

Course Title: Geometry

Topic/Concept: Terminology

Time Allotment: 16 days

Unit Sequence: 1

Major Concepts to be learned:

1. Points, Lines, & Planes
2. Measure of a Segment & Segment Relationships
3. Classifying Angles & Angle Pairs

Expected Skills to be demonstrated:

1. The students will be able to graph ordered pairs on the coordinate plane.
2. The students will be able to identify collinear & noncollinear points, intersecting lines, & intersecting planes.
3. The students will be able to calculate the distance between two points on a number line & in a coordinate plane.
4. The students will be able to find the midpoint of a segment on a number line & in a coordinate plane.
5. The students will be able to identify & classify angles and pairs of angles.

PA Standards/Anchors:

Eligible Content:

G.2.1.2
G.2.2.1

G.2.1.2.1
G.2.1.2.2
G.2.1.2.3
G.2.2.1.1

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities
Lecture	Group discussion
Written work	Hands-on activity
Note Taking	Graphic organizers
Math Binders	Graphic Calculators

- Two (2) quizzes per unit
- One (1) comprehensive exam per unit
- Open-Ended / Free Response Questions Worksheets
- PSSA Exam Review Packet

Course Title: Geometry

Topic/Concept: Proofs

Time Allotment: 15 days

Unit Sequence: 2

Major Concepts to be learned:

1. Inductive Reasoning & Conjecturing
2. If-Then Statements, Converses, & Postulates
3. Deductive Reasoning
4. Two-Column Proofs with Segments
5. Two Column Proofs with Angles

Expected Skills to be demonstrated:

1. The students will be able to make geometric conjectures based on inductive reasoning.
2. The students will be able to identify the hypothesis & conclusion of an “if-then” statement and write the converse of an “if-then” statement.
3. The students will be able to apply the law of detachment and the law of syllogism in deductive reasoning.
4. The students will be able to apply the properties of equality in algebraic & geometric proofs.
5. The students will be able to complete geometric proofs involving segment & angle theorems.

PA Standards/Anchors:

Eligible Content:

G.1.3.2
G. 2.2.1

G.1.3.2.1
G. 2.2.1.1

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities
Lecture	Group discussion
Written work	Hands-on activity
Note Taking	Graphic organizers
Math Binders	Graphic Calculators

- Two (2) quizzes per unit
- One (1) comprehensive exam per unit
- Open-Ended / Free Response Questions Worksheet
- PSSA Exam Review Packet

Course Title: Geometry

Topic/Concept: Parallel Lines

Time Allotment: 13 days

Unit Sequence: 3

Major Concepts to be learned:

1. Parallel Lines & Transversals
2. Proofs with Parallel Lines
3. Slope of a Line
4. Parallel Lines & Distance

Expected Skills to be demonstrated:

1. The students will be able to describe the relationship between two lines or between two planes.
2. The students will be able to identify the relationship between pairs of angles formed by lines and transversals.
3. The students will be able to apply the properties of parallel lines to determine angle measures.
4. The students will be able to use the relationships between angles to prove that two lines are parallel.
5. The students will be able to complete geometric proofs involving parallel lines and angle relationships.
6. The students will be able to calculate the slope of a line and use the slope of a line to identify parallel & perpendicular lines.

PA Standards/Anchors:

Eligible Content:

G.1.3.2
G.2.1.2
G.2.2.1

G.1.3.2.1
G.2.1.2.1
G.2.1.2.2
G.2.1.2.3
G.2.2.1.1
G.2.2.1.2

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities
Lecture	Group discussion
Written work	Hands-on activity
Note Taking	Graphic organizers
Math Binders	Graphic Calculators

- Two (2) quizzes per unit
- One (1) comprehensive exam per unit
- Open-Ended / Free Response Questions Worksheet
- PSSA Exam Review Packet

