Coeur d'Alene School District 271 **Agenda Item J**

Board Agenda Item for Information

AGENDA ITEM: **Course Pacing Guides**
PURPOSE: **Information**
MEETING DATE: **March 4, 2019**
PREPARED BY: **Michael S. Nelson**

INFORMATIONAL SUMMARY: Our district regularly updates course pacing guides to adjust to changing state standards or based on needs-based outcomes. Two new pacing guides are provided:

- Algebra 2 (2330)
    - Adjusted by representatives from Coeur d'Alene and Lake City High Schools to current *Big Ideas Mathematics* text and currently under review by the Idaho Regional Math Center at Idaho State University, Pocatello.
    - Currently out for peer review with updated standardized assessments.
- ALP Algebra 2 (2337)
    - Adjusted by representatives from Coeur d'Alene and Lake City High Schools to current *Big Ideas Mathematics* text and currently under review by the Idaho Regional Math Center at Idaho State University, Pocatello.
    - Currently out for peer review with updated standardized assessments.

Idaho State University Regional Math Center

The Idaho State University Regional Math Center was asked to conduct a short review of the Coeur d'Alene Public Schools Course Pacing Guides for Aglebra 2 and ALP Algebra 2. Specifically, we were asked to analyze the pacing guides for coverage of Idaho Content Standards for Algebra 2 to ensure student learning during district-wide transition to an integrated math program.

	Coeur d'Alene Public Schools Course Pacing Guide: Algebra 2	Coeur d'Alene Public Schools Course Pacing Guide: ALP Algebra 2
Are all Algebra 2 Content Standards visible in the pacing guide?	The *Idaho Core State Standards for Mathematics (ICSS)* does not recommend pathways to distinguish between Algebra 1 and 2. The ICSS does intend that they not "be taught as isolated topics, but in relation to other standards." (p.57) There are a total of 27 Algebra standards in the ICSS with 13 represented in the CDA Algebra 2 Pacing Guide.* Additional Standards that coincide with the CCSS Algebra 2 recommentations are: 3- Number and Quantity (N), 12- Function (F), and 3- Statistic (S) standards. *Common Core State Standards* Appendix A has identified 4 Critical Areas for a traditional pathway Algebra 2 course (p. 36). Included within these Critical areas are 5- Number and Quantity (N), 18-Algebra (A), 17- Function (F), and 9- Statistic (S) standards, for a total of 49 standards for the Traditional Algebra 2 pathway (p.36-43). Six are Plus Standards (not necessarily assessed on high stakes assessments) with 2 present. Of those critical area standards, 31 are present in the Coeur d'Alene Public Schools Course Pacing Guide: Algebra 2 . Eighteen of the recommended standards are not present, with 4 of those being plus (+) standards. There are 15 additional Standards identified on the CDA Algebra 2 Pacing Guide that are not listed in the CCSS Traditional for Algebra 2.	The *Idaho Core State Standards for Mathematics (ICSS)* does not recommend pathways to distinguish between Algebra 1 and 2. The ICSS does intend that they not "be taught as isolated topics, but in relation to other standards." (p.57) There are a total of 27 Algebra standards in the ICSS with 13 represented in the CDA Algebra 2 Pacing Guide.