

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Foundations of Geometry

Time Allotment: 18 Days

Unit Sequence: 1

Major Concepts to be learned:

- Points, Lines, & Planes (1-1)
- Measure of Segments & Segment Relationships (1-2)
- Measure of Angles & Angle Relationships (1-3)
- Classifying Angles & Angle Pairs (1-4)
- Using Formulas in Geometry (1-5)
- Midpoint & Distance (1-6)

Expected Skills to be demonstrated:

- Identify, name, and draw points, lines, segments, rays, and planes
- Use length and midpoint of a segment
- Name, classify, and measure angles
- Identify adjacent, vertical, complementary, and supplementary angles
- Find measures of pairs of angles
- Apply formulas for perimeter, area, and circumference
- Develop and apply the midpoint formula
- Use the Distance Formula and the Pythagorean Theorem to find the distance between two points

PA Standards/Anchors:

CC.2.3.HS.A.14

Eligible Content:

G.2.2.4.1
G.2.3.1.1-3

Instructional Strategies:

Cooperative groups	Problem solving activities
Lectures	Group Discussions
Hands-on activities	Note-Taking
Math Binders	Scientific Calculators

Assessments:

Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Geometric Reasoning

Time Allotment: 25 Days

Unit Sequence: 2

Major Concepts to be learned:

- Using Inductive Reasoning to Make Conjectures (2-1)
- Conditional Statements (2-2)
- Using Deductive Reasoning to Verify Conjectures (2-3)
- Biconditional Statements & Definitions (2-4)
- Algebraic Proof (2-5)
- Geometric Proof (2-6 & 2-7)

Expected Skills to be demonstrated:

- Use inductive reasoning to identify patterns and make conjectures
- Find counterexamples to disprove conjectures
- Identify, write, and analyze the truth value of conditional statements
- Write the Converse of a conditional statement
- Apply the Law of Detachment and the Law of Syllogism in logical reasoning
- Write and analyze biconditional statements
- Write two-column Algebraic Proofs
- Write two-column Geometric Proofs

PA Standards/Anchors:

Eligible Content:

CC.2.3.HS.A.3 CC.2.3.HS.A.11	G.1.2.1.1-5 G.1.3.2.1 G.2.2.1.1-2 G.2.2.2.1-5	G.2.1.2.1-3
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Instructional Strategies:

Assessments:

Cooperative groups Lectures Hands-on activities Math Binders	Problem solving activities Group Discussions Note-Taking Scientific Calculators	Homework Discussion & Review Section quizzes Chapter Test Binder Quiz
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Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Parallel & Perpendicular Lines

Time Allotment: 10 Days

Unit Sequence: 3

Major Concepts to be learned:

- Lines and Angles (3-1)
- Angles Formed by Parallel Lines & Transversals (3-2)
- Perpendicular Lines (3-4)
- Slopes of Lines (3-5)
- Lines in the Coordinate Plane (3-6)

Expected Skills to be demonstrated:

- Identify parallel, perpendicular, and skew lines
- Identify the angles formed by two lines and a transversal
- Use theorems about the angles formed by parallel lines and a transversal
- Apply theorems about perpendicular lines
- Find the slope of a line
- Use slopes to identify parallel and perpendicular lines
- Graph lines and write their equations in slope-intercept form and point-slope form
- Classify lines as parallel, perpendicular, intersecting, or coinciding

PA Standards/Anchors:

CC.2.3.HS.A.3
CC.2.3.HS.A.14

Eligible Content:

G.1.2.1.1-5	G.2.2.4.1
G.1.3.2.1	G.2.3.1.1-3
G.2.2.1.1-2	
G.2.2.2.1-5	

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities
Lectures	Group Discussions
Hands-on activities	Note-Taking
Math Binders	Scientific Calculators

Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Triangle Congruence

Time Allotment: 10 Days

Unit Sequence: 4

Major Concepts to be learned:

- Classifying Triangles (4-1)
- Angle Relationships in Triangles (4-2)
- Congruent Triangles (4-3)
- Isosceles and Equilateral Triangles (4-8)

Expected Skills to be demonstrated:

- Classify triangles by their angle measures and side lengths
- Use triangle classifications to find angle measures and side lengths
- Find the measure of interior and exterior angles of triangles
- Apply theorems about the interior and exterior angles of triangles
- Use properties of congruent triangles
- Apply properties of isosceles and equilateral triangles

PA Standards/Anchors:

