

**Course Description**

This is a complete course in Geometry with a balance of theory and application. The course aims at a continuation of the student's mathematical maturity with an emphasis on proof. Concepts of space geometry and transformation are integrated in the course material. This course includes constructions, loci, coordinate geometry and the study of area and volume.

**Scope and Sequence**

<b>Timeframe</b>	<b>Unit</b>	<b>Instructional Topics</b>
27 Day(s)	Basic Geometry and Introduction Into Reasoning and Proof (Sections 1.1-2.6)	1. Representing 3-Dimensional Drawings (Section 1.1)* 2. Points, Lines and Planes (Section 1.2) 3. Measuring Segments and the Segment Addition Postulate (Section 1.3) 4. Measuring Angles and the Angle Addition Postulate (Section 1.4) 5. Special Angle Pairs (Section 1.5)* 6. Basic Constructions (Section 1.6) 7. Midpoint and Distance Formulas (Section 1.7) 8. Perimeter, Circumference, and Area (Section 1.8) 9. Patterns and Inductive Reasoning (Section 2.1)* 10. Conditional Statements (Section 2.2)* 11. Biconditionals and Definitions (Section 2.3)* 12. Deductive Reasoning (Section 2.4)** 13. Reasoning in Algebra - Algebraic Proofs (Section 2.5)* 14. Proving Angles Congruent (Section 2.6)
23 Day(s)	Parallel/Perpendicular Lines and Congruent Triangles (Sections 3.1-4.7)	1. Lines and Angles (Section 3.1) 2. Properties of Parallel and Perpendicular Lines (Section 3.2-4) 3. Parallel Lines and Triangles (Section 3.5) 4. Constructing Parallel and Perpendicular Lines (Section 3.6) 5. Equations of Lines in the Coordinate Plane (Section 3.7) 6. Slopes of Parallel and Perpendicular Lines (Section 3.8) 7. Congruent Figures (Section 4.1) 8. Congruent Triangles (Sections 4.2-4.3, 4.6) 9. Using Corresponding Parts of Congruent Triangles (Section 4.4) 10. Isosceles and Equilateral Triangles (Section 4.5) 11. Congruence in Overlapping Triangles (Section 4.7)
21 Day(s)	Relationships Within Triangles, Polygons, and Quadrilaterals (Sections 5.1 - 6.9)	1. Midsegments of Triangles (Section 5.1) 2. Perpendicular and Angle Bisectors in Triangles (Section 5.2) 3. Bisectors in Triangles (Section 5.3) 4. Medians and Altitudes (Section 5.4) 5. Indirect Proof (Section 5.5)** 6. Inequalities in One and Two Triangles (Section 5.6 - 5.7)* 7. Polygon Angle-Sum Theorems (Section 6.1)* 8. Properties of Parallelograms (Section 6.2-3) 9. Properties of Rhombuses, Rectangles, and Squares (Section 6.4 - 6.5) 10. Trapezoids and Kites (Section 6.6)* 11. Applying Coordinate Geometry (Sections 6.7 - 6.9)
16 Day(s)	Ratio, Proportion, and Similarity, and Right Triangles (Sections 7.1 - 8.3)	1. Ratios and Proportions (Section 7.1)* 2. Similar Polygons (Section 7.2)

# Geometry/Advanced Geometry (2016)

Wright City R-II  
Mathematics  
Grades 9 - 10, Duration 1 Year, 1 Credit  
Required Course

		<ol style="list-style-type: none"> <li>3. Proving Triangles Similar (Section 7.3)</li> <li>4. Similarity in Right Triangles (Section 7.4)</li> <li>5. Proportions in Triangles (Section 7.5)</li> <li>6. The Pythagorean Theorem and its Converse (Section 8.1)</li> <li>7. Special Right Triangles (Section 8.2)</li> <li>8. Trigonometry (Section 8.3)</li> </ol>
12 Day(s)	Transformations (Sections 9.1 - 9.7)	<ol style="list-style-type: none"> <li>1. Translations (Section 9.1)</li> <li>2. Reflections (Section 9.2)</li> <li>3. Rotations (Section 9.3 +9.3CB)</li> <li>4. Congruence Transformations (Section 9.5)</li> <li>5. Dilations (Section 9.6)</li> <li>6. Similarity Transformations (Section 9.7)</li> </ol>
21 Day(s)	Area, Circles and Arcs, Surface Area and Volume (Sections 10.1 - 12.5)	<ol style="list-style-type: none"> <li>1. Areas of Parallelograms and Triangles (Section 10.1 - 10.4*)</li> <li>2. Trigonometry and Area (Section 10.5)</li> <li>3. Circles, Arcs, and Sectors (Sections 10.6 - 10.7)</li> <li>4. Space (3-d) Figures and Cross Sections (Section 11.1)</li> <li>5. Surface Areas and Volumes of Prisms and Cylinders (Sections 11.2 and 11.4)</li> <li>6. Surface Area and Volumes of Pyramids and Cones (Sections 11.3 and 11.5)</li> <li>7. Surface Area and Volumes of Spheres (Section 11.6)</li> <li>8. Areas and Volumes of Similar Solids (Section 10.7)</li> <li>9. Parts of Circles (Sections 12.1 - 12.3)</li> <li>10. Circles in the Coordinate Plane (Section 12.5 + 12.5 Concept byte)</li> </ol>
13 Day(s)	Probability	<ol style="list-style-type: none"> <li>1. Experimental and Theoretical Probability (Section 13.1)</li> <li>2. Probability Distributions and Frequency Tables (Section 13.2)</li> <li>3. Permutations and Combinations (Section 13.3)</li> <li>4. Compound Probability (Section 13.4)</li> <li>5. Probability Models and Conditional Probability Formulas (Sections 13.5 - 13.6)</li> </ol>

## Prerequisites

Algebra 1

## Course Instructional Resources/Textbook

Geometry Common Core Teacher's Edition PEARSON 2015

## Course Details

**UNIT: Basic Geometry and Introduction Into Reasoning and Proof (Sections 1.1-2.6) -- 27 Day(s)**

### Unit Description

In this unit, students will learn basic the terms and figures that will be the foundation for the course. Students will also be introduced to proofs and begin the process of writing a proof using algebra, congruent angles and segments.

*The asterix (\*) denotes sections that have been covered in the past but have not current MLS standards tied to them.*

**TOPIC: Representing 3-Dimensional Drawings (Section 1.1)\*** -- 1 Day(s)

**Description**

Students will draw and describe 3-dimensional objects from 2-dimensional drawings. Student drawings will include nets, and isometric and orthographic drawings. Students will use visual judgment to describe 3-dimensional figures from different points of view.

