

GEOMETRY PACING GUIDE

2012-2013 School Year

Montana Common Core Standards Mathematical Practice and Content (Nov 2011)
Math Unit/Content Holt McDougal Burger Textbook (©2012)

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Standards for Mathematical Content

Numbers and Quantity (N)	<i>The Real Number System</i> <i>Quantities</i> <i>The Complex Number System</i> <i>Vector & Matrix Quantities</i>
Algebra (A)	<i>Seeing Structure in Expressions</i> <i>Arithmetic w/ Polynomials & Rational Expressions</i> <i>Creating Equations</i> <i>Reasoning with Equations & Inequalities</i>
Functions (F)	<i>Interpreting Functions</i> <i>Building Functions</i> <i>Linear, Quadratic, & Exponential Models</i> <i>Trigonometric Functions</i>
Modeling (M)	<i>"Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions ... a link to everyday life, work, and decision-making."</i>
Geometry (G)	<i>Congruence</i> <i>Similarity, Right Triangles, & Trigonometry</i> <i>Circles</i> <i>Geometric Measurement & Dimension</i> <i>Modeling with Geometry</i>
Statistics and Probability (SP)	<i>Interpreting Categorical & Quantitative Data</i> <i>Making Inferences & Justifying Conclusions</i> <i>Conditional Probability & the Rules of Probability</i> <i>Using Probability to Make Decisions</i>

Standards for Mathematical Practice

Overarching habits of mind of a productive mathematical thinker.

1. Make sense of problems and persevere in solving them.
6. Attend to precision.

Reasoning and explaining.

2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.

Modeling and using tools.

4. Model with mathematics.
5. Use appropriate tools strategically.

Seeing structure and generalizing.

7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.



http://opi.mt.gov/pdf/CCSSO/11NovMathPractice_ContentGradeLevel.pdf



http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

KalisPELL Public Schools Pacing Map for Mathematics

Grade Level: Geometry

All sections, labs, and "Connecting Geometry" activities are to be taught and "Extensions" skipped unless otherwise noted.

No. of Instructional Days = 168 days (INCLUDES REVIEW & TEST)	Geometry Common Core Standards Covered	Textbook Lesson
Chapter 1 (≈13 days) FOUNDATIONS FOR GEOMETRY • Euclidean and Construction Tools • Coordinate and Transformation Tools Note: Teach Section 1.5 (CC.9-12.A.SSE.1)	CONGRUENCE: Experiment with transformations in the plane.	
	CC.9-12.G.CO.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.	1.1, 1.2 TLab, 1.3, 1.4
	CC.9-12.G.CO.2 Represent transformations in the plane using, e.g., transparencies and geometry software.	1.7 TLab
	CC.9-12.G.CO.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.	
	CC.9-12.G.CO.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	1.7
	CONGRUENCE: Make geometric constructions.	
	CC.9-12.G.CO.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.).	1.2, 1.3
Chapter 2 (≈7 days) GEOMETRIC REASONING • Inductive & Deductive Reasoning • Mathematical Proof *Skip 2.3 Lab (Act 2) *Skip 2.6 Lab	EXPRESSING GEOMETRIC PROPERTIES WITH EQUATIONS: Use coordinates to prove simple geometric theorems algebraically.	
	CC.9-12.G.GPE.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	1.6
	CONGRUENCE: Prove geometric theorems.	
	CC.9-12.G.CO.9 Prove theorems about lines and angles.	2.1-2.7, 2.3 Lab (Act 1)
	CC.9-12.G.CO.10 Prove theorems about triangles.	2.7

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No. of Instructional Days	Geometry Common Core Standards Covered	Textbook Lesson
Chapter 3 (≈12 days) PARALLEL & PERPENDICULAR LINES • Lines & Transversals • Coordinate Geometry <i>*Skip 3.6 Lab</i> <i>*Skip Connecting Geometry pg198</i>	CONGRUENCE: Experiment with transformations in the plane.	
	CC.9-12.G.CO.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.	3.1
	CONGRUENCE: Prove geometric theorems.	
	CC.9-12.G.CO.9 Prove theorems about lines and angles.	3.2 TLab, 3.2, 3.3, 3.4
	CONGRUENCE: Make geometric constructions.	
	CC.9-12.G.CO.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.).	3.3, 3.3 Lab, 3.4, 3.4 Lab
	EXPRESSING GEOMETRIC PROPERTIES WITH EQUATIONS: Use coordinates to prove simple geometric theorems algebraically.	
	CC.9-12.G.GPE.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).	3.5, 3.6
(1 day)	ADMINISTER ONLINE: QCC STANDARDIZED TEST PREP CH1-3 CUMULATIVE ASSESSMENT (pg210)	