CC.2.3.HS.A.3
CC.2.3.HS.A.4

Eligible Content:

G.1.2.1.1-5
G.1.3.2.1
G.2.2.1.1-2
G.2.2.2.1-5

Instructional Strategies:

Assessments:

Cooperative groups
Lectures
Hands-on activities
Math Binders

Problem solving activities
Group Discussions
Note-Taking
Scientific Calculators

Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Properties of Triangles

Time Allotment: 6 Days

Unit Sequence: 5

Major Concepts to be learned:

- Inequalities in One Triangle (5-5)
- The Pythagorean Theorem (5-7)

Expected Skills to be demonstrated:

- Apply inequalities in one triangle
- Use the Pythagorean Theorem and its converse to solve problems
- Use Pythagorean inequalities to classify triangles

PA Standards/Anchors:

CC.2.3.HS.A.3
CC.2.3.HS.A.14

Eligible Content:

G.1.2.1.1-5 G.2.2.4.1
G.1.3.2.1 G.2.3.1.1-3
G.2.2.1.1-2
G.2.2.2.1-5

Instructional Strategies:

Assessments:

Cooperative groups
Lectures
Hands-on activities
Math Binders

Problem solving activities
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Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Polygons & Quadrilaterals

Time Allotment: 18 Days

Unit Sequence: 6

Major Concepts to be learned:

- Properties and Attributes of Polygons (6-1)
- Properties of Parallelograms (6-2)
- Properties of Special Parallelograms (6-4)

Expected Skills to be demonstrated:

- Classify polygons based on their sides and angles
- Find and use the measure of interior and exterior angles of polygons
- Apply properties of parallelograms
- Use properties of parallelograms to solve problems
- Apply properties of rectangles, rhombuses, and squares
- Use properties of rectangles, rhombuses, and squares to solve problems

PA Standards/Anchors:

CC.2.3.HS.A.3

Eligible Content:

G.1.2.1.1-5
G.1.3.2.1
G.2.2.1.1-2
G.2.2.2.1-5

Instructional Strategies:

Assessments:

Cooperative groups
Lectures
Hands-on activities
Math Binders

Problem solving activities
Group Discussions
Note-Taking
Scientific Calculators

Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Similarity

Time Allotment: 8 Days

Unit Sequence: 7

Major Concepts to be learned:

- Ratio and Proportions (7-1)
- Ratios in Similar Polygons (7-2)
- Using Proportional Relationships (7-5)

Expected Skills to be demonstrated:

- Write and simplify ratios
- Use proportions to solve problems
- Identify similar polygons
- Apply properties of similar polygons to solve problems
- Use ratios to make indirect measurements
- Use scale drawings to solve problems

PA Standards/Anchors:

CC.2.3.HS.A.3
CC.2.3.HS.A.5
CC.2.3.HS.A.6
CC.2.3.HS.A.14

Eligible Content:

G.1.2.1.1-5	G.1.3.1.1-2
G.1.3.2.1	G.2.2.4.1
G.2.2.1.1-2	G.2.3.1.1-3
G.2.2.2.1-5	

Instructional Strategies:

Cooperative groups	Problem solving activities
Lectures	Group Discussions
Hands-on activities	Note-Taking
Math Binders	Scientific Calculators

Assessments:

Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Right Triangles & Trigonometry

Time Allotment: 15 Days

Unit Sequence: 8

Major Concepts to be learned:

- Trigonometric Ratios (8-2)
- Solving Right Triangles (8-3)
- Angles of Elevation and Depression (8-4)

Expected Skills to be demonstrated:

- Find the sine, cosine, and tangent of an acute angle
- Use trigonometric ratios to find side lengths in right triangles and to solve real-world problems
- Use trigonometric ratios to find angle measures in right triangles and to solve real-world problems
- Solve problems involving angles of elevation and angles of depression

PA Standards/Anchors:

CC.2.3.HS.A.7
CC.2.3.HS.A.14

Eligible Content:

G.2.1.1.1-2
G.2.2.4.1
G.2.3.1.1-3

Instructional Strategies:

Cooperative groups
Lectures
Hands-on activities
Math Binders

Problem solving activities
Group Discussions
Note-Taking
Scientific Calculators

Assessments:

Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Perimeter, Circumference, & Area

Time Allotment: 13 Days

Unit Sequence: 9

Major Concepts to be learned:

- Developing Formulas for Triangles and Quadrilaterals (9-1)
- Developing Formulas for Circles and Regular Polygons (9-2)
- Composite Figures (9-3)

