Chapter 1: Essentials of Geometry
Approximately 10 days

Sections Covered:

- 1.1: Identify Points, Lines & Planes (G.CO.A.1) – 1 day
- 1.2: Use Segments & Congruence (review) – 1 day
- 1.3: Use midpoint & distance formulas (review) – 1 day
- 1.4: Measure & classify angles (review) – 1 day
- Constructions pg. 33 (G.CO.D.12) – 1 day
- 1.5: Describe angle pair relationships (review) – 1 day
- 1.7: Find perimeter, circumference & area (review) – 1 day

Mathematical Practices:

1: Make sense of problems and persevere in solving them.
2: Reason abstractly and quantitatively.
3: Construct viable arguments and critique the reasoning of others.
4: Model with mathematics.
5: Use appropriate tools strategically.
6: Attend to precision.
7: Look for and make use of structure.
8: Look for and express regularity in repeated reasoning.

Objectives:

The student will be able to…
- Describe geometric figures
- Measure geometric figures
- Understand equality & congruence

Essential Questions:

- How do you use geometric terminology to describe figures?
- How do you determine the measure of geometric figures using formulas?
- How do you use congruence to determine equal segments and angles?

Montana Core Standards

The student will…

G.CO.A: Experiment with transformations in the plane.
**1: Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

G.CO.D: Make geometric constructions.
**12: Make formal geometric constructions, including those representing Montana American Indians, with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Constructions include: Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*

Teacher Resources:

Geometry McDougal Littell 2007 book

Media/Technology Resources:

- Refer to website: http://bpshsmath.weebly.com
- For constructions: http://www.mathopenref.com/tocs/constructionstoc.html
- Desmos.com
- Geogebra
- TI-Nspire activity: Points, Lines and Planes
- MathIsFun construction activity

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Assessments:	Suggested Instructional Practices:
• **Homework:** To be given daily on each introduced topic. • **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. • **Formative Assessments:** On current chapter concepts. • **Summative Assessments:** On concepts involving the essentials of geometry.	Constructions are essential for the following MVP Module 6.

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

MVP Module 6: Congruence, Constructions & Proof
Approximately 28 days

Sections Covered:

- 6.1: Leaping Lizards (G.CO.A.1, 4, 5) – 2 days
- 6.2: Is It Right? (G.CO.A.1, 5) – 2 days
- 6.3: Leap Frog (G.CO.A.4, 5) – 2 days
- 6.4: Leap Year (G.CO.A.1, 2, 4, 5) – 2 days
- 6.5: Symmetries of Quadrilaterals (G.CO.A.3, 6) – 2 days
- 6.6: Symmetries of Regular Polygons (G.CO.A.3, 6) – 1 day
- 6.7: Quadrilaterals Beyond Definition (G.CO.A.3, 4, 6) – 2 days
- **Suggested that 6.1-6.7 be assessed together**
- 6.8: Can You Get There From Here? (G.CO.A.5) – 1 day
- 6.9: Congruent Triangles (G.CO.A.6, 7, 8) – 1 day
- 6.10: Congruent Triangles To The Rescue (G.CO.A.7, 8) – 2 days
- 6.11: Under Construction (G.CO.A.12, 13) – 2 days
- 6.12: More Things Under Construction (G.CO.A.12, 13) – 2 days
- 6.13: Justifying Constructions (G.CO.A 12, 13) – 2 days
- 6.14: Constructions Blueprints (G.CO.A.12, 13) – 1 day
- **Suggested that 6.8-6.14 be assessed together**

Mathematical Practices:

1: Make sense of problems and persevere in solving them.
2: Reason abstractly and quantitatively.
3: Construct viable arguments and critique the reasoning of others.
4: Model with mathematics.
5: Use appropriate tools strategically.
6: Attend to precision.
7: Look for and make use of structure.
8: Look for and express regularity in repeated reasoning.

Objectives:

The student will be able to…
- Develop, write, & apply definitions of rigid motion transformations.
- Examine slopes of perpendicular and parallel lines.
- Find rotational symmetry and lines of symmetry in special types of quadrilaterals.
- Examine characteristics of regular polygons that emerge from rotational symmetry and lines of symmetry.
- Make sense of and justify properties of quadrilaterals using symmetry transformations.
- Describe a sequence of transformations that map congruent images onto each other.
- Establish ASA, AAS, and SSS for congruent triangles.
- Explore, examine, and write compass and straightedge constructions

Essential Questions:

- How do you prove 2 figures are congruent using rigid motion?
- How do you construct rhombus, squares, and parallelograms using only a compass and straightedge?
- Can you define and apply the definitions of rigid motion transformations?
- How can you prove 2 triangles are congruent?