Course Title: Geometry

Topic/Concept: Congruent Triangles

Time Allotment: 15 days

Unit Sequence: 4

Major Concepts to be learned:

1. Classifying Triangles
2. Congruent Triangles
3. Tests for Congruent Triangles
4. Isosceles Triangles

Expected Skills to be demonstrated:

1. The students will be able to identify the parts of a triangle & classify different types of triangles.
2. The students will be able to name & label the corresponding parts of congruent triangles.
3. The students will be able to use & apply the angle sum theorem & exterior angle theorem.
4. The students will be able to complete geometric proofs involving the angle sum theorem and exterior angle theorem.
5. The students will be able to use the SAS, SSS, ASA postulates and the AAS theorem to test for triangles congruence.
6. The students will be able to complete geometric proofs involving the SAS, SSS, ASA postulates and the AAS theorem.
7. The students will be able to use & apply the properties of isosceles triangles and equilateral triangles.
8. The students will be able to complete geometric proofs involving congruent, equilateral, & isosceles triangles.

PA Standards/Anchors:

Eligible Content:

G.1.2.1	G.1.2.1.1	G.2.2.1.2
G.1.3.1	G.1.2.1.3	
G.1.3.2	G.1.3.1.1	
G.2.2.1	G.1.3.2.1	
	G.2.2.1.1	

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities	<ul style="list-style-type: none">• Two (2) quizzes per unit• One (1) comprehensive exam per unit• Open-Ended / Free Response Questions Worksheet• PSSA Exam Review Packet
Lecture	Group discussion	
Written work	Hands-on activity	
Note Taking	Graphic organizers	
Math Binders	Graphic Calculators	

Course Title: Geometry

Topic/Concept: Applications for Congruent Triangles

Time Allotment: 14 days

Unit Sequence: 5

Major Concepts to be learned:

1. Special Segments within Triangles
2. Right Triangles
3. Indirect Proofs & Inequalities
4. The Triangle Inequality
5. Inequalities involving Two Triangles

Expected Skills to be demonstrated:

1. The students will be able to identify & use medians, altitudes, angle bisectors, & perpendicular bisectors of a triangle.
2. The students will be able to complete geometric proofs involving medians, altitudes, angle bisectors, & perpendicular bisectors of a triangle.
3. The students will be able to recognize & use the theorems & postulates that test for the congruence of right triangles.
4. The students will be able to complete geometric proofs that test the congruence of right triangles.
5. The students will be able to use indirect reasoning & proofs to reach a conclusion.
6. The students will be able to recognize & use the relationships between sides & angles of a triangle.
7. The students will be able to recognize & use the triangle inequality, SAS inequality, and SSS inequality theorems to solve problems involving different types of triangles.
8. The students will be able to complete geometric proofs that involve the triangle inequality, SAS inequality, & SSS inequality theorems.

PA Standards/Anchors:

Eligible Content:

G.1.2.1	G.1.2.1.1	G.2.2.1.2
G.1.3.1	G.1.2.1.3	
G.1.3.2	G.1.3.1.1	
G.2.2.1	G.1.3.2.1	
	G.2.2.1.1	

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities	<ul style="list-style-type: none">• Two (2) quizzes per unit• One (1) comprehensive exam per unit• Open-Ended / Free Response Questions Worksheet• PSSA Exam Review Packet
Lecture	Group discussion	
Written work	Hands-on activity	
Note Taking	Graphic organizers	
Math Binders	Graphic Calculators	

Course Title: Geometry

Topic/Concept: Quadrilaterals

Time Allotment: 13 days

Unit Sequence: 6

Major Concepts to be learned:

1. Parallelograms
2. Tests for Parallelograms
3. Rectangles
4. Squares & Rhombi
5. Trapezoids

Expected Skills to be demonstrated:

1. The students will be able to recognize, use, & prove the properties of a parallelogram.
2. The students will be able to complete geometric proofs involving the properties of a parallelogram.
3. The students will be able to recognize & apply the conditions that ensure that a quadrilateral is a parallelogram.
4. The students will be able to recognize, use, & prove the properties of a rectangle.
5. The students will be able to recognize, use, & prove the properties of both a rhombus & square.
6. The students will be able to recognize, use, & prove the properties of a trapezoid.
7. The students will be able to complete geometric proofs involving rectangles, rhombi, squares, & trapezoids.

