Geometry

Chapter 1 – Basics of Geometry

Biblical Worldview Essential Questions:
Can geometry be seen in creation outside of math?
What do patterns tell us about God's plan for humanity?
How can inductive and deductive reasoning be used to witness?

Time: 11 lessons
Curriculum Objectives: G-1, 3, 10, and 11

Objectives	Methods	Resources	Assessment
The student will: • Find and describe patterns • Use inductive reasoning to make real-life conjectures • Understand and use the basic undefined terms and defined terms of geometry • Sketch the intersection of lines and planes • Use segment postulates • Use the distance formula to measure distances • Use angle postulates • Classifying angles as acute, right, obtuse, or straight • Bisect a segment • Bisect and angle • Identify vertical angles and linear pairs • Identify complementary and supplementary angles • Find the perimeter and area of common plane figures • Use a general problem solving plan	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test • Dream Room Project

Geometry

Chapter 2 – Reasoning and Proof

Biblical Worldview Essential Questions:
How will the process of "proofing" be used to confirm our faith?
Why is it important to be able to logically reason?

Time: 10 Lessons
Curriculum Objectives: G-1, 2, 3, 4, and 11

Objectives	Methods	Resources	Assessment
The student will: • Recognize and analyze a conditional statement • Write postulates about points, lines, and planes using conditional statements • Recognize and use definitions • Recognize and use biconditional statements • Use symbolic notation to represent logical statements • Form conclusions by applying the laws of logic to true statements • Use properties from algebra • Use properties of length and measure to justify segment and angle relationships • Justify statements about congruent segments • Write reasons for steps in a proof • Use angle congruence properties • Prove properties about special pairs of angles	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test

Geometry

Chapter 3 – Perpendicular and Parallel Lines

Biblical Worldview Essential Question:
In what career fields is it important to use perpendicular and parallel lines and how can that field be used to practice dominion science/math?

Time: 11 Lessons
Curriculum Objectives: G-1, 3, 10, and 11

Objective	Methods	Resources	Assessment
The student will: • Identify relationships between lines • Identify angles formed by transversals • Write different types of proofs • Prove results about perpendicular lines • Prove and use results about parallel lines and transversals • Use properties of parallel lines to solve real-life problems • Prove that two lines are parallel • Use properties of parallel lines to solve real-life problems • Use properties of parallel lines in real-life situations • Construct parallel lines using straightedge and compass • Find slopes of lines and use slope to identify parallel lines in a coordinate plane • Write equations of parallel lines in a coordinate plane • Use slope to identify perpendicular lines in a coordinate plane • Write equations of perpendicular lines	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test

Geometry

Chapter 4 – Congruent Triangles

Biblical Worldview Essential Questions:
Why is classification of objects/nature important?
Where can you see classification in scriptures?

Time: 11 Lessons
Curriculum Objectives: G-1, 2, 3, 4, 5, and 11

Objectives	Methods	Resources	Assessment
The student will: • Classify triangles by their sides and angles • Find angle measures in triangles • Identify congruent figures and corresponding parts • Prove that two triangles are congruent • Prove that triangles are congruent using the SSS and the SAS congruence postulates • Use a congruence postulates in real-life problems • Prove that triangles are congruent using the ASA congruence postulate and the AAS congruence theorem • Use congruence postulates and theorems in real-life problems • Use congruent triangles to plan and write proofs • Use congruent triangles to prove that constructions are valid • Use properties of isosceles and equilateral triangles • Use properties of right triangles • Place geometric figures in a coordinate plane • Write a coordinate proof	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test

Geometry

Chapter 5 – Properties of Triangles

Biblical Worldview Essential Questions:
Refresh students' purpose of logically reasoning from previous chapters.
How can inductive and deductive reasoning be used to witness?
Why is it important to be able to logically reason?

Time: 10 Lessons
Curriculum Objectives: G-1, 2, 3, 4, 5, and 11

Objectives	Methods	Resources	Assessment
The student will: • Use properties of perpendicular bisectors • Use properties of angle bisectors to identify equal distances • Use properties of perpendicular bisectors of a triangle • Use properties of angle bisectors of a triangle • Use properties of medians of a triangle • Use properties of altitudes of a triangle • Identify the midsegments of a triangle • Use properties of midsegments of a triangle • Use triangle measurements to decide which side is longest or which angle is largest • Use the triangle inequality • Read and write an indirect proof • Use the hinge theorem and its converse to compare side lengths and angle measures	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test

Geometry

Chapter 6 – Quadrilaterals

Biblical Worldview Essential Question:
Are the "properties" displayed in your life enough evidence to prove you are a believer?

Time: 11 Lessons
Curriculum Objectives: G-1, 7, 10, and 11

Objectives	Methods	Resources	Assessment
The student will: • Identify, name, and describe polygons • Use the sum of the measures of the interior angles of a quadrilateral • Use some properties of parallelograms • Use properties of parallelograms in real-life situations • Prove that a quadrilateral is a parallelogram • Use coordinate geometry with parallelograms • Use properties of sides and angles of rhombuses, rectangles, and squares • Use properties of trapezoids • Use properties of kites • Identify special quadrilaterals based on limited information • Prove that a quadrilateral is a special type of quadrilateral • Find the areas of squares, rectangles, parallelograms, and triangles • Find the areas of trapezoids, kites, and rhombuses	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test

Geometry

Chapter 7 – Transformations

Biblical Worldview Essential Questions:
How can transformations be used in art?
Can reflections, rotations, and translations be seen in creation?
Where is symmetry seen in creation?