Montana Core Standards
The student will…

G.CO.A: Experiment with transformations in the plane.
1: Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

2: Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translations versus horizontal stretch).

3: Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself (Introduced in 8th grade Pre-Algebra).

4: Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

5: Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using e.g., graph paper, tracing paper, or geometry software (Introduced in 8th grade Pre-Algebra). Specify a sequence of transformations that will carry a given figure onto another (this is new).

G.CO.B: Understand congruence in terms of rigid motions.
6: Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given 2 figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

7: Use the definition of congruence in terms of rigid motions to show that 2 triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.

8: Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

G.CO.D: Make geometric constructions.
12: Make formal geometric constructions, including those representing Montana American Indians, with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).
Constructions include: Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line (Introduced in 7th grade).

13: Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

Teacher Resources:	Media/Technology Resources:
• Geometry McDougall Littell 2007 (Chap 9) • Mathematics Vision Project (Secondary One – Module 6: Congruence & Proof)	• IEFA Native American Designs Activity (OPI website) • IEFA Building Patterns Using Reflections Activity (OPI website) • Refer to website: http://bpshsmath.weebly.com • Online game: http://www.mathplayground.com/ShapeMods/ShapeMods.html
Assessments: • **Homework:** To be given daily on each introduced topic. • **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. • **Formative Assessments:** On current chapter concepts. • **Summative Assessments:** Suggested that 6.1-6.7 be assessed and 6.8-6.14 be assessed.	**Suggested Instructional Practices:** • Supplement this unit with lessons 3.4-3.6 from the Geometry text.

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Chapter 3: Parallel and Perpendicular Lines
Approximately 4 days

Sections Covered:	Mathematical Practices:
 • 2.2: Analyze Conditional Statements (foundational) – 1 day • 3.1: Identify Pairs of lines & angles (review) – 1 day • 3.2: Use parallel lines and transversals (G.CO.C.9) -1 day • 3.3: Prove lines are parallel (G.CO.C.9) – 1 day	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.

Objectives:	Essential Questions:
 The student will be able to… • Read and write conditional statements. • Identify and apply angle pair relationships when 2 lines are cut by a transversal. • Use point-slope form of an equation.	 • How do you prove alternate interior and corresponding angles are congruent when you have parallel lines? • How do you know if 2 lines are parallel based on the angles formed by the lines and a transversal?

Montana Core Standards

The student will…

G.CO.C: Prove geometric theorems.
**9: Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

Teacher Resources:	Media/Technology Resources:
 • Geometry McDougall Littell 2007	 • Mathwarehouse Exploration Activity • Refer to website: http://bpshsmath.weebly.com

Assessments:	Suggested Instructional Practices:
 • **Homework:** To be given daily on each introduced topic. • **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. • **Formative Assessments:** Homework and worksheets on current chapter concepts. • **Summative Assessments:** A quiz over 2.2, 3.1-3.3.	 • Make sure students are using Point-Slope form of an equation • Constructions are essential for the following MVP modules

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Chapter 4: Congruent Triangles
Approximately 9 days

Sections Covered:	**Mathematical Practices:**
4.1: Apply Triangle Sum Properties (G.CO.C.10) – 1 day 4.2: Apply Congruence & Triangles (G.CO.C.7, 10) – 1 day 4.3, 4.4, 4.5: Proving Triangles Congruent with SSS, SAS, ASA, AAS & HL Theorem (G.CO.C.8) – 2 days 4.6: Use Congruent Triangles (G.CO.C.7) – 1 day 4.7: Use Isosceles & Equilateral Triangles (G.CO.C.10) – 1 day	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.
Objectives: The student will be able to… - Explain why the Triangle Sum Theorem works and prove it. - Prove triangles are congruent using SSS, SAS, ASA, AAS, or HL Theorem. - Use congruent triangles to prove other parts of triangles are congruent.	**Essential Questions:** - How can you prove triangles are congruent based on knowing certain angles and side lengths? - What special properties do Isosceles and Equilateral triangles have?

Montana Core Standards

The student will…

G.CO.B: Understand Congruence in terms of Rigid Motion.
7: Use the definition of congruence in terms of rigid motions to show that 2 triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.

8: Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

G.CO.C: Prove geometric theorems.
**10: Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180˚; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.