PA Standards/Anchors:

Eligible Content:

G.1.2.1	G.1.2.1.1	G.2.1.2.1
G.1.3.1	G.1.2.1.2	G.2.1.2.2
G.1.3.2	G.1.2.1.3	G.2.1.2.3
G.2.1.2	G.1.3.1.1	G.2.2.1.1
G.2.2.1	G.1.3.2.1	G.2.2.1.2

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities	<ul style="list-style-type: none">• Two (2) quizzes per unit• One (1) comprehensive exam per unit• Open-Ended / Free Response Questions Worksheet• PSSA Exam Review Packet
Lecture	Group discussion	
Written work	Hands-on activity	
Note Taking	Graphic organizers	
Math Binders	Graphic Calculators	

Course Title: Geometry

Topic/Concept: Similarity

Time Allotment: 13 days

Unit Sequence: 7

Major Concepts to be learned:

1. Properties of Proportions
2. Applications of Proportions
3. Similar Triangles & Polygons
4. Proportional Parts
5. Parts of Similar Triangles

Expected Skills to be demonstrated:

1. The students will be able to recognize & apply the properties of ratios & proportions.
2. The students will be able to identify similar figures.
3. The students will be able to recognize & apply proportional parts of triangles.
4. The students will be able to complete geometric proofs involving the use of proportional parts to determine if two or more triangles are similar.
5. The students will be able to recognize & apply the proportional relationships of corresponding perimeters, altitudes, angle bisectors, & medians of similar triangles.
6. The students will be able to complete geometric proofs involving the perimeters, altitudes, angle bisectors, & medians of similar triangles.

PA Standards/Anchors:

Eligible Content:

G.1.2.1	G.1.2.1.1	G.1.3.1.2	G.2.2.2.2
G.1.3.1	G.1.2.1.2	G.1.3.2.1	G.2.2.2.3
G.1.3.2	G.1.2.1.3	G.2.2.1.1	G.2.2.2.4
G.2.2.1	G.1.2.1.4	G.2.2.1.2	
G.2.2.2	G.1.3.1.1	G.2.2.2.1	

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities	<ul style="list-style-type: none">• Two (2) quizzes per unit• One (1) comprehensive exam per unit• Open-Ended / Free Response Questions Worksheet• PSSA Exam Review Packet
Lecture	Group discussion	
Written work	Hands-on activity	
Note Taking	Graphic organizers	
Math Binders	Graphic Calculators	

Course Title: Geometry

Topic/Concept: Right Triangles & Trigonometry

Time Allotment: 17 days

Unit Sequence: 8

Major Concepts to be learned:

1. Geometric Mean
2. Pythagorean Theorem
3. Trigonometry & Applications
4. Law of Sines
5. Law of Cosines

Expected Skills to be demonstrated:

1. The students will be able to calculate the geometric mean between a pair of numbers.
2. The students will be able to complete geometric proofs involving the geometric mean of a right triangle.
3. The students will be able to apply the Pythagorean Theorem & its converse, and the properties of special right triangles (45-45-90 and 30-60-90 triangles).
4. The students will be able to complete geometric proofs involving the use of the Pythagorean Theorem and the properties of special right triangles (45-45-90 and 30-60-90 triangles).
5. The students will be able to express trigonometric ratios as fractions & decimals, recognize trigonometric relationships from right triangles, & use a calculator to find the values of trigonometric ratios or measures of angles.
6. The students will be able to use trigonometry to recognize the angle of depression & the angle of elevation.
7. The students will be able to apply the properties of the law of sines & the law of cosines.
8. The students will be able to complete geometric proofs involving the law of sines & the law of cosines.