Time: 10 Lessons
Curriculum Objectives: G-1, 10, and 11

Objectives	Methods	Resources	Assessment
The student will: • Identify the three basic rigid transformations • Use transformations in real-life situations • Identify and use reflections in a plane • Identify relationships between reflections and line symmetry • Identify rotations in a plane • Use rotational symmetry in real-life situations • Identify and use translations in a plane • Use vectors in real-life situations • Identify glide reflections in a plane • Represent transformations as compositions of simpler transformations • Use transformations to classify frieze patterns • Use frieze patterns in real-life	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper • Tessellation video	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test • Frieze pattern activity • Tessellation Project

Geometry

Chapter 8 – Similarity

Biblical Worldview Essential Question:
Based on the idea of similarity, would you be considered similar to Christ or to the world?

Time: 11 Lessons
Curriculum Objectives: G-1, 3, 5, 10, and 11

Objectives	Methods	Resources	Assessment
The student will: • Find and simplify the ratio of two numbers • Use proportions to solve real-life problems • Use properties of proportions • Identify similar polygons • Use similar polygons to solve real-life problems • Identify similar triangles • Use similar triangles in real-life problems • Use similar theorems to prove that two triangles are similar • Use similar triangles to solve real-life problems • Use proportionality theorems to calculate segment length • Use proportionality theorems to solve real-life problems • Identify dilations • Use properties of dilations to create a real-life prospective drawing	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test

Geometry

Chapter 9 – Right Triangles & Trigonometry

Biblical Worldview Essential Question:
Refresh students' perspective on career paths that use geometry for ministry opportunities.
In what career fields is it important to use the Pythagorean theroem and how can that field be used to practice dominion science/math?

Time: 11 Lessons
Curriculum Objectives: G-1, 3, 6, 10, and 11

Objectives	Methods	Resources	Assessment
The student will: • Solve problems involving similar right triangles formed by the altitude drawn to the hypotenuse of a right triangle • Use geometric mean to solve problems • Prove the Pythagorean theorem • Use the Pythagorean theorem to solve real-life problems • Use the converse of the Pythagorean theorem to solve problems • Use side lengths to classify triangles by their angle measures • Find the side lengths of special triangles • Use special right triangles to solve real-life problems • Find the sine, cosine, and tangent of an acute angle • Use trigonometric ratios to solve real-life problems • Solve a right triangle • Use right triangles to solve real-life problems • Find the magnitude and direction of a vector • Add vectors	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper • Scientific calculator	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test

Geometry

Chapter 10 – Circles

Biblical Worldview Essential Question:
What "locus" would describe you?

Time: 11 Lessons
Curriculum Objectives: G-1, 8, 10, and 11

Objectives	Methods	Resources	Assessment
The student will: • Identify segments and lines related to circles • Use properties of a tangent to a circle • Use properties of arcs of circles • Use properties of chords of circles • Use inscribed angles to solve problems • Use properties of inscribed polygons • Use angles formed by tangents and chords to solve problems in geometry • Use angles formed by lines that intersect a circle to solve problems • Find the lengths of segments of chords • Find the lengths of tangents and secants • Write the equation of a circle • Use the equation of a circle and its graph to solve problems • Draw the locus of points that satisfy the given condition • Draw the locus of points that satisfy two or more conditions	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper • Scientific calculator • Bullseye compass	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test

Geometry

Chapter 11 – Area of Polygons & Circles

Biblical Worldview Essential Question:
If you were to take a measurement of your life and compare it to Christ's expectations, where would you fall?

Time: 10 Lessons
Curriculum Objectives: G-1, 6, 7, 9, and 11

Objectives	Methods	Resources	Assessment
The student will: • Find the measures of the interior and exterior angles of polygons • Use measures of angles of polygons to solve real-life problems • Find the area of an equilateral triangle • Find the area of a regular polygon • Compare perimeters and areas of similar figures • Use perimeters and areas of similar figures to solve real-life problems • Find the circumference of a circle and the length of a circular arc • Use circumference and arc length to solve real-life problems • Find the area of a circle and a sector of a circle • Use areas of circles and sectors to solve real-life problems • Find a geometric probability • Use geometric probability to solve real-life problems	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper • Scientific calculator	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test

Geometry

Chapter 12 – Surface Area & Volume

Biblical Worldview Essential Question:
What "volume" of your life is spent on focusing on your walk with Christ?

Time: 11 Lessons
Curriculum Objectives: G-1, 6, 9, and 11

Objectives	Methods	Resources	Assessment
The student will: • Use properties of polyhedra • Use Euler's theorem in real-life situations • Find the surface area of a prism • Find the surface area of a cylinder • Find the surface area of a pyramid • Find the surface area of a cone • Use volume postulates • Find the volume of prisms and cylinders in real-life • Find the volume of pyramids and cones • Find the volume of pyramids and cones in real-life • Find the surface area of a sphere • Find the volume of a sphere in real-life • Find and use the scale factor of similar solids • Use similar solids to solve real-life problems	• Daily PowerPoint presentation • Illustrate problems on the marker board • Do textbook exercises in class • Work with partners on problem-solving activities • Have students work and explain problems on the marker board	• Textbook: McDougal Littell *Geometry* • Practice worksheets from McDougal Littell *Geometry* • Students' personally made theorem and postulate book • Compass, ruler, protractor, and graph paper • Scientific calculator • Plastic geometric models	• Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Chapter test