Chapter 4 (≈19 days) TRIANGLE CONGRUENCE • Triangles and Congruence • Proving Triangle Congruence <i>*4.4 Lab (optional)</i>	CONGRUENCE: Understand congruence in terms of rigid motion.	
	CC.9-12.G.CO.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 two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	4.1
	CC.9-12.G.CO.8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	4.4 Lab, 4.5, 4.6
	CONGRUENCE: Prove geometric theorems.	
	CC.9-12.G.CO.10 Prove theorems about triangles.	4.2, 4.3 Lab, 4.3, 4.9
	SIMILARITY, RIGHT TRIANGLES, & TRIGONOMETRY: Prove theorems involving similarity.	
	CC.9-12.G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	4.4, 4.5, 4.6 TLab, 4.6, 4.7
	EXPRESSING GEOMETRIC PROPERTIES WITH EQUATIONS: Use coordinates to prove simple geometric theorems algebraically.	
	CC.9-12.G.GPE.4 Use coordinates to prove simple geometric theorems algebraically.	4.8

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No. of Instructional Days	Geometry Common Core Standards Covered		Textbook Lesson
Chapter 5 (≈15 days) PROPERTIES AND ATTRIBUTES OF TRIANGLES - Segments in Triangles - Relationships in Triangles *Emphasis on 5.7-5.8 *Skip Connecting Geometry pg342 *Skip 5.8 Lab	CONGRUENCE: Prove geometric theorems.		
	CC.9-12.G.CO.9	Prove theorems about lines and angles.	5.1
	CC.9-12.G.CO.10	Prove theorems about triangles.	5.3, 5.3 TLab, 5.4, 5.5, 5.5 Lab, 5.6
	CIRCLES: Understand and apply theorems about circles.		
	CC.9-12.G.C.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	5.2
	SIMILARITY, RIGHT TRIANGLES, & TRIGONOMETRY: Define trigonometric ratios and solve problems involving right triangles.		
	CC.9-12.G.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	5.7
	CC.9-12.G.SRT.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.	5.8
Chapter 6 (≈14 days) POLYGONS AND QUADRILATERALS - Polygons and Parallelograms - Other Special Quadrilaterals *Skip 6.1 Lab (Act 3) *Skip Connecting Geometry pg401 *6.2 Lab suggest using GSP *Skip 6.5 Lab (develop diagonals lab)	CONGRUENCE: Prove geometric theorems.		
	CC.9-12.G.CO.11	Prove theorems about parallelograms.	6.1, 6.2 Lab, 6.2, 6.3, 6.4, 6.5, 6.6 TLab
	CONGRUENCE: Make geometric constructions.		
	CC.9-12.G.CO.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	6.1 Lab (skip Act 3)
	EXPRESSING GEOMETRIC PROPERTIES WITH EQUATIONS: Use coordinates to prove simple geometric theorems algebraically.		
	CC.9-12.G.GPE.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).	6.3
	MODELING WITH GEOMETRY: Apply geometric concepts in modeling situations.		
	CC.9-12.G.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	6.3
(1 day)	SIMILARITY, RIGHT TRIANGLES, & TRIGONOMETRY: Prove theorems involving similarity.		
	CC.9-12.G.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	6.6
ADMINISTER ONLINE: QCC STANDARDIZED TEST PREP CH4-6 CUMULATIVE ASSESSMENT (pg458)			

Semester 1, Total Days = 82 days

All sections, labs, and "Connecting Geometry" activities are to be taught and "Extensions" skipped unless otherwise noted.

No. of Instructional Days	Geometry Common Core Standards Covered	Textbook Lesson
Chapter 7 (≈17 days) SIMILARITY • Similarity Relationships • Applying Similarity	SIMILARITY, RIGHT TRIANGLES, & TRIGONOMETRY: Understand similarity in terms of similarity transformations.	
	CC.9-12.G.SRT.2 Given two 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.	7.1, 7.3 TLab, 7.3, 7.4
	CIRCLES: Understand and apply theorems about circles.	
	CC.9-12.G.C.1 Prove that all circles are similar.	7.2
	SIMILARITY, RIGHT TRIANGLES, & TRIGONOMETRY: Prove theorems involving similarity.	
	CC.9-12.G.SRT.4 Prove theorems about triangles.	7.4
	CC.9-12.G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	7.4, 7.5
Chapter 8 (≈15 days) RIGHT TRIANGLES & TRIGONOMETRY • Trigonometric Ratios • Applying Trigonometric Ratios *Skip 8.1 *Teach 8.2 Ext *Skip Connecting Geometry pg551 *Skip 8.5 Note: teach 8.6 (Vectors) in 9.2 (Translations) →	SIMILARITY, RIGHT TRIANGLES, & TRIGONOMETRY: Define trigonometric ratios and solve problems involving right triangles.	
	CC.9-12.G.SRT.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.	8.2 TLab, 8.2
	CC.9-12.G.SRT.7 Explain and use the relationship between the sine and cosine of complementary angles.	8.2 Ext
	CC.9-12.G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	8.3, 8.4 Lab (pg568), 8.4
		

All sections, labs, and "Connecting Geometry" activities are to be taught and "Extensions" skipped unless otherwise noted.