Expected Skills to be demonstrated:

- Develop and Apply the formulas for the areas of triangles and special quadrilaterals
- Solve problems involving perimeters and areas of triangles and special quadrilaterals
- Develop and apply the formulas for the area and circumference of a circle
- Develop and apply the formula for the area of a regular polygon
- Use the Area Addition Postulate to find the areas of composite figures

PA Standards/Anchors:

CC.2.3.HS.A.3
CC.2.3.HS.A.13
CC.2.3.HS.A.14

Eligible Content:

G.1.2.1.1-5	G.1.1.1.1-4
G.1.3.2.1	G.2.3.2.1
G.2.2.1.1-2	G.2.2.4.1
G.2.2.2.1-5	G.2.3.1.1-3

Instructional Strategies:

Assessments:

Cooperative groups
Lectures
Hands-on activities
Math Binders

Problem solving activities
Group Discussions
Note-Taking
Scientific Calculators

Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Spatial Reasoning

Time Allotment: 21 Days

Unit Sequence: 10

Major Concepts to be learned:

- Solid Geometry (10-1)
- Surface Area & Volume of Prisms & Cylinders (10-4 & 10-6)
- Surface Area & Volume of Pyramids & Cones (10-5 & 10-7)
- Surface Area & Volume of Spheres (10-8)
- Surface Area and Volume of Composite Solids (Ext.)

Expected Skills to be demonstrated:

- Classify three-dimensional figures according to their properties
- Use nets and cross sections to analyze three-dimensional figures
- Learn and apply the formulas for the surface area and volume of prisms, cylinders, pyramids, cones, and spheres
- Calculate the surface and volume of composite solids

PA Standards/Anchors:

CC.2.3.HS.A.12
CC.2.3.HS.A.13
CC.2.3.HS.A.14

Eligible Content:

G.2.3.1.1-3 G.2.2.4.1
G.1.1.1.1-4
G.1.2.1.1-5
G.2.3.2.1

Instructional Strategies:

Cooperative groups	Problem solving activities
Lectures	Group Discussions
Hands-on activities	Note-Taking
Math Binders	Scientific Calculators

Assessments:

Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Circles

Time Allotment: 15 Days

Unit Sequence: 11

Major Concepts to be learned:

- Lines that Intersect Circles (11-1)
- Arcs and Chords (11-2)
- Sector Area and Arc Length (11-3)
- Inscribed Angles (11-4)
- Angle Relationships in Circles (11-5)
- Segment Relationships in Circles (11-6)

Expected Skills to be demonstrated:

- Identify tangents, secants, and chords
- Use properties of tangents, arcs, and chords to solve problems.
- Find the area of sectors
- Find arc lengths
- Find the measure of an inscribed angle
- Use inscribed angles and their properties to solve problems
- Find the measure of angles formed by lines that intersect circles
- Use angle measures to solve problems
- Find the length of segments formed by lines that intersect circles
- Use the lengths of segments in circles to solve problems

PA Standards/Anchors:

Eligible Content:

CC.2.3.HS.A.8
CC.2.3.HS.A.9

G.1.1.1.1-4 G.2.2.2.1-5
G.1.3.2.1
G.2.2.3.1

Instructional Strategies:

Assessments:

Cooperative groups
Lectures
Hands-on activities
Math Binders

Problem solving activities
Group Discussions
Note-Taking
Scientific Calculators

Homework Discussion & Review
Section quizzes
Chapter Test
Binder Quiz

Grade Level: 8-10

Course Title: Geometry

Topic/Concept: Transformations

Time Allotment: 7 Days

Unit Sequence: 12

Major Concepts to be learned:

- Reflections (12-1)
- Translation (12-2)
- Rotations (12-3)
- Compositions of Transformations (12-4)
- Dilations (12-7)

Expected Skills to be demonstrated:

- Identify & draw reflections
- Identify & draw translations
- Identify & draw rotations
- Identify & draw compositions of transformations
- Identify & draw dilations

PA Standards/Anchors:

CC.2.3.HS.A.1
CC.2.3.HS.A.2
CC.2.3.HS.A.5

Eligible Content:

G.1.3.1.1-2

Instructional Strategies:

Assessments:

Cooperative groups
Lectures
Hands-on activities
Math Binders

Problem solving activities
Group Discussions
Note-Taking
Scientific Calculators

Homework Discussion & Review
Section quizzes
Chapter Test
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