Teacher Resources:	**Media/Technology Resources:**
- Geometry McDougall Littell 2007 - MVP website	- Illuminations Triangle Congruence Activity - Similar or Congruent? (Texas Instruments Activity) - Illustrative Mathematics Activities: - Why does SAS work? - Why does ASA work? - Why does SSS work? - When does SSA work? - Refer to website: http://bpshsmath.weebly.com

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Assessments:	Suggested Instructional Practices:
- **Homework:** To be given daily on each introduced topic. - **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. - **Formative Assessments:** On current chapter concepts. - **Summative Assessments:** Test on triangle congruence.	**MVP Secondary 2 Module 5: Geometric Figures:** 5.1 goes with 4.1 5.2 goes with 4.3-4.5 and includes point on perpendicular bisector

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Chapter 5: Relationships within triangles
Approximately 7 days

Sections Covered:	Mathematical Practices:
• 5.1: Midsegments Theorem & Coordinate Proof (G.SRT.B.4, G.CO.C.10, G.GPE.B.4) – 2 days • 5.2: Use perpendicular bisectors (G.CO.C.10) – 1 day • 5.3: Use angle bisectors of a triangle (G.CO.C.10) – 1 day • 5.4: Use medians & altitudes (G.CO.C.10, G.GPE.B.6) – 1 day	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.

Montana Core Standards

The student will…

G.CO.C: Prove geometric theorems.
10: Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180˚; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.

G.SRT.B: Prove theorems involving similarity.
**4: Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two sides proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.

G.GPE.B: Use coordinates to prove simple geometric theorems algebraically.
**4: Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by 4 given points in the coordinate plane is a rectangle prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point (0, 2).

Objectives:	Essential Questions:
The student will be able to… • Use properties of special segments in triangles. • Use triangle inequalities to determine what triangles are possible. • Extend methods for justifying and proving relationships.	• How do we use special segments within triangles? • How do we use triangle inequalities to determine if triangles are possible? • Can we justify and prove relationships?

Teacher Resources:	Media/Technology Resources:

• Geometry McDougall Littell 2007	• Illuminations Activities:
	    o Triangle Incenter
	    o Perpendicular Bisector
	• Refer to website: http://bpshsmath.weebly.com

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Assessments:	Suggested Instructional Practices:
• **Homework:** To be given daily on each introduced topic. • **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. • **Formative Assessments:** On current chapter concepts. • **Summative Assessments:** On concepts involving relationships in triangles.	

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Chapter 6: Similarity
Approximately 10 days

Sections Covered:	Mathematical Practices:
• 6.1: Ratios, Proportions, & Geometric Mean (G.SRT.A.2) – 1 day • 6.2: Use proportions to solve geometry problems (review) – 1 day • 6.3: Use similar polygons (G.SRT.A.1) – 1 day • 6.4, 6.5: Prove triangles similar by AA, SSS, & SAS (G.SRT.A.3) – 1 day • 6.6: Use proportionality theorems (G.SRT.B.5) – 1 day • 6.7: Perform Similarity Transformations (G.SRT.A.1, 2) – 2 days	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.
Objectives: The student will be able to… • Use ratios and proportions to solve geometry problems. • Show triangles are similar. • Use indirect measurement and similarity.	**Essential Questions:** • How can we use ratios and proportions to solve geometry problems? • How can we show triangles are similar? • How can we measure indirectly?

Montana Core Standards

The student will…

G.SRT.A: Understand similarity in terms of similarity transformations.
**1: Verify experimentally the properties of dilations given by a center and a scale factor:
    **a: A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
    **b: The dilation of a line segment is longer or shorter in the ration given by the scale factor.

**2: Given 2 figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.

**3: Use the properties of similarity transformations to establish the AA criterion for 2 triangles to be similar.

G.SRT.B: Prove theorems involving similarity.
**5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Teacher Resources:	Media/Technology Resources:
• Geometry McDougall Littell 2007	• SIMMS: Crazy Cartoons • Illustrative Mathematics: Are they Similar? • Refer to website: http://bpshsmath.weebly.com

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Assessments:	Suggested Instructional Practices:
Homework: To be given daily on each introduced topic. **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. **Formative Assessments:** On current chapter concepts. **Summative Assessments:** On concepts involving similarity.	