No. of Instructional Days	Geometry Common Core Standards Covered		Textbook Lesson
Chapter 9 (≈11 days) EXTENDING TRANSFORMATIONAL GEOMETRY • Congruence Transformations • Patterns <i>Note: 9.2 (teach 8.6 Vectors)</i>	CONGRUENCE: Experiment with transformations in the plane.		
	CC.9-12.G.CO.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., translation versus horizontal stretch).	9.1-9.7
	CC.9-12.G.CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	9.5
	CC.9-12.G.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	9.1-9.4
	CC.9-12.G.CO.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. Specify a sequence of transformations that will carry a given figure onto another.	9.1-9.6
	CONGRUENCE: Understand congruence in terms of rigid motions.		
	CC.9-12.G.CO.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 two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	9.1-9.4
	VECTOR AND MATRIX QUANTITIES: Represent and model with vector quantities.		
	CC.9-12.N.VM.1 (+)	Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., $\mathbf{v}$, $ \mathbf{v} $, $ \mathbf{v} $, v).	8.6
	CC.9-12.N.VM.2 (+)	Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.	8.6
(1 day)	ADMINISTER ONLINE: QCC STANDARDIZED TEST PREP CH7-9 CUMULATIVE ASSESSMENT (pg668)		

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No. of Instructional Days	Geometry Common Core Standards Covered	Textbook Lesson
Chapter 10 (≈12 days) EXTENDING PERIMETER, CIRCUMFERENCE, AREA • Developing Geometric Formulas • Applying Geometric Formulas <i>*Skip Connecting Geom pg676 & pg701</i> <i>*Skip Labs 10.2 & 10.6</i> Note: Teach Section 10.1 (CC.9-12.A.SSE.1)	GEOMETRIC MEASUREMENT AND DIMENSION: Explain volume formulas and use them to solve problems.	
	CC.9-12.G.GMD.1 Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. <i>Use dissection arguments, Cavalieri's principle, and informal limit arguments.</i>	10.2
	MODELING WITH GEOMETRY: Apply geometric concepts in modeling situations.	
	CC.9-12.G.MG.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	10.3
	EXPRESSING GEOMETRIC PROPERTIES WITH EQUATIONS: Use coordinates to prove simple geometric theorems algebraically.	
	CC.9-12.G.GPE.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	10.4, 10.5
	CONDITIONAL PROBABILITY AND THE RULES OF PROBABILITY: Understand independence and conditional probability and use them to interpret data.	
Chapter 11 (≈8 days) SPATIAL REASONING • Three-Dimensional Figures and Volume	CC.9-12.S.CP.1 Describe events 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").	10.6
	GEOMETRIC MEASUREMENT AND DIMENSION: Visualize relationships between two-dimensional and three-dimensional objects.	
	CC.9-12.G.GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	11.1
	GEOMETRIC MEASUREMENT AND DIMENSION: Explain volume formulas and use them to solve problems.	
	CC.9-12.G.GMD.1 Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. <i>Use dissection arguments, Cavalieri's principle, and informal limit arguments.</i>	11.2, 11.3
	CC.9-12.G.GMD.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	11.2, 11.3, 11.4, 11.4 TLab

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No. of Instructional Days	Geometry Common Core Standards Covered	Textbook Lesson
Chapter 12 (≈17 days) CIRCLES • Lines and Arcs in Circles • Angles and Circles in Segments <i>*Teach 12.3 Ext</i> <i>Solutions to pg828 Lab are on pg838 (& vice versa)</i>	CIRCLES: Understand and apply theorems about circles.	
	CC.9-12.G.C.2 Identify and describe relationships among inscribed angles, radii, and chords. <i>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.</i>	12.1, 12.2, 12.4, 12.5 TLab , 12.5, 12.6 TLab , 12.6
	CC.9-12.G.C.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	12.4
	CIRCLES: Find arc lengths and areas of sectors of circles.	
	CC.9-12.G.C.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.	12.3
	EXPRESSING GEOMETRIC PROPERTIES WITH EQUATIONS: Use coordinates to prove simple geometric theorems algebraically.	
	CC.9-12.G.GPE.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.	12.7
(1 day)	ADMINISTER ONLINE: QCC STANDARDIZED TEST PREP CH9-12 CUMULATIVE ASSESSMENT (pg864)	

Semester 2, Total Days = 82 days

Chapter 13	PROBABILITY ...addressed in Algebra courses
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