ALGEBRA 2 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)	*The Real Number System* *Quantities* *The Complex Number System* *Vector & Matrix Quantities*
Algebra (A)	*Seeing Structure in Expressions* *Arithmetic w/ Polynomials & Rational Expressions* *Creating Equations* *Reasoning with Equations & Inequalities*
Functions (F)	*Interpreting Functions* *Building Functions* *Linear, Quadratic, & Exponential Models* *Trigonometric Functions*
Modeling (M)	*"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."*
Geometry (G)	*Congruence* *Similarity, Right Triangles, & Trigonometry* *Circles* *Geometric Measurement & Dimension* *Modeling with Geometry*
Statistics and Probability (SP)	*Interpreting Categorical & Quantitative Data* *Making Inferences & Justifying Conclusions* *Conditional Probability & the Rules of Probabiltiy* *Using Probability to Make Decisions*

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.

Montana Common Core Standards and Assessments Getting Ready

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

COMMON CORE STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

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

Kalispell Public Schools Pacing Map for Mathematics
Grade Level: Algebra 2

No. of Instructional Days = days *(INCLUDES LABS,REVIEW,TEST)*	Math Unit/Content Holt McDougal Burger Textbook 2012	Common Core Standards Covered	Concept Descriptors	Notes
Chapter 1 *(≈9 days)*	**FOUNDATIONS FOR FUNCTIONS** • Parent Functions & Transformations • Transformation of Linear Functions	A.CED.3 F.BF.3	• Exploring transformations – translations, reflections, stretches, and compressions • Introduce parent functions & apply transformations to linear functions • Curve Fitting with Linear Models	1-1 Alg Lab 1-3 Stat Graphs Review Explorations for additional introductory activities
Chapter 2 *(≈25 days)* *Skip 2.7*	**QUADRATIC FUNCTIONS** • Graph Quadratic Functions • Solve Quadratic Equations • Complex Numbers • Applications of Quadratic Functions	N.CN.1 N.CN.2 N.CN.7 F.FIF.7a F.FIF.8a	• Graph quadratic functions using transformations (vertex form) and standard form • Solve quadratic equations by graphing, factoring, completing the square, finding square roots, and using the quadratic formula (including complex solutions) • Perform operations on complex numbers and simplifying radicals with negatives • Find a quadratic function algebraically (given various points) • Solve application problems given the quadratic model • Create a quadratic model using technology (Quadratic Regression) • 12.5 parabola (focus, directrix)	2-1 Technology Lab 2-3 Factor Quads 2-3 Technology Lab 2-5 Area Lab 2-8 Include an additional lab (ball bounce, TI-Nspire, Car on a Ramp, etc.)

Chapter 3 *(≈25-30 days)*	**POLYNOMIAL FUNCTIONS** ***New!!!*** • Operations with Polynomials • Solve Polynomial Equations • Graphs of Polynomial Functions • Applications of Polynomial Functions	N.CN.9 A.APR.2 A.APR.3 A.APR.5 F.FIF.7c	• Identify degree, classify, and perform operations on polynomials • Solve polynomial equations algebraically (rational root theorem, remainder theorem, polynomial division, synthetic division) and using graphing technology to find real roots • Identify important features of polynomial graphs (end behavior, local extrema, increasing/decreasing, positive/negative, multiplicities) • Model data using polynomial functions	3-2 Pascal's Tri 3-3 Nets 3-4 Algebra Lab 3-5 Sunburst WS 3-7 Technology Lab 3-8 - Introduce only using technology
Administer GVC/Common Core Assessment #1				
Chapter 4 *(≈25 days)*	**EXPONENTIAL/LOGARITHMIC FUNCTIONS** • Graph Exponential Functions • Graph Logarithmic Functions • Determine the Inverse to a Function • Solve Exponential Equations • Solve Logarithmic Equations • Natural Logarithm • Applications of Exponential and Logarithmic Functions	A.CED.2 F.FIF.7e F.BF.4c(+) F.BF.5 (+) F.LE.4	• Write and evaluate exponential functions that model growth and decay situations • Find the inverse of a function graphically and algebraically • Write and evaluate logarithmic functions • Graph exponential and logarithmic functions as a transformation of the parent function • Use properties of logarithms to solve problems (product, quotient, power, change of base) • Solve exponential equations • Solve logarithmic equations (include solving for base, argument, and logarithm) • Model data using exponential and logarithmic functions	4-1 Include lab similar to Skeeters or Penny Flip 4-2 Technology Lab 4-6 Exponents in Probability 4-6 Technology Lab ***Students have no previous exposure to exponential functions
Administer GVC/Common Core Assessment #2				
End of Semester 1				