**Academic Vocabulary (What terms will students need to know?)**

Net  
Isometric Drawing  
Orthographic Drawing  
3-Dimensional  
2-Dimensional

**Learning Targets**

Students will draw and label nets from 3-dimensional objects.  
Students will identify a 3-dimensional object from its net.  
Students will create isometric and orthographic drawings from 3-dimensional objects.

**TOPIC: Points, Lines and Planes (Section 1.2)** -- 2 Day(s)

**Description**

Students will be introduced to the basic terms and postulates in geometry, such as, points, lines, and planes. Students will use visual models to represent various intersections of segments, lines, and planes.

**Academic Vocabulary (What terms will students need to know?)**

Point  
Line  
Plane  
Collinear  
Coplanar  
Space  
Segment  
Ray  
Opposite Rays  
Postulate  
Axiom  
Intersection

**Learning Targets**

Students will draw, label, and identify basic terms in geometry.  
Students will understand basic postulates of geometry.  
Students will be able to define line segments and rays.

MA.G.CO.A.1

**TOPIC: Measuring Segments and the Segment Addition Postulate (Section 1.3)** -- 2 Day(s)

**Description**

Students will find the length of a segment by physically counting units or by using subtraction. It is important for students to understand every point can be paired with a real number. Students will use the segment addition postulate to write and solve algebraic equations, as well as, write and solve equations involving segments and segment bisectors.

**Academic Vocabulary (What terms will students need to know?)**

- Coordinate
- Distance
- Congruent Segments
- Midpoint
- Segment Bisector
- Segment Addition Postulate

**Learning Targets**

Students will use segment addition postulate to write and solve algebraic equations.

MA.G.GPE.B.5

Students will be able to define distance along a line.

MA.G.CO.A.1

Students will calculate distance of a segment on a number line.

MA.G.GPE.B.5

Students will use the midpoint of a segment to write and solve algebraic equations.

MA.G.GPE.B.5

**TOPIC: Measuring Angles and the Angle Addition Postulate (Section 1.4)** -- 2 Day(s)

**Description**

Students will be introduced to different angles and their parts. Students will be introduced to the measure of angles as being part of a circle or 360 degrees. They will learn to name and classify these angles. Students will be introduced to the Angle Addition Postulate and an Angle Bisector.

**Academic Vocabulary (What terms will students need to know?)**

- Angle
- Side of an Angle
- Vertex of an Angle
- Measure of an Angle
- Acute Angle
- Right Angle
- Straight Angle
- Obtuse Angle
- Congruent Angles

**Learning Targets**

Students will use angle addition postulate to write and solve algebraic equations.

Students will use angle bisector to write and solve algebraic equations.

Students will be able to define angles as acute, right, or obtuse.

MA.G.CO.A.1

Students will identify and label the parts of an angle: side, vertex, interior space, exterior space.

MA.G.CO.A.1

**TOPIC: Special Angle Pairs (Section 1.5)\*** -- 2 Day(s)

**Description**

Students are introduced to special angle pairs. They will need to find complements and supplements and identify congruent angle pairs. Students will use these special angle pairs to find missing angle measures and to write and solve equations based on the relationship of these angles.

Although this is not tied to a specific standard, these theorems are crucial for later understanding.

**Academic Vocabulary (What terms will students need to know?)**

Adjacent Angles  
Vertical Angles  
Complementary Angles  
Supplementary Angles  
Linear Pair  
Angle Bisector

**Learning Targets**

Students will identify between adjacent and non adjacent angles.  
Students will determine what makes vertical, complementary, supplementary, and linear angle pairs.  
Students will determine missing angle measures in complementary, supplementary, vertical, and linear angle pairs.  
Students will write and solve equations using complementary, supplementary, vertical, and linear angle pairs.

**TOPIC: Basic Constructions (Section 1.6)** -- 2 Day(s)

**Description**

Students will be introduced to making geometric constructions using a compass and a straight edge.

**Academic Vocabulary (What terms will students need to know?)**

straightedge  
compass  
construction  
perpendicular lines  
perpendicular bisector

**Learning Targets**

Students will be able to define perpendicular lines.

MA.G.CO.A.1

Students will be able to construct congruent segments.

MA.G.CO.D.11

Students will be able to construct congruent angles.

MA.G.CO.D.11

Students will be able to construct the perpendicular bisector to a line segment.

MA.G.CO.D.11

Students will be able to construct the angle bisector to an angle.

MA.G.CO.D.11

**TOPIC: Midpoint and Distance Formulas (Section 1.7)** -- 3 Day(s)

**Description**

Students will be introduced to midpoint of a segment on a number line and in the coordinate plane. Students will use the midpoint formula to find both a midpoint and an endpoint of segments in the coordinate plane. Students will also explore distance on a number line and calculate the distance of a segment in the coordinate plane using the distance formula.

**Academic Vocabulary (What terms will students need to know?)**

Midpoint Formula

Distance Formula

**Learning Targets**

Students will calculate the midpoint of a segment on a number line.

MA.G.GPE.B.5

Students will find the midpoint of a segment in the coordinate plane using midpoint formula.

MA.G.GPE.B.5

Students will find the endpoint of a segment in the coordinate plane given the midpoint and other endpoint of the segment.

MA.G.GPE.B.5

Students will calculate the distance of a segment in the coordinate plane using the distance formula.

MA.G.GPE.B.5

**TOPIC: Perimeter, Circumference, and Area (Section 1.8)** -- 2 Day(s)

**Description**

Students will find the perimeter and area of shapes using various formulas. Students will apply the Area Addition Postulate by dividing up irregular figures into recognizable shapes and finding total area and perimeter. Students will find the area of shaded regions by subtracting known regions or by Area Addition Postulate.

**Academic Vocabulary (What terms will students need to know?)**

Perimeter

Area

Circumference

Area Addition Postulate

**Learning Targets**

Students will use formulas to calculate the circumference and area of a circle.

MA.G.GPE.B.6

Students will use formulas to find perimeter and area of basic shapes, such as, triangle, rectangle.

MA.G.GPE.B.6

Students will use the area addition postulate to find the area of irregular shapes.

MA.G.GPE.B.6

Students will use the distance formula to calculate the area and perimeter of shapes in the coordinate plane.

MA.G.GPE.B.6

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**TOPIC: Patterns and Inductive Reasoning (Section 2.1)\*** -- 1 Day(s)

**Description**

Students will be introduced to the process of exploring patterns and making conjectures. Students will examine patterns based on numbers, graphs, and geometric figures.