* Additional Standards that coincide with the CCSS Algebra 2 recommentations are: 3- Number and Quantity (N), 12- Function (F), and 3- Statistic (S) standards. Common Core State Standards Appendix A has identified 4 Critical Areas for a traditional pathway Algebra 2 course (p. 36). Included within these Critical areas are 5- Number and Quantity (N), 18-Algebra (A), 17- Function (F), and 9- Statistic (S) standards, for a total of 49 standards for the Traditional Algebra 2 pathway (p.36-43). Six are Plus Standards (not necessarily assessed on high stakes assessments) with 2 present. Of those critical area standards, 31 are present in the Coeur d'Alene Public Schools Course Pacing Guide: Algebra 2 . Eighteen of the recommended standards are not present, with 4 of those being plus (+) standards. There are 15 additional Standards identified on the CDA Algebra 2 Pacing Guide that are not listed in the CCSS Traditional for Algebra 2.
Are the Standards for Mathematical Practice Visible?	The Standards for Mathematical Practice are present on the Coeur d'Alene Public Schools Course Pacing Guide: Algebra 2. Each Unit lists all eight Mathematical Practice Standards. Each lesson identifies an SMP that is to receive "Special Attention" or to be the focus SMP for that lesson. Within the lessons the SMPs are identified as follows: SMP 1: 5, SMP 2: 4 lessons, SMP 3: 0 lessons, SMP 4: 12 lessons, SMP 5: 11 lessons, SMP 6: 8 lessons, SMP 7: 12 lessons, SMP 8: 3 lessons.	The Standards for Mathematical Practice are present on the Coeur d'Alene Public Schools Course Pacing Guide: Algebra 2. Each Unit lists all eight Mathematical Practice Standards. Each lesson identifies an SMP that is to receive "Special Attention" or to be the focus SMP for that lesson. Within the lessons the SMPs are identified as follows: SMP 1: 5, SMP 2: 4 lessons, SMP 3: 0 lessons, SMP 4: 12 lessons, SMP 5: 11 lessons, SMP 6: 8 lessons, SMP 7: 12 lessons, SMP 8: 3 lessons.
Is the intent of the Standards being met?	In the pacing guide, the only resource present is *Algebra 2 Text.* Without completing a thorough investigaiton of the intended resources, this question cannot be answered sufficiently.	
Recomendations	It is important to recognize that not all SMPs are equal. Research suggests that focusing on SMPs 2,7,8 support the building of SMP 1 with 3,4,5,6 used to support SMPs 2,7,8. It might be beneficial to analyze how this could be represented in the Pacing guides as well as classroom instruction. Consider including additional resources to support the SMPs and intent of the standards. Incorporate high-quality, rich mathematical tasks into the Pacing Guides, such as illustrativemathematics.org, 3-Acts tasks, GeoGebra, Desmos, or insidemathematics.org. The Common Core Mathematics Companion: The Standards Decoded, High School edition can also support understanding the intent of the standards.	It is important to recognize that not all SMPs are equal. Research suggests that focusing on SMPs 2,7,8 support the building of SMP 1 with 3,4,5,6 used to support SMPs 2,7,8. It might be beneficial to analyze how this could be represented in the Pacing guides as well as classroom instruction. Consider including additional resources to support the SMPs and intent of the standards. Incorporate high-quality, rich mathematical tasks into the Pacing Guides, such as illustrativemathematics.org, 3-Acts tasks, GeoGebra, Desmos, or insidemathematics.org. The Common Core Mathematics Companion: The Standards Decoded, High School edition can also support understanding the intent of the standards.