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Chapter 7: Right Triangles & Trigonometry
Approximately 12 days

Sections Covered:	Mathematical Practices:
7.1, 7.2: Pythagorean Theorem and Its Converse (G.SRT.C.6, 7) – 1 day 7.3: Use Similar Right Triangles (G.SRT.C.6) – 2 days 7.4: Special Right Triangles (G.SRT.C.6) – 2 days 7.5: Apply the Tangent Ratio (G.SRT.C.8) – 1 day 7.6: Apply the Sine and Cosine Ratios (G.SRT.C.7,8) – 1 day 7.7: Solve Right Triangles (G.SRT.C.8) – 2 days	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.
Objectives: The student will be able to… - Use the Pythagorean Theorem and its converse. - Use special relationships in right triangles. - Use trig ratios to solve right triangles.	**Essential Questions:** - Can you use the Pythagorean Theorem and its converse? - How do you solve right triangles using trig ratios and special relationships?

Montana Core Standards

The student will…

G.SRT.C: Define trigonometric ratios and solve problems involving right triangles.
**6: Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.

**7: Explain and use the relationship between the sine and cosine of complementary angles.

**8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Teacher Resources:	Media/Technology Resources:
Geometry McDougal Littell 2007 book	- Refer to website: http://bpshsmath.weebly.com - SIMMS: A New Angle on an Old Pyramid

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Assessments:	Suggested Instructional Practices:
Homework: To be given daily on each introduced topic. **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. **Formative Assessments:** On current chapter concepts. **Summative Assessments:** On concepts involving right triangles and trig.	- Use simplest radical form whenever possible. Only introduce rationalizing the denominator. - Worksheets from box.com: - Trig ratios: https://app.box.com/s/1c30fea2cf10a945ab74 - Complimentary Angles: https://app.box.com/s/369041ad098a3748372e - Modeling a Montana American Indian Tipi Activity: http://www.native-languages.org/houses.htm

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Chapter 8: Quadrilaterals
Approximately 6 days

Sections Covered:	Mathematical Practices:
• 8.1: Find angle measures in polygons (review) – 1 day • 8.2, 8.3: Use properties of parallelograms and show that a quadrilateral is a parallelogram (G.CO.C.11) – 1 day • 8.4, 8.5: Properties of rhombuses, rectangles, squares, trapezoids & kites (G.CO.C.11) – 1 day • 8.6: Identify special quadrilaterals (G.CO.C.11) – 1 day	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.
Objectives: The student will be able to… • Use polygon angle relationships. • Use properties of parallelograms. • Classify quadrilaterals by properties	**Essential Questions:** • Can we use polygon angle relationships and properties of parallelograms? • How can we classify quadrilaterals by properties?

Montana Core Standards

The student will…

G.CO.C: Prove geometric theorems
*11: Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.

Teacher Resources:	Media/Technology Resources:
• Geometry McDougall Littell 2007	• Refer to website: http://bpshsmath.weebly.com • Illuminations Activity: Quadrilateral Diagonals
Assessments: • **Homework:** To be given daily on each introduced topic. • **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. • **Formative Assessments:** On current chapter concepts. • **Summative Assessments:** On concepts involving quadrilaterals.	**Suggested Instructional Practices:**

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Skip Chapter 9

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Chapter 10: Properties of Circles
Approximately 11 days

Sections Covered:	Mathematical Practices:
- Construction pg. 650: Explore Tangent Segments (G.C.4+) – ½ day 10.1: Use Properties of Tangents – ½ day 10.2: Find Arc Measures – 1 day 10.3 Apply Properties of Chords (G.C.2) – 1 day 10.4: Use Inscribed Angles & Polygons (G.C.2, 3) – 1 day 10.5: Apply Other Angle Relationships in Circles - 1 day 10.6: Find Segment Lengths in Circles (G.GPE.1) – 2 days 10.7: Will be taught with Coordinate Geometry	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.

Objectives:	Essential Questions:
The student will be able to… - Use properties of segments that intersect circles. - Apply angles relationships in circles. - Use circles in the coordinate plane.	- How do you use properties of segments to intersect circles? - How do you apply relationships in circles? - How do you use circles in the coordinate plane?

Montana Core Standards

The student will…

G.C.A: Understand and apply theorems about circles.
2: Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.

3: Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.

4 (+): Construct a tangent line from a point outside a give circle to the circle.

G.GPE.A: Translate between the geometric description and the equation for a conic section.
1: Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

Teacher Resources:	Media/Technology Resources:
Geometry McDougall Littell 2007	Refer to website: http://bpshsmath.weebly.com

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Assessments:	Suggested Instructional Practices:
Homework: To be given daily on each introduced topic. **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. **Formative Assessments:** Homework and worksheets on current chapter concepts. **Summative Assessments:** On major properties of circles.	