**Academic Vocabulary (What terms will students need to know?)**

Inductive Reasoning  
Conjecture  
Counterexample

**Learning Targets**



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**TOPIC: Conditional Statements (Section 2.2)\*** -- 2 Day(s)

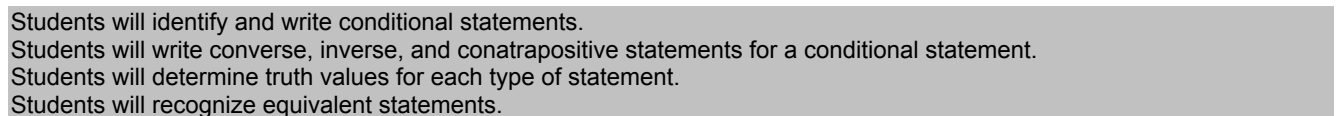
**Description**

Students will explore conditional statements and their truth values. Students will recognize the parts of a conditional statement and how to write related statements.

**Academic Vocabulary (What terms will students need to know?)**

Conditional  
Hypothesis  
Conclusion  
Truth Value  
Negation  
Converse  
Inverse  
Contrapositive  
Equivalent Statements

**Learning Targets**



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**TOPIC: Biconditionals and Definitions (Section 2.3)\*** -- 2 Day(s)

**Description**

Students will determine the truth value of a conditional and its converse and use this information to write a biconditional.

**Academic Vocabulary (What terms will students need to know?)**

Conditional  
Converse  
Truth Value  
Biconditional

**Learning Targets**

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**TOPIC: Deductive Reasoning (Section 2.4)\*\*** -- 2 Day(s)

**Description**

Students will be introduced to the Law of Detachment and the Law of Syllogism and draw conclusions using logical reasoning.

**Academic Vocabulary (What terms will students need to know?)**

Deductive Reasoning  
Law of Detachment  
Law of Syllogism

**Learning Targets**

**TOPIC: Reasoning in Algebra - Algebraic Proofs (Section 2.5)\*** -- 2 Day(s)

**Description**

Students will be introduced to the properties of equality. These properties are used as justifications in algebraic proofs written by the students. This topic is to familiarize the student with the process of proof writing.

**Academic Vocabulary (What terms will students need to know?)**

Reflexive Property  
Symmetric Property  
Transitive Property  
Proof  
Two-Column Proof  
Addition Property of Equality  
Subtraction Property of Equality  
Multiplication Property of Equality  
Division Property of Equality  
Substitution Property of Equality

**Learning Targets**

**TOPIC: Proving Angles Congruent (Section 2.6)** -- 2 Day(s)

**Description**

Students will be introduced to beginning proofs with geometric figures. They will apply angle theorems to proofs and understand the difference between congruence and equality.

**Academic Vocabulary (What terms will students need to know?)**

Proof  
Congruent  
Equality

**Learning Targets**

Students will be able to prove that vertical angles are congruent.

MA.G.CO.C.8

Students will be able to prove similarity using the congruent complements theorem.

MA.G.CO.C.8

**UNIT: Parallel/Perpendicular Lines and Congruent Triangles (Sections 3.1-4.7)** -- 23 Day(s)

**Unit Description**

This unit introduces students to special angle pairs created with a transversal. Students will explore and write equations of parallel and perpendicular lines in the coordinate plane. Also, students will be introduced to congruent triangle postulates and special triangles, such as, right, isosceles, and equilateral and their properties.



**TOPIC: Lines and Angles (Section 3.1)** -- 1 Day(s)

**Description**

This topic will introduce the special angle pairs that are created when one line intersects (transversal) intersects 2 or more other lines. Relationship between lines in space will be explored.

**Academic Vocabulary (What terms will students need to know?)**

- Parallel Lines
- Skew Lines
- Parallel Planes
- Transversal
- Alternate Interior Angles
- Alternate Exterior Angles
- Same-Side Interior Angles
- Corresponding Angles

**Learning Targets**

Students will be able to prove all triangle's interior angles add to 180 degrees using the triangle angle-sum theorem.

MA.G.C.A.1

**TOPIC: Properties of Parallel and Perpendicular Lines (Section 3.2-4)** -- 3 Day(s)

**Description**

Students will use angle theorems to find missing angle measures and converse angle theorems to prove lines are parallel. Students will write and solve equations to prove converse angles theorems. They use the perpendicular transversal theorem to prove relationships between two lines.

**Academic Vocabulary (What terms will students need to know?)**

- Alternate Interior Angles Theorem
- Corresponding Angles Theorem
- Same-Side Interior Angles Theorem
- Alternate Exterior Angles Theorem
- Converse of the Interior Angles Theorem
- Converse of the Corresponding Angles Theorem
- Converse of the Alternate Exterior Angles Theorem
- Converse of the Same-Side Interior Angles Theorem

**Learning Targets**

Students will be able to prove alternate interior angles are congruent.

MA.G.CO.C.8

Students will be able to prove same-side angles are supplements.

MA.G.CO.C.8

Students will be able to prove corresponding angles are congruent.

MA.G.CO.C.8

Students will be able to prove alternate exterior angles are congruent.

MA.G.CO.C.8

Students will be able to solve mathematical models using geometric methods.

MA.G.MG.A.3

**TOPIC: Parallel Lines and Triangles (Section 3.5)** -- 2 Day(s)

**Description**

Students will be introduced to triangle theorems and use them to find missing angle measures, prove triangles, and write and solve equations.

**Academic Vocabulary (What terms will students need to know?)**

Auxiliary Line  
Exterior Angle of a Polygon  
Remote Interior Angles  
Parallel Postulate  
Triangle Angle-Sum Theorem  
Triangle Exterior Angle Theorem  
Remote Interior Angles

**Learning Targets**

Students will be able to prove all triangle's interior angles add to 180 degrees using the triangle angle-sum theorem.

MA.G.CO.C.9

Students will be able to prove the sum of the two remote interior angles equals the sum of the exterior angle using the the exterior angle theorem.

MA.G.CO.C.9

**TOPIC: Constructing Parallel and Perpendicular Lines (Section 3.6)** -- 1 Day(s)

**Description**

In this section student will further their knowledge of compass/straightedge constructions to be able to construct parallel, perpendicular lines, and quadrilaterals.

**Academic Vocabulary (What terms will students need to know?)**

No new vocabulary

**Learning Targets**

Students will be able to construct a parallel line through a given point not on the line.

MA.G.CO.D.11

Students will be able to construct a perpendicular line through a line and a given point.

MA.G.CO.D.11

Students will be able to construct a perpendicular line through a line and a given point.

MA.G.CO.D.11

Students will be able to construct a quadrilateral using parallel and perpendicular line construction techniques.

MA.G.CO.D.11

**TOPIC: Equations of Lines in the Coordinate Plane (Section 3.7)** -- 2 Day(s)

**Description**

This topic will review the student's understanding of slope and writing and graphing equations of lines from certain given facts of the line covered in Algebra 1.

*This section does not cover any particular MLS standards, however it does prepare students for understanding G.GPE.B.4*

**Academic Vocabulary (What terms will students need to know?)**

Slope  
Slope-Intercept Form  
Point-Slope Form

**Learning Targets**

Students will be able to write equations of lines in slope-intercept form.

Students will be able to write equations of lines in point-slope form.

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**TOPIC: Slopes of Parallel and Perpendicular Lines (Section 3.8)** -- 2 Day(s)

**Description**

Students will compare slopes of parallel and perpendicular lines. Students will apply the concept of parallel and perpendicular lines to coordinate geometry in order to determine types of quadrilaterals in the coordinate plane.

**Learning Targets**

Students will be able to prove the slope criteria for parallel and perpendicular lines.

MA.G.GPE.B.4

Students will be able to use the slopes of parallel and perpendicular lines to solve problems.

MA.G.GPE.B.4

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**TOPIC: Congruent Figures (Section 4.1)** -- 1 Day(s)

**Description**

This topic will introduce students to congruent polygons. Students will recognize congruent figures and match their corresponding parts with appropriate labels.

**Academic Vocabulary (What terms will students need to know?)**

Congruent Polygons

Corresponding Parts

**Learning Targets**

Students will be able to recognize congruent figures.

MA.G.CO.B.6

Students will be able to identify corresponding parts of congruent figures.

MA.G.CO.B.6

**TOPIC: Congruent Triangles (Sections 4.2-4.3, 4.6) -- 4 Day(s)**

**Description**

This topic will explore the 5 postulates that determine triangle congruence. Students will determine by which postulate two triangles are congruent and match their corresponding parts. Students will also identify when there is incorrect or not enough information to determine congruence. Students will write proofs to justify two congruent triangles.

**Academic Vocabulary (What terms will students need to know?)**

- Side Side Side Postulate
- Side Angle Side Postulate
- Angle Side Angle Postulate
- Angle Angle Side Postulate
- Hypotenuse Leg Postulate
- Hypotenuse
- Leg

**Learning Targets**

Students will use the Side-Side-Side (SSS) Postulate to prove two triangles are congruent.

MA.G.SRT.B.4

Students will use the Side-Angle-Side (SAS) Postulate to prove two triangles are congruent.

MA.G.SRT.B.4

Students will use the Angle-Side-Angle (ASA) Postulate to prove two triangles are congruent.

MA.G.SRT.B.4

Students will use the Angle-Angle-Side (AAS) Postulate to prove two triangles are congruent.

MA.G.SRT.B.4

Students will solve problems using the fact that base angles of isosceles triangles congruent.

MA.G.SRT.B.4

**TOPIC: Using Corresponding Parts of Congruent Triangles (Section 4.4) -- 2 Day(s)**

**Description**

Students will determine that two triangles are congruent and conclude that their parts are corresponding. Students will prove corresponding parts of congruent triangles are congruent.

**Academic Vocabulary (What terms will students need to know?)**

Corresponding Parts of Congruent Triangles are Congruent (CPCTC)

**Learning Targets**

Students will prove that triangles are congruent using Corresponding Parts of Congruent Triangles (CPCTC).

MA.G.CO.C.9

**TOPIC: Isosceles and Equilateral Triangles (Section 4.5)** -- 3 Day(s)

**Description**

Students will explore properties of isosceles and equilateral triangles.

**Academic Vocabulary (What terms will students need to know?)**

Legs of an Isosceles Triangle  
Base of an Isosceles Triangle  
Vertex Angles of an Isosceles Triangle  
Base angles of an Isosceles Triangle  
Corollary  
Equilateral  
Equiangular

**Learning Targets**

Students will prove that the base angles of isosceles triangles congruent.

MA.G.CO.C.9

Students will prove that triangles are congruent using congruent overlapping parts.

MA.G.SRT.B.4

**TOPIC: Perpendicular and Angle Bisectors in Triangles (Section 5.2)** -- 2 Day(s)

**Description**

In this section students will learn about perpendicular and angle bisectors and use their properties to solve problems.

**Academic Vocabulary (What terms will students need to know?)**

Equidistant

**Learning Targets**

Students will prove that triangles are congruent using congruent overlapping parts.

MA.G.SRT.B.4

**UNIT: Relationships Within Triangles, Polygons, and Quadrilaterals (Sections 5.1 - 6.9)** -- 21 Day(s)

**Unit Description**

In this unit, students will explore relationships within triangles and special segments and points of triangles. Students will learn properties of polygons with emphasis on quadrilaterals. Students will use coordinate geometry to find relations in triangles and prove quadrilaterals.

**TOPIC: Midsegments of Triangles (Section 5.1)** -- 1 Day(s)

**Description**

In this section students will learn what the midsegment of a triangle is and use their relationships to solve problems.

**Academic Vocabulary (What terms will students need to know?)**

Midsegment of a triangle.

**Learning Targets**

Students will calculate midsegments of triangles.

MA.G.SRT.B.4

Students will use properties of midsegments of triangles to solve problems.

MA.G.SRT.B.4

Students will write and solve equations using midsegments of triangles.

MA.G.SRT.B.4

**TOPIC: Perpendicular and Angle Bisectors in Triangles (Section 5.2)** -- 2 Day(s)

**Description**

In this section students will learn about perpendicular and angle bisectors and use their properties to solve problems.

**Academic Vocabulary (What terms will students need to know?)**

Equidistant

Distance from a point to a line

Perpendicular Bisector Theorem

Converse of the Perpendicular Bisector Theorem

Angle Bisector Theorem

Converse of the Angle Bisector Theorem

**Learning Targets**

Students will use properties of perpendicular bisectors to calculate angles and lengths of triangles.

MA.G.CO.C.8

Students will use the angle bisector theorem to write and solve equations representing side lengths of triangles.

MA.G.CO.C.8

**TOPIC: Bisectors in Triangles (Section 5.3)** -- 2 Day(s)

**Description**

Students will identify and use the properties of perpendicular and angle bisectors in triangles.

**Academic Vocabulary (What terms will students need to know?)**

Concurrent

Point of Concurrency

Circumcenter of a Triangle

Circumscribed about

Incenter of a Triangle

Inscribed in

**Learning Targets**

Students will identify and use the properties of perpendicular bisectors in triangles to solve problems.

MA.G.SRT.B.4

Students will identify and use the properties of angle bisectors in triangles to solve problems.

MA.G.SRT.B.4

Students will be able to construct the inscribed circle of a triangle.

MA.G.C.A.3

Students will be able to construct the circumscribed circle of a triangle.

MA.G.C.A.3

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**TOPIC: Medians and Altitudes (Section 5.4)** -- 2 Day(s)

**Description**

In this section students will learn about medians and altitudes of triangles. They will then use medians and altitudes of triangles to solve problems.

**Academic Vocabulary (What terms will students need to know?)**

Median of a Triangle  
Centroid of a Triangle  
Altitude of a Triangle  
Orthocenter of a Triangle  
Concurrency of Altitudes Theorem  
Concurrency of Medians Theorem

**Learning Targets**

Students will identify properties of medians and altitudes of a triangle and use them to solve problems.

MA.G.SRT.B.4

Students will be able to prove if a quadrilateral is a parallelogram then its opposite sides are congruent (Thm. 6-3)

MA.G.SRT.B.4

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**TOPIC: Indirect Proof (Section 5.5)\*\*** -- 1 Day(s)

**Description**

Students will use indirect reasoning to write proofs.

**Academic Vocabulary (What terms will students need to know?)**

Indirect Reasoning  
Indirect Proof

**Learning Targets**

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**TOPIC: Inequalities in One and Two Triangles (Section 5.6 - 5.7)\*** -- 1 Day(s)

**Description**

Students will use inequalities to compare side and angle measurements of triangles in one and two triangles.

**Academic Vocabulary (What terms will students need to know?)**

Hinge Theorem

**Learning Targets**

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**TOPIC: Polygon Angle-Sum Theorems (Section 6.1)\*** -- 2 Day(s)

**Description**

Students will calculate the sum of measures of the interior angles and exterior angles of a polygon using formulas. Students will write and solve equations to find missing angles measures in regular and irregular polygons.

**Academic Vocabulary (What terms will students need to know?)**

Regular Polygon  
Equilateral Polygon  
Equiangular Polygon

**Learning Targets**

**TOPIC: Properties of Parallelograms (Section 6.2-3) -- 2 Day(s)**

**Description**

Students will use properties of parallelograms to find missing angle measures and side lengths.  
Students will use properties of parallelograms to write and solve equations.  
Students will prove parallelograms through coordinate geometry.

**Academic Vocabulary (What terms will students need to know?)**

Parallelogram  
Opposite Sides  
Opposite Angles  
Consecutive Angles  
Diagonal of a Parallelogram

**Learning Targets**

Students will be able to prove if a quadrilateral is a parallelogram then its opposite sides are congruent (Thm. 6-3)

MA.G.CO.C.10

Students will be able to prove if a quadrilateral is a parallelogram then its consecutive angles are supplementary (Thm. 6-4)

MA.G.CO.C.10

Students will be able to prove if a quadrilateral is a parallelogram then its opposite angles are congruent. (Thm. 6-5)

MA.G.CO.C.10

Students will be able to prove if a quadrilateral is a parallelogram then its diagonals bisect each other. (Thm. 6-6)

MA.G.CO.C.10

Students will be able to prove if a pair of opposite sides a quadrilateral is both congruent and parallel, then the quadrilateral is a parallelogram (Thm. 6-12).

MA.G.CO.C.10

Students will be able to prove if an angle of a quadrilateral is supplementary to both of its consecutive angles, then the quadrilateral is a parallelogram (Thm. 6-9)

MA.G.CO.C.10

Students will be able to prove if both pairs of opposite angles a quadrilateral are congruent, then the quadrilateral is a parallelogram (Thm. 6-10).

MA.G.CO.C.10

Students will be able to prove if both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram (Thm. 6-8).

MA.G.CO.C.10

Students will be able to prove if the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram (Thm. 6-11)

MA.G.CO.C.10



**TOPIC: Properties of Rhombuses, Rectangles, and Squares (Section 6.4 - 6.5)** -- 3 Day(s)

**Description**

Students will define and classify special types of parallelograms.  
 Students will apply properties of rhombuses, rectangles, and squares and their diagonals.  
 Students will prove quadrilaterals through coordinate proofs.

**Academic Vocabulary (What terms will students need to know?)**

Rhombus  
 Rectangle  
 Square

**Learning Targets**

Students will be able to prove if a parallelogram is a rhombus, then its diagonals are perpendicular. (Thm. 6-13) and its converse (Thm. 6-16)

MA.G.CO.C.10

Students will be able to prove if a parallelogram is a rhombus, then each diagonal bisects a pair of opposite angles. (Thm. 6-14) and its converse (Thm 6-17)

MA.G.CO.C.10

Students will prove theorems using figures in the coordinate plane.

MA.G.CO.C.10

**TOPIC: Trapezoids and Kites (Section 6.6)\*** -- 2 Day(s)

**Description**

Students will apply properties of trapezoids, isosceles trapezoids, and kites.  
 Students will write and solve equations using the midsegment of a trapezoid.  
 Students will prove trapezoids and kites through coordinate geometry.

**Academic Vocabulary (What terms will students need to know?)**

Trapezoid  
 Base  
 Leg  
 Base Angle  
 Isosceles Trapezoid  
 Midsegment of a Trapezoid  
 Kite

**Learning Targets**

**TOPIC: Applying Coordinate Geometry (Sections 6.7 - 6.9)** -- 3 Day(s)

**Description**

In these sections students will apply their knowledge of quadrilaterals and other programs in the coordinate plane making use of the midpoint and distance formulas to classify polynomials.

**Academic Vocabulary (What terms will students need to know?)**

Coordinate Proof

**Learning Targets**

Students will be able to classify polygons in the coordinate plane.

MA.G.CO.B.6

Students will be able to name coordinates of special figures by using their properties.

MA.G.GPE.B.6

Students will be able to determine the length of various sides of polygons in the coordinate plane using the distance formula.

MA.G.GPE.B.6

Students will prove theorems using figures in the coordinate plane.

MA.G.GPE.B.3

**UNIT: Ratio, Proportion, and Similarity, and Right Triangles (Sections 7.1 - 8.3)** -- 16 Day(s)

**Unit Description**

Students will apply ratios and proportions to scales and similar figures.  
Students will use trigonometry and Pythagorean Theorem on special right triangles.

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**TOPIC: Ratios and Proportions (Section 7.1)\*** -- 1 Day(s)

**Description**

In this section students will review writing and solving ratios and proportions.

**Academic Vocabulary (What terms will students need to know?)**

Ratio  
Extended Ratio  
Proportion  
Extremes  
Means  
Cross Product Property

**Learning Targets**

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**TOPIC: Similar Polygons (Section 7.2)** -- 2 Day(s)

**Description**

Students will identify similar figures and their scale factors.  
Student will use scale factors to find model or real life figure dimensions.

**Academic Vocabulary (What terms will students need to know?)**

Similar Figures  
Similar Polygons  
Extended Proportion  
Scale Factor  
Scale Drawing  
Scale

**Learning Targets**

Students will use the definition of similar polygons to prove two polygons are similar.

MA.G.SRT.B.4

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**TOPIC: Proving Triangles Similar (Section 7.3)** -- 2 Day(s)

**Description**

Students will use similarity to find indirect measurements.  
Students will use AA, SAS, and SSS Similarity Postulates to prove triangles similar.

**Academic Vocabulary (What terms will students need to know?)**

Indirect Measurement  
AA~ Postulate  
SAS~ Postulate  
SSS~ Postulate

**Learning Targets**

Students will use the definition of perpendicular angles to solve similar triangle problems

MA.G.GPE.B.4

Students will use the Angle-Angle (AA~) Similarity Postulate to prove two triangles are similar.

MA.G.SRT.B.4

Students will use the Side-Angle-Side (SAS~) Similarity Theorem to prove two triangles are similar.

MA.G.SRT.B.4

Students will use the Side-Side-Side (SSS~) Similarity Theorem to prove two triangles are similar.

MA.G.SRT.B.4

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**TOPIC: Similarity in Right Triangles (Section 7.4)** -- 2 Day(s)

**Description**

Students will use the geometric mean and boomerang method to find missing lengths in similar right triangles.

**Academic Vocabulary (What terms will students need to know?)**

Geometric Mean

**Learning Targets**

Students will use the definition of perpendicular angles to solve similar triangle problems

MA.G.GPE.B.4

Students will be able to use the altitude to the hypotenuse of a right triangle in order to divide the triangle into two similar triangles in order to solve problems (Thm 7-3)

MA.G.SRT.B.4

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**TOPIC: Proportions in Triangles (Section 7.5)** -- 2 Day(s)

**Description**

Students will use Side-Splitter Theorem and the Triangle-Angle-Bisector Theorem to find missing lengths in figures.

**Academic Vocabulary (What terms will students need to know?)**

Side-Splitter Theorem

Triangle-Angle-Bisector Theorem

**Learning Targets**

Students will be able to use the Side-Splitter Theorem (7-4) to solve proportionality problems.

MA.G.SRT.C.5

Students will be able to use the Triangle-Angle-Bisector Theorem (7-5) to solve proportionality problems.

MA.G.SRT.C.5

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**TOPIC: The Pythagorean Theorem and its Converse (Section 8.1)** -- 2 Day(s)

**Description**

Students will apply Pythagorean Theorem to real life situations.

Students use the Converse of the Pythagorean Theorem to identify right, acute and obtuse triangles.

**Academic Vocabulary (What terms will students need to know?)**

Pythagorean Theorem

Converse of the Pythagorean Theorem

**Learning Targets**

Students will apply Pythagorean Theorem to real life situations.

MA.G.SRT.C.5

Students use the Converse of the Pythagorean Theorem to identify right, acute and obtuse triangles.

MA.G.SRT.C.5

Students will be able to use the Pythagorean Theorem to solve right triangles

MA.G.SRT.C.7

**TOPIC: Special Right Triangles (Section 8.2)** -- 2 Day(s)

**Description**

Students will apply properties of 45-45-90 and 30-60-90 right triangles.

**Academic Vocabulary (What terms will students need to know?)**

45-45-90 Right Triangle

30-60-90 Right Triangle

**Learning Targets**

Students will be able to use the 45-45-90 Triangle Theorem (8-5) to solve proportionality problems.

MA.G.SRT.C.5

Students will be able to use the 30-60-90 Triangle Theorem (8-6) to solve proportionality problems.

MA.G.SRT.C.5

Students will be able to use trigonometric ratios to solve right triangles

MA.G.SRT.C.7

**TOPIC: Translations (Section 9.1)** -- 1 Day(s)

**Description**

In this section students learn to identify rigid transformations and find translations images of figures.

**Academic Vocabulary (What terms will students need to know?)**

Transformation

Preimage

image

**Learning Targets**

Students will use sine, cosine, and tangent ratios and inverse ratios to determine side lengths and angles measures in right triangles.

MA.G.SRT.C.5

Students will use trigonometric ratios to find distance.

MA.G.SRT.C.5

Students will be able to define the trigonometric ratios for right and acute triangles.

MA.G.SRT.C.5

Students will be able to explain the relationship between sine and cosine of complementary angles.

MA.G.SRT.C.6

Students will be able to use the relationship between sine and cosine of complementary angles to solve problems.

MA.G.SRT.C.6

Students will be able to use trigonometric ratios to solve right triangles

MA.G.SRT.C.7

**UNIT: Transformations (Sections 9.1 - 9.7)** -- 12 Day(s)

**Unit Description**

In this unit students learn about translations, reflections, rotations and other geometric transformations.

**TOPIC: Translations (Section 9.1)** -- 1 Day(s)

**Description**

In this section students learn to identify rigid transformations and find translations images of figures.

**Academic Vocabulary (What terms will students need to know?)**

Transformation  
Preimage  
image  
rigid motion  
translation  
composition of transformations

**Learning Targets**

Students will be able to identify rigid motions.

MA.G.CO.A.4      MA.G.CO.B.6

Students will be able to find translation images of figures.

MA.G.CO.A.2

Students will be able to recognize that rotations, reflections, and translations of a preimage result in a congruent image.

MA.G.CO.B.6

**TOPIC: Reflections (Section 9.2)** -- 2 Day(s)

**Description**

In this section student will find reflection images of figures.

**Academic Vocabulary (What terms will students need to know?)**

Reflection  
Line of Reflection

**Learning Targets**

Students will be able to find reflection images of figures.

MA.G.CO.A.5

Students will be able to define a reflection of a figure using reflective properties.

MA.G.CO.A.4

Students will be able to recognize that rotations, reflections, and translations of a preimage result in a congruent image.

MA.G.CO.B.6

Students will be able to find reflection images of figures.

MA.G.CO.A.2

**TOPIC: Rotations (Section 9.3 +9.3CB) -- 2 Day(s)**

**Description**

In this section students will draw and identify rotation images of figures.

9.3 concept byte includes rotational symmetry and lines of symmetry of two-dimensional figures.

**Academic Vocabulary (What terms will students need to know?)**

rotation

center of rotation

angle of rotation

**Learning Targets**

Students will be able to find rotations images of figures about a point.

MA.G.CO.A.5

Students will be able to find rotations images of figures in the coordinate plane.

MA.G.CO.A.5

Students will be able to recognize that rotations, reflections, and translations of a preimage result in a congruent image.

MA.G.CO.B.6

Students will be able to find rotation images of figures.

MA.G.CO.A.2

Students will be able to describe rotational symmetry of two dimensional figures.

MA.G.CO.A.3

Students will be able to describe lines of symmetry of two dimensional figures.

MA.G.CO.A.3

**TOPIC: Congruence Transformations (Section 9.5) -- 2 Day(s)**

**Description**

In this section students will learn to identify congruence transformations and prove triangles congruence using isometries.