PA Standards/Anchors:

Eligible Content:

G.1.2.1	G.1.2.1.1	G.2.1.1.1	G.2.2.2.2
G.1.3.1	G.1.2.1.3	G.2.1.1.2	
G.1.3.2	G.1.3.1.1	G.2.1.2.1	
G.2.1.1	G.1.3.1.2	G.2.2.1.1	
G.2.2.1	G.1.3.2.1	G.2.2.1.2	

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities	<ul style="list-style-type: none">• Two (2) quizzes per unit• One (1) comprehensive exam per unit• Open-Ended / Free Response Questions Worksheet• PSSA Exam Review Packet
Lecture	Group discussion	
Written work	Hands-on activity	
Note Taking	Graphic organizers	
Math Binders	Graphic Calculators	

Course Title: Geometry

Topic/Concept: Circles

Time Allotment: 15 days

Unit Sequence: 9

Major Concepts to be learned:

1. Parts of a Circle
2. Angles, Arcs, & Chords
3. Tangent Lines
4. Special Segments in a Circle

Expected Skills to be demonstrated:

1. The students will be able to name the parts of a circle and write the equation of a circle.
2. The students will be able to recognize major & minor arcs and find the measures of arcs, central angles, & inscribed angles of a circle.
3. The students will be able to complete geometric proofs involving both arcs and inscribed angles of a circle.
4. The students will be able to recognize & apply the relationships between arcs, chords, & diameters of a circle.
5. The students will be able to find the measures of angles formed by intersecting tangents & secants in relation to intercepted arcs of a circle.
6. The students will be able to recognize & apply the properties of chords, secants, & tangents of a circle.
7. The students will be able to complete geometric proofs involving chords, secants, & tangents of a circle.

PA Standards/Anchors:

Eligible Content:

G.1.1.1	G.2.2.2	G.1.1.1.1	G.1.2.1.3	G.2.2.1.2
G.1.3.2		G.1.1.1.2	G.1.3.2.1	G.2.2.2.1
G.1.2.1		G.1.1.1.3	G.2.1.1.1	G.2.2.2.2
G.2.1.1		G.1.2.1.1	G.2.1.1.2	G.2.2.2.5
G.2.2.1		G.1.2.1.2	G.2.2.1.1	

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities	<ul style="list-style-type: none">• Two (2) quizzes per unit• One (1) comprehensive exam per unit• Open-Ended / Free Response Questions Worksheet• PSSA Exam Review Packet
Lecture	Group discussion	
Written work	Hands-on activity	
Note Taking	Graphic organizers	
Math Binders	Graphic Calculators	

Course Title: Geometry

Topic/Concept: Polygons

Time Allotment: 13 days

Unit Sequence: 10

Major Concepts to be learned:

1. Polygons & Polyhedrons
2. Angles of a Polygon
3. Area of a Parallelogram
4. Area of Triangles, Rhombi, & Trapezoids
5. Area & Circumference of a Circle

Expected Skills to be demonstrated:

1. The students will be able to identify & name polygons and identify the parts of a polyhedron.
2. The students will be able to calculate the measure of an interior angle, exterior angle, or the sum of the measures of the both the interior & exterior angles of a regular polygon.
3. The students will be able to calculate the area of the following figures – parallelograms, rhombi, triangles, trapezoids, & regular polygons.
4. The students will be able to calculate the area & circumference of a circle.
5. The students will be able to recognize nodes & edges used in graph theory and determine if a network is traceable and/or complete.