Reviewers: Angie Godfrey godfange@isu.edu Regional Math Specialist
Veronica Blackham blacvero@isu.edu Regional Math Specialist

Additional Comments:

* This review does not take into account quality of instruction or curricular implementation.
* This review does not take into account standards addressed in previous courses (Algebra I, Math I, etc.)
* This review did not investigate whether absent Algebra 2 standards were embedded in curriculur materials or otherwise addressed.
* The reviewers noticed that the pacing guide units were equally distributed among each quarter. This review did not investigage the rigor or time allocation (prioritization) of these units.

Coeur d'Alene Public Schools Course Pacing Guide: Algebra 2					
Critical Area	**Domain/ Conceptual Theme**	**Standard #**	**Standard**	**Are all Algebra Content Standards visible in the pacing guide?**	
1	N	CN.1	CC.9-12.N.CN.1 Perform arithmetic operations with complex numbers. Know the	4-4	
	N	CN.2	CC.9-12.N.CN.2 Perform arithmetic operations with complex numbers. Use the	4-4	
	N	CN.7	CC.9-12.N.CN.7 Use complex numbers in polynomial identities and equations. S	4-4, 4-5,	
	N	CN.8	CC.9-12.N.CN.8 (+) Use complex numbers in polynomial identities and equation	**(+)**	
	N	CN.9	CC.9-12.N.CN.9 (+) Use complex numbers in polynomial identities and equation	**(+)**	
	A	SSE.1	CC.9-12.A.SSE.1 Interpret the structure of expressions. Interpret expressions th		
	A	SSE.1a	CC.9-12.A.SSE.1a Interpret parts of an expression, such as terms, factors, and		
	A	SSE.1b	CC.9-12.A.SSE.1b Interpret complicated expressions by viewing one or more of		
	A	SSE.2	CC.9-12.A.SSE.2 Interpret the structure of expressions. Use the structure of an	4-2,4-3, 5-3, 7-3	
	A	SSE.4	CC.9-12.A.SSE.4 Write expressions in equivalent forms to solve problems. Deriv		
	A	APR.1	CC.9-12.A.APR.1 Perform arithmetic operations on polynomials. Understand tha	5-1	
	A	APR.2	CC.9-12.A.APR.2 Understand the relationship between zeros and factors of poly	5-2, 5-3	
	A	APR.3	CC.9-12.A.APR.3 Understand the relationship between zeros and factors of poly	3-2, 5-3	
	A	APR.4	CC.9-12.A.APR.4 Use polynomial identities to solve problems. Prove polynomia	5-1	
	A	APR.5	CC.9-12.A.APR.5 (+) Use polynomial identities to solve problems. Know and ap	5-1, **(+)**	
	A	APR.6	CC.9-12.A.APR.6 Rewrite rational expressions. Rewrite simple rational expressi	5-2, 8-2	
	A	APR.7	CC.9-12.A.APR.7 (+) Rewrite rational expressions. Understand that rational exp	8-2, (+)	
	A	REI.2	CC.9-12.A.REI.2 Understand solving equations as a process of reasoning and e	6-4, 8-3	
	A	REI.11	CC.9-12.A.REI.11 Represent and solve equations and inequalities graphically. E	4-6	
	F	IF.7c	CC.9-12.F.IF.7c Graph polynomial functions, identifying zeros when suitable fac		
2	F	TF.1	CC.9-12.F.TF.1 Extend the domain of trigonometric functions using the unit circl	10-1	
	F	TF.2	CC.9-12.F.TF.2 Extend the domain of trigonometric functions using the unit circl		
	F	TF.5	CC.9-12.F.TF.5 Model periodic phenomena with trigonometric functions. Choose		
	F	TF.8	CC.9-12.F.TF.8 Prove and apply trigonometric identities. Prove the Pythagorean	9-1	
	A	CED.1	CC.9-12.A.CED.1 Create equations that describe numbers or relationship. Crea		
	A	CED.2	CC.9-12.A.CED.2 Create equations that describe numbers or relationship. Crea	2-1, 3-3, 7-5	
	A	CED.3	CC.9-12.A.CED.3 Create equations that describe numbers or relationship. Repr	2-3, 4-6	
	A	CED.4	CC.9-12.A.CED.4 Create equations that describe numbers or relationship. Rear	6-6	
	F	IF.4	CC.9-12.F.IF.4 Interpret functions that arise in applications in terms of the conte	3-2	
	F	IF.5	CC.9-12.F.IF.5 Interpret functions that arise in applications in terms of the conte		