**Academic Vocabulary (What terms will students need to know?)**

Section 9.4

glide reflection

isometry

Section 9.5

congruent

congruence transformation

**Learning Targets**

Students will be able to recognize that rotations, reflections, and translations of a preimage result in a congruent image.

MA.G.CO.B.6

Students will be able to prove triangle congruence using isometries.

MA.G.CO.B.7

**TOPIC: Dilations (Section 9.6)** -- 2 Day(s)

**Description**

In this section students will learn to understand dilation images of figures.

**Academic Vocabulary (What terms will students need to know?)**

dilation  
center of dilation  
scale factor of a dilation  
enlargement  
reduction

**Learning Targets**

Students will be able to find dilation images of figures.

MA.G.CO.A.2

Students will be able to construct new geometric figures using dilations.

MA.G.SRT.A.1

Students will be able to analyze geometric figures and describe the scale factor of the dilation.

MA.G.SRT.A.1

Students will be able to determine if a dilation's scale factor produces an enlarged or reduced figure.

MA.G.SRT.A.1

**TOPIC: Similarity Transformations (Section 9.7)** -- 3 Day(s)

**Description**

In this section students will identify similarity transformations and verify properties of similarity.

**Academic Vocabulary (What terms will students need to know?)**

similarity transformation  
similar

**Learning Targets**

Students will use the definition of similarity to decide if figures are similar.

MA.G.SRT.A.2

Students will use the definition of similarity to solve problems involving similar figures.

MA.G.SRT.A.2

Students will use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.

MA.G.SRT.A.3

**UNIT: Area, Circles and Arcs, Surface Area and Volume (Sections 10.1 - 12.5)** -- 21 Day(s)

**Unit Description**

In this unit students will look at all aspects of area, circles, surface area, and volume in geometry.

**TOPIC: Areas of Parallelograms and Triangles (Section 10.1 - 10.4\*)** -- 3 Day(s)

**Description**

In this section students will review finding the area of parallelograms and triangles.

\*Figures in sections 10.2, 10.3 and 10.4 are not specifically referenced in the MLS standards

**Academic Vocabulary (What terms will students need to know?)**

base of a parallelogram  
altitude of a parallelogram  
height of a parallelogram  
base of a triangle  
height of a triangle

**Learning Targets**

Students will use coordinates to compute area of triangles and rectangles.

MA.G.GPE.B.6

Students will be able to use rectangles, their measures and their properties to describe real world objects.

MA.G.MG.A.1

Students will be able to define the distance around a circular arc.

MA.G.MG.A.1

**TOPIC: Trigonometry and Area (Section 10.5)** -- 2 Day(s)

**Description**

In this section students will find areas of regular polygons and triangles using trigonometry.

**Academic Vocabulary (What terms will students need to know?)**

no new vocabulary

**Learning Targets**

Students will be able to find the area of a triangle given SAS and the formula  $A = \frac{1}{2} ab \sin(c)$

MA.G.SRT.C.8

Students will be able to derive the formula  $A = \frac{1}{2} ab \sin(C)$

MA.G.SRT.C.8



**TOPIC: Circles, Arcs, and Sectors (Sections 10.6 - 10.7)** -- 4 Day(s)

**Description**

In this section students will learn how to find the measures of central angles and arcs. Students will also be able to find the circumference, arc length, area, and sectors of various circles.

**Academic Vocabulary (What terms will students need to know?)**

Section 10.6

circle  
center  
diameter  
radius  
congruent circles  
central angle  
semicircle  
minor arc  
major arc  
adjacent arcs  
circumference  
 $\pi$   
concentric circles  
arc length

Section 10.7

Sector of a circle  
segment of a circle

**Learning Targets**

Students will be able to define the distance around a circular arc.

MA.G.C.A.1

Students will be able to prove all circles are similar using similarity transformations.

MA.G.C.A.1

Students will be able to identify radii of circles.

MA.G.C.A.2

Students will be able to use the formula for the length of an arc to solve problems

MA.G.C.B.4

Students will be able to derive the formula for the length of an arc of a circle.

MA.G.C.B.4

Students will be able to derive the formula for the area of a sector of a circle.

MA.G.C.B.5

Students will be able to use the formula for the area of a sector of a circle to solve problems

MA.G.C.B.5

**TOPIC: Space (3-d) Figures and Cross Sections (Section 11.1)** -- 1 Day(s)

**Description**

In this section students will learn to recognize polyhedrons and their parts. Students will also learn to visual cross sections of space (3dimensional) figures.

**Academic Vocabulary (What terms will students need to know?)**

polyhedron  
 face  
 edge  
 vertex  
 cross section

**Learning Targets**

Students will be able to identify the shapes of two-dimensional cross sections of three-dimensional objects.

MA.G.GMD.B.3

Students will be able to use prisms, their measures and their properties to describe real world objects.

MA.G.GMD.B.4

**TOPIC: Surface Areas and Volumes of Prisms and Cylinders (Sections 11.2 and 11.4)** -- 2 Day(s)

**Description**

In these sections students will learn to calculate the surface area and volumes of prisms and cylinders.

**Academic Vocabulary (What terms will students need to know?)**

Section 11.2

prism (base, lateral face, altitude, height, lateral area, surface area)  
 right prism  
 oblique prism  
 cylinder (base, altitude, height, lateral area, surface area)  
 right cylinder  
 oblique cylinder

Section 11.4

volume  
 composite space figure

**Learning Targets**

Students will be able to give an informal argument for the formula for the circumference of a circle.

MA.G.GMD.A.1

Students will be able to give an informal argument for the formula for the area of a circle.

MA.G.GMD.A.1

Students will be able to give an informal argument for the formula for the volume of a cylinder.

MA.G.GMD.A.1

Students will be able to use the volume formula for cylinders to solve problems.

MA.G.GMD.A.2

Students will be able to use the volume formula for prisms to solve problems.

MA.G.GMD.A.2

Students will be able to use cylinders, their measures and their properties to describe real world objects.

MA.G.MG.A.1

Students will be able to use prisms, their measures and their properties to describe real world objects.

MA.G.MG.A.1

**TOPIC: Surface Area and Volumes of Pyramids and Cones (Sections 11.3 and 11.5)** -- 2 Day(s)

**Description**

In these sections students will learn to calculate the surface area and volumes of pyramid and cones.

**Academic Vocabulary (What terms will students need to know?)**

Pyramid (base, lateral face, vertex, altitude, height, slant height, lateral area, surface area)

Regular Pyramid

Cone (base, vertex, altitude, height, slant height, lateral area, surface area)

Right Cone

**Learning Targets**

Students will be able to use pyramids, their measures and their properties to describe real world objects.

MA.G.MG.A.1

Students will be able to use cones, their measures and their properties to describe real world objects.

MA.G.MG.A.1

Students will be able to give an informal argument for the formula for the volume of a pyramid.