PA Standards/Anchors:

Eligible Content:

G.1.1.1	G.2.1.2	G.1.1.1.1	G.1.2.1.4	G.2.1.1.2	G.2.2.1.2	G.2.2.3.1
G.1.2.1	G.2.2.1	G.1.1.1.3	G.1.3.1.1	G.2.1.2.1	G.2.2.2.1	G.2.2.4.1
G.1.3.1	G.2.2.2	G.1.2.1.1	G.1.3.1.2	G.2.1.2.2	G.2.2.2.2	
G.1.3.2	G.2.2.3	G.1.2.1.2	G.1.3.2.1	G.2.1.2.3	G.2.2.2.3	
G.2.1.1	G.2.2.4	G.1.2.1.3	G.2.1.1.1	G.2.2.1.1	G.2.2.2.4	

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities	<ul style="list-style-type: none">• Two (2) quizzes per unit• One (1) comprehensive exam per unit• Open-Ended / Free Response Questions Worksheet• PSSA Exam Review Packet
Lecture	Group discussion	
Student Journals	Written work	
Note Taking	Graphic organizers	
Math Binders	Graphic Calculators	

Course Title: Geometry

Topic/Concept: Surface Area & Volume

Time Allotment: 15 days

Unit Sequence: 11

Major Concepts to be learned:

1. Surface Area of Prisms & Cylinders
2. Surface Area of Pyramids & Cones
3. Volume of Prisms & Cylinders
4. Volume of Pyramids & Cones
5. Surface Area & Volume of Spheres

Expected Skills to be demonstrated:

1. The students will be able to calculate the lateral area & surface area of right prisms & right cylinders.
2. The students will be able to calculate the lateral area & surface area of a regular pyramid & a right circular cone.
3. The students will be able to calculate the volume of right prisms & right cylinders.
4. The students will be able to calculate the volume of regular pyramids & right circular cones.
5. The students will be able to calculate the surface area & volume of a sphere.

PA Standards/Anchors:

Eligible Content:

G.1.1.1	G.2.1.1	G.1.1.1.1	G.1.2.1.3	G.1.3.1.2	G.2.2.2.1	G.2.3.1.2
G.1.2.1	G.2.2.2	G.1.1.1.4	G.1.2.1.4	G.1.3.2.1	G.2.2.2.2	G.2.3.1.3
G.1.3.1	G.2.3.1	G.1.2.1.1	G.1.2.1.5	G.2.1.1.1	G.2.2.2.5	G.2.3.2.1
G.1.3.2	G.2.3.2	G.1.2.1.2	G.1.3.1.1	G.2.1.1.2	G.2.3.1.1	

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities	<ul style="list-style-type: none">• Two (2) quizzes per unit• One (1) comprehensive exam per unit• Open-Ended / Free Response Questions Worksheet• PSSA Exam Review Packet
Lecture	Group discussion	
Written work	Hands-on activity	
Note Taking	Graphic organizers	
Math Binders	Graphic Calculators	

Course Title: Geometry

Topic/Concept: Coordinate Geometry

Time Allotment: 8 days

Unit Sequence: 12

Major Concepts to be learned:

1. Graphing Linear Equations
2. Writing Equations of Lines
3. Vectors
4. Coordinates in Three-Dimensional Space

Expected Skills to be demonstrated:

1. The students will be able to graph linear equations using both the intercepts method & the slope-intercept method.
2. The students will be able to write the equation of a line.
3. The students will be able to locate a point in space and use the distance & midpoint formulas for points in space.
4. The students will be able to determine the center & radius of a sphere.

PA Standards/Anchors:

Eligible Content:

G.1.3.2
G.2.1.2
G.2.3.2

G.1.3.2.1
G.2.1.2.1
G.2.1.2.2
G.2.1.2.3
G.2.3.2.1

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities
Lecture	Group discussion
Written work	Hands-on activity
Note Taking	Graphic organizers
Math Binders	Graphic Calculators

- Two (2) quizzes per unit
- One (1) comprehensive exam per unit
- Open-Ended / Free Response Questions Worksheet
- PSSA Exam Review Packet