Chapter 5 *(≈15 days)* *Skip 5.1, 5.4, 5.7*	**RATIONAL/RADICAL FUNCTIONS** ***New!!!*** • Rational Expressions • Rational Equations • Rational Exponents • Radical Expressions • Radical Equations	A.APR.1 A.APR.7 A.REI.12 F.FIF.5	• Perform operations on and simplify rational expressions • Simplify expressions with rational exponents • Solve simple rational and radical equations, identifying possible extraneous solutions	Rational and radical inequality problems are not required
Chapter 6 *(≈15 days)* *Skip 6.5 & 6.6*	**PROPERTIES & ATTRIBUTES OF FUNCTIONS** ***New!*** • Multiple Representations of Functions • Piecewise Functions • Transformations of Functions • Modeling Data with Functions	A.CED.2 A.CED.3 F.FIF.7 F.BF.1b F.BF.1c F.BF.3	• Represent functions as tables, graphs, equations, and verbal descriptions. • Write and graph piecewise functions • Create mathematical models to represent data	6-3 Technology Lab
Administer GVC/Common Core Assessment #3				
Chapter 7 *(≈11 days)*	**PROBABILITY** • Permutations and Combinations • Experimental vs. Theoretical Probability • Independent and Dependent Events • Data Analysis	S.ID.5 S.CP.3 S.CP.9 S.MD.7	• ${}_nC_r$, ${}_nP_r$, and ! notation and calculations • With and without replacement • Two way tables • Conditional Probability with two way tables, tree diagrams, and Venn diagrams	7-2 Relative Area Lab 7-2 Technology Lab
Chapter 8 *(≈20 days)*	**DATA ANALYSIS AND STATISTICS** • Measures of Central Tendency • Methods of Collecting Data • Binomial Distributions and Probability • Normal Distribution and Probability	S.ID.2 S.ID.4 S.IC.3 S.IC.4 S.IC5	• Measures of Center (mean, median, and mode), Standard Deviation, and Outliers • Introduction of methods of Sampling (SRS, systematic, stratified, cluster, convenience, and volunteer) • Comparison of Surveys, Experiments, and Observational Studies • Binomial Theorem, Distribution, and Probabilities • Normal Distribution and Probabilities	8-1 Algebra Lab

Chapter 9 *(≈15 days)*	**SEQUENCES AND SERIES** • Arithmetic Sequences and Series • Geometric Sequences and Series • Summation Notation	A.SSE.4 F.FIF.3 F.BF.1a F.BF.2	• Write sequences using explicit and recursive formulas • Evaluate series in summation notation • Solve arithmetic sequences for first term, common difference, number of terms, or n^{th} term • Solve geometric sequences for first term, common ratio, number of terms, or n^{th} term • Find the sum of an infinite geometric series	9-2 Geometric Patterns and Tessellations Lab 9-2 Technology Lab 9-5 Algebra Lab Fibonacci Art Project
Administer GVC/Common Core Assessment #4				
End of Semester 2				
Chapter 10	**TRIGONOMETRIC FUNCTIONS**		PreCalculus	
Chapter 11	**TRIGONOMETRIC GRAPHS AND IDENTITIES**		PreCalculus	
Chapter 12	**CONIC SECTIONS**		PreCalculus	