MA.G.GMD.A.1

Students will be able to give an informal argument for the formula for the volume of a cone.

MA.G.GMD.A.1

Students will be able to use the volume formula for pyramids to solve problems.

MA.G.GMD.A.2

Students will be able to use the volume formula for cones to solve problems.

MA.G.GMD.A.2

**TOPIC: Surface Area and Volumes of Spheres (Section 11.6)** -- 2 Day(s)

**Description**

Students will learn to find the surface area and volumes of a sphere.

**Academic Vocabulary (What terms will students need to know?)**

sphere

center of a sphere

radius of a sphere

diameter of a sphere

circumference of a sphere

great circle

hemisphere

**Learning Targets**

Students will be able to use the volume formula for spheres to solve problems.

MA.G.GMD.A.2

Students will be able to use the volume formula for composite figures to solve problems.

MA.G.GMD.A.2

Students will be able to use the surface area formula for spheres to solve problems.

MA.G.GMD.A.2

**TOPIC: Areas and Volumes of Similar Solids (Section 10.7)** -- 2 Day(s)

**Description**

In this section students will learn to compare and find the areas and volumes of similar solids. This section has a large mathematical modeling component.

**Academic Vocabulary (What terms will students need to know?)**

similar solids

**Learning Targets**

Students will be able to use composite figures, their measures and their properties to describe real world objects.

MA.G.MG.A.1

Students will be able to use scale factor of similar figures, and their properties to describe real world objects.

MA.G.MG.A.1

Students will be able to apply concepts of density based on area in modeling situations.

MA.G.MG.A.2

Students will be able to apply concepts of density based on volume in modeling situations.

MA.G.MG.A.2

**TOPIC: Parts of Circles (Sections 12.1 - 12.3)** -- 2 Day(s)

**Description**

In these sections students learn specific parts of circles such as: tangent lines, chords, arcs, and inscribed angles.

**Academic Vocabulary (What terms will students need to know?)**

Section 12.1

Tangent to a circle

point of tangency

Section 12.2

chord

Section 12.3

inscribed angle

intercepted arc

**Learning Targets**

Students will be able to describe the relationships among inscribed angles, radii, and chords of circles.

MA.G.C.A.2

Students will be able to identify chords of circles.

MA.G.C.A.2

Students will be able to identify inscribed angles of circles.

MA.G.C.A.2

Students will be able to identify tangent lines of circles.

MA.G.C.A.2

Students will be able to construct a tangent line from a point outside a given circle to the circle.

MA.G.CO.D.11

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**TOPIC: Permutations and Combinations (Section 13.3)** -- 2 Day(s)

**Description**

In this section students will be introduced to permutations and combinations to solve problems.

**Academic Vocabulary (What terms will students need to know?)**

Fundamental Counting Principle  
Permutation  
n factorial  
combination

**Learning Targets**

Students will derive the equation of a circle

MA.G.GPE.A.1

Students will use the equation of a circle to solve problems algebraically

MA.G.GPE.A.1

Students will be able to derive the equation of a parabola given a focus and diretrix.

MA.G.GPE.A.2

**UNIT: Probability** -- 13 Day(s)

**Unit Description**

In this unit students will combine the fields of geometry and statistics by finding probabilities related to geometric properties.

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**TOPIC: Experimental and Theoretical Probability (Section 13.1)** -- 1 Day(s)

**Description**

In this section students will learn to calculate experimental and theoretical probability.

**Academic Vocabulary (What terms will students need to know?)**

outcome  
even  
sample space  
probability  
experimental probability  
theoretical probability  
complement of an event

**Learning Targets**

Students will be able to describe events as subsets of a sample space.

MA.G.CP.A.1

**TOPIC: Probability Distributions and Frequency Tables (Section 13.2)** -- 2 Day(s)

**Description**

In this section student will make and use frequency table sand probability distributions.

**Academic Vocabulary (What terms will students need to know?)**

frequency table  
relative frequency  
probability distribution

**Learning Targets**

Students will be able to construct two-way frequency tables of data when two categories are associated with each object being classified.

MA.G.CP.A.4

Students will be able to explain the concept of independence in a context.

MA.G.CP.A.4

**TOPIC: Permutations and Combinations (Section 13.3)** -- 2 Day(s)

**Description**

In this section students will be introduced to permutations and combinations to solve problems.

**Academic Vocabulary (What terms will students need to know?)**

Fundamental Counting Principle  
Permutation  
n factorial  
combination

**Learning Targets**

Students will use permutations to solve problems

MA.G.CP.A.8

Students will use combinations to solve problems

MA.G.CP.A.8

Students will be able to determine the difference between the use of permutations and combinations.

MA.G.CP.A.8

**TOPIC: Compound Probability (Section 13.4)** -- 3 Day(s)

**Description**

In this section students will learn how to identify independent, dependent events. and find compound probabilities.

**Academic Vocabulary (What terms will students need to know?)**

- compound event
- independent events
- dependent events
- mutually exclusive events
- overlapping events

**Learning Targets**

Students will be able to use a two-way frequency table as a sample space to decide if events are independent.

MA.G.CP.A.4

Students will apply the Addition Rule for calculating probabilities.

MA.G.CP.A.6

Students will interpret the Addition Rule for calculating probabilities.

MA.G.CP.A.6

Students will apply the general Multiplication Rule in a uniform probability model.

MA.G.CP.A.7

Students will interpret the general Multiplication Rule in a uniform probability model.

MA.G.CP.A.7

Students will be able to understand the definition of independent event sand use it to solve problems

MA.G.CP.A.2

Students will be able to explain the concept of independence in a context.

MA.G.CP.A.5

Students will be able to recognize the concept of independence in a context.

MA.G.CP.A.5

**TOPIC: Probability Models and Conditional Probability Formulas (Sections 13.5 - 13.6)** -- 2 Day(s)

**Description**

In this section students will construct and use probability models. Students will also use formulas to understand and calculate conditional probabilities.

**Academic Vocabulary (What terms will students need to know?)**

- two-way frequency table
- conditional probability

**Learning Targets**

Students will be able to use a two-way frequency table as a sample space to approximate conditional probabilities.

MA.G.CP.A.4

Students will be able to calculate conditional probabilities of events.

MA.G.CP.A.3

Students will be able to recognize the concept of conditional probability in a context.

MA.G.CP.A.5

Students will be able to recognize the concept of independence in a context.

MA.G.CP.A.5

Students will be able to explain the concept of conditional probability in a context.

MA.G.CP.A.5

Students will be able to explain the concept of independence in a context.

MA.G.CP.A.5

**Geometry/Advanced Geometry (2016)**

Wright City R-II  
Mathematics  
Grades 9 - 10, Duration 1 Year, 1 Credit  
Required Course