3	F	IF.6	CC.9-12.F.IF.6 Interpret functions that arise in applications in terms of the conte		
	F	IF.7b	CC.9-12.F.IF.7b Graph square root, cube root, and piecewise-defined functions,	6-3	
	F	IF.7e	CC.9-12.F.IF.7e Graph exponential and logarithmic functions, showing intercept	7-1, 7-2, 10-2	
	F	IF.8	CC.9-12.F.IF.8 Analyze functions using different representations. Write a functio	4-2, 4-3, 4-5	
	F	IF.9	CC.9-12.F.IF.9 Analyze functions using different representations. Compare prop	2-1, 3-2	
	F	BF.1a	CC.9-12.F.BF.1a Determine an explicit expression, a recursive process, or steps	2-1, 3-2, 7-5	
	F	BF.1b	CC.9-12.F.BF.1b Combine standard function types using arithmetic operations.	6-5	
	F	BF.3	CC.9-12.F.BF.3 Build new functions from existing functions. Identify the effect or	3-2, 6-3, 7-1, 7-2, 8-1, 10-2	
	F	BF.4a	CC.9-12.F.BF.4a Solve an equation of the form f(x) = c for a simple function f tha	6-6	
	F	LE.4	CC.9-12.F.LE.4 Construct and compare linear, quadratic, and exponential mode	3-2	
4	S	ID.4	CC.9-12.S.ID.4 Summarize, represent, and interpret data on a single count or m	1-3	
	S	IC.1	CC.9-12.S.IC.1 Understand and evaluate random processes underlying statistica	1-4	
	S	IC.2	CC.9-12.S.IC.2 Understand and evaluate random processes underlying statistica		
	S	IC.3	CC.9-12.S.IC.3 Make inferences and justify conclusions from sample surveys, e	1-5	
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	S	IC.6	CC.9-12.S.IC.6 Make inferences and justify conclusions from sample surveys, e		
	S	MD.6	CC.9-12.S.MD.6 (+) Use probability to evaluate outcomes of decisions. Use prob	(+)	
	S	MD.7	CC.9-12.S.MD.7 (+) Use probability to evaluate outcomes of decisions. Analyze	(+)	
	S	ID.1	CC.9-12.S.ID.1 Summarize, represent, and interpret data on a single count or m	1-1	
	S	ID.2	CC.9-12.S.ID.2 Summarize, represent, and interpret data on a single count or m	1-1,1-2	
	S	ID.3	CC.9-12.S.ID.3 Summarize, represent, and interpret data on a single count or m	1-1,1-2	
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	S	ID.6a	CC.9-12.S.ID.6a Fit a function to the data; use functions fitted to data to solve pr	2-2	
	A	REI.6	CC.9-12.A.REI.6 Solve systems of equations. Solve systems of linear equations	2-3	
	F	IF.7c	CC.9-12.F.IF.7c Graph polynomial functions, identifying zeros when suitable fac	3-2	
	A	REI.4b	CC.9-12.A.REI.4b Solve quadratic equations by inspection (e.g., for x^2 = 49), ta	4-1, 4-2, 4-3, 4-4, 4-5	
	A	REI.7	CC.9-12.A.REI.7 Solve systems of equations. Solve a simple system consisting	4-6	
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	(+)		Appendix A: All college and career ready standards (those without a +) are found in each pathway. A few (+) standards are included to increa		
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4			Model with mathematics. ...	12	
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Coeur d'Alene Public Schools
DIVISION OF TEACHING AND LEARNING
INVEST | INSPIRE | INNOVATE

COURSE PACING GUIDE
ALGEBRA 2
Date of Last Update: 05-December, 2018

D R A F T

Course Title:	Algebra 2	**Course Number:**	2330
Department / Grade Level:	Mathematics / Grades 09-12	**Date:**	December 5, 2018

PHILOSOPHY OF INSTRUCTION: The Coeur d'Alene School District will challenge each student to develop and extend mathematical proficiency and literacy through a focused and coherent curriculum, highest quality mathematics teaching, and assessments that meet the learning needs of each student.

Using the Common Core Standards as a foundation, the curriculum will emphasize depth over breadth with a focus on the foundational concepts and processes of mathematics. In order to address the demands of a changing world, our district 's mathematics instruction will prepare students to innovate, think critically, problem solve, communicate, and collaborate—therefore becoming inspired for future study.

SCOPE AND SEQUENCE:

Quarter 1 (9 Weeks) Sept-Oct	Quarter 2 (9 Weeks) Nov- ½ January	Quarter 3 (9 Weeks) Last ½ Jan-March	Quarter 4 (9 Weeks) April-June
• Unit #1: Statistics (3 weeks) • Unit #2: Linear Function Review (3 weeks) • Unit #3: Quadratic Functions (5 weeks)	• Unit #4: Quadratic Equations and Complex Numbers (5 weeks) • Unit #5: Polynomial Functions (2 Weeks)	• Unit #6: Rational Exponents and Radical Functions (3 Weeks) • Unit #7: Exponential and Logarithmic Functions (4 Weeks) • Unit #8: Rational Functions (4 Weeks)	• Unit #9: Right Triangle Trigonometry (3 Weeks) • Unit #10: Trigonometric Functions (3 weeks)

UNIT / THEME TITLE: UNIT #1: STATISTICS					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**• MP1: Make sense of problems and persevere in solving them • MP4: