review the essential skills of Algebra 1 that are needed in Algebra 2. Topics include: solving linear equations, writing and graphing linear equations, systems of equations, and factoring.

Performance Indicators Assessed in Unit

M.2B -Writes and solves equations and inequalities in one variable.

- (A.CED.A) Create equations that describe numbers or relationships.
- (A.SSE.A) Interpret the structure of expressions.
- (A.REI.A) Understand solving equations as a process of reasoning and explain the reasoning.
- (A.REI.B) Solve equations and inequalities in one variable.

M.2E - Writes and graphs linear equations from various forms

- (A.SSE.B) Write expressions in equivalent forms to solve problems.
- (A.REI.D) Represent and solve equations and inequalities graphically.
- (A.CED.A) Create equations that describe numbers or relationships.

M.2F- Solves systems of linear equations and inequalities

- (A.REI.C) Solve systems of equations.
- (A.REI.D) Represent and solve equations and inequalities graphically.

M.2G- Factors polynomial expressions

- (A.APR.A) Perform arithmetic operations on polynomials.
- (A.APR.C) Use polynomial identities to solve problems.
- (A.SSE.A) Interpret the structure of expressions.
- (A.SSE.B) Write expressions in equivalent forms to solve problems.