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Coordinate Geometry Unit
MVP Secondary Math I: Connecting Algebra & Geometry
Approximately 9 days

Sections Covered:	Mathematical Practices:
- Circles & Completing the Square (G.GPE.1) found at cc.betterlesson.com/lesson/474483/circles-and-completing-the-square-day-1-of-2. 10.7: Write and Graph Equations of Circles Using Completing the Square (G.GPE.1) – 2 days - Parabolas (G.GPE.2) found at cc.betterlesson.com/lesson/474541/parabolas - Partitioning Segments (G.GPE.6) found in Geometry Connections pg. 13-14 - MVP 7.1: Go the Distance (G.GPE.7) - MVP 7.2: Slippery Slopes (G.GPE.5) - MVP 7.3: Prove It (G.GPE.4)	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.
Objectives: The student will be able to… - Prove and write lines that are parallel, perpendicular, or neither. - Partition a segment into a given ratio. - Describe how the equations of a circle and parabolas are derived.	**Essential Questions:** - How do you prove geometric figures using coordinates and formulas? - How do you partition a segment into a given ratio? - How are the equations or a circle and parabola derived?

Montana Core Standards
The student will…

G.GPE.A: Translate between the geometric description and the equation for a conic section.
1: Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

**2: Derive the equation of a parabola given a focus and directrix (keeping vertex at (0, 0).

G.GPE.B: Use coordinates to prove simple geometric theorems algebraically.
4: Use coordinates to prove simple geometric theorems algebraically.

**5: Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

**6: Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

**7: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles (e.g., using the Distance Formula).

Teacher Resources:	Media/Technology Resources:
- Geometry McDougall Littell 2007 - MVP website - On Core book	Refer to website: http://bpshsmath.weebly.com

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Assessments:	Suggested Instructional Practices:
• **Homework:** To be given daily on each introduced topic. • **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. • **Formative Assessments:** On coordinate geometry ideas. • **Summative Assessments:** Unit test on coordinate geometry.	• On Core book is a good resource for the focus and directrix of parabolas.

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Chapter 11: Measuring Length & Area
Approximately 11 days

Sections Covered:	Mathematical Practices:
 • 11.1, 11.2: Areas of Triangles, Parallelograms, Trapezoids, Rhombuses, & Kites Using Real-World Problems - 1 day • 11.3: Perimeter & Area of Similar Figures – 1 day • MVP 7.2: Circles Dilations (similar circles) (G.C.A.1) found at MVP Secondary 2, Module 7 Circle & Geometric Perspective – 2 days • 11.4: Circumference & Arc Length (G.C.B.5) – 1 day • 11.5: Areas of Circles & Sectors (G.C.B.5) – 1 day • 11.6: Area of Regular Polygons – 1 day	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.

Montana Core Standards

The student will…

G.C.A: Understand and apply theorems about circles.
1: Prove that all circles are similar.

G.C.B: Find arc lengths and areas of sectors of circles.
5: Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Objectives:	Essential Questions:
 The student will be able to… • Use area formulas for polygons. • Relate length, perimeter, and area ratios of similar polygons and circles. • Compare measures for parts of circles and the whole circle.	 • How do you use area formulas for polygons? • How do you relate length, perimeter, and area ratios in similar polygons and circles? • How do you compare measures for parts of circles and the whole circle?

Teacher Resources:	Media/Technology Resources:
 • Geometry McDougall Littell 2007 • MVP website (Secondary Math 2: Module 7)	 • M.A.R.S. Inscribing & Circumscribing Right Triangles Activity found at http://map.mathshell.org/materials/download.php?fileid=1194 • Refer to website: http://bpshsmath.weebly.com

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Assessments:	Suggested Instructional Practices:
• **Homework:** To be given daily on each introduced topic. • **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. • **Formative Assessments:** On current chapter concepts. • **Summative Assessments:** On concepts involving measuring length and area of polygons, whole circles, and parts of circles.	

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**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Chapter 12: Surface Area & Volume of Solids
Approximately 14 days

Sections Covered:	Mathematical Practices:
- Density of Area and Volume Activity (G.MG.2⋆) 12.1: Explore Solids – 1 day 12.2, 12.3: Surface Area of Prisms, Cylinders, Pyramids, & Cones (G.GMD.4⋆) – 3 days 12.4, 12.5: Volume of Prisms, Cylinders, Pyramids, & Cones (G.MG.1⋆, G.MD.1) – 3 days 12.6: Surface Area & Volume of Spheres (G.MG.1⋆) – 2 days - Solids of Revolution Supplement (G.GMD.4⋆) – 1 day	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.

Objectives:	Essential Questions:
The student will be able to… - Explore solids and their properties. - Solve problems using surface area and volume. - Connect similarity to solids.	- How do you relate solids and their properties? - How do you solve problems using surface area and volume? - How do you connect similarity to solids?

Montana Core Standards

The student will…

G.SRT.A: Understand similarity in terms of similarity transformations.
1: Verify experimentally the properties of dilations given by a center and a scale factor:
    a: A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
    b: The dilation of a line segment is longer or shorter in the ration given by the scale factor.

2: Given 2 figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.

3: Use the properties of similarity transformations to establish the AA criterion for 2 triangles to be similar.

G.SRT.B: Prove theorems involving similarity.
5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Teacher Resources:	Media/Technology Resources:
- Geometry McDougall Littell 2007 - Solids of Revolution Worksheet found at http://training.nms.org/Portals/ltftraining/docs/MG%20%20Solids%20of%20Revolution.pdf	- Refer to website: http://bpshsmath.weebly.com 2D representation of 3D objects activity found at http://map.mathshell.org/materials/download.php?fileid=1280 - Interactive 3D Transmographer found at http://www.shodor.org/interactivate/activities/3DTransmographer/

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

Assessments:	Suggested Instructional Practices:
• **Homework:** To be given daily on each introduced topic. • **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. • **Formative Assessments:** On current chapter concepts. • **Summative Assessments:** On concepts involving surface area and volume of solids.	

Note: If a chapter section is not listed, it is meant to be skipped.
**This is the first time students are seeing this topic. Develop to an appropriate level for the class.

MVP Year 2 Module 9: Probability

Sections Covered:	**Mathematical Practices:**
• Permutations/Combinations Need to find a lesson for this! • Geometric Probability (SIMMS Activity "Hurry Hurry" • 9.1: TB or not TB (S.CP.B.6, S.MD.B.7+) – 2 days • 9.2: Chocolate vs Vanilla (S.CP.B.6) - 2 days • 9.3: Fried Freddy's (S.CP.A.2, S.CP.B.6) – 2 days • 9.4: Visualizing with Venn (S.CP.B.6, 7) – 2 days • 9.5: Freddy Revisited (S.CP.A.2, 3, 4, 5) – 2 days • 9.6: Striving for Independence (S.CP.A.2, 3, 4, 5) – 2 days	1: Make sense of problems and persevere in solving them. 2: Reason abstractly and quantitatively. 3: Construct viable arguments and critique the reasoning of others. 4: Model with mathematics. 5: Use appropriate tools strategically. 6: Attend to precision. 7: Look for and make use of structure. 8: Look for and express regularity in repeated reasoning.
Objectives: The student will be able to… • Estimate conditional probabilities and interpret the meaning of the data. • Examine conditional probability using multiple representations. • Use samples to estimate probabilities. • Create Venn diagrams using data while examining the addition rule for probability. • Examine the independence of events using two-way tables. • Use data in various representations to determine independence.	**Essential Questions:** • How do you estimate conditional probabilities and interpret the meaning of data? • How do you examine conditional probability using multiple representations? • How do you use samples to estimate probabilities? • How do you create Venn diagrams using data while examining the addition rule for probability? • How do you examine independence of events using two-ways tables? • How do you use data in various representations to determine independence?

Montana Core Standards

The student will…

S.CP.A: Understand independence and conditional probability and use them to interpret data.

**1: Describe evens as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections or complements of other events ("or", "and", "not").

**2: Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.

**3: Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.

4: Construct and interpret two-way frequency tables of data when 2 categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in 10th grade. Do the same for other subjects and compare the results. (This is introduced in Algebra 1).

**5: Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.

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S.CP.B: Use the rules of probability to compute probabilities of compound events in a uniform probability model.
**6: Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.

**7: Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answer in terms of the model.

Teacher Resources:	Media/Technology Resources:
• MVP website (Secondary 2 Module 9)	• Refer to website: http://bpshsmath.weebly.com

Assessments:	Suggested Instructional Practices:
• **Homework:** To be given daily on each introduced topic. • **Class discussion:** Students will be expected to be prepared for class, participate in class activities and actively engage in class discussion. • **Formative Assessments:** On current chapter concepts. • **Summative Assessments:** On concepts involving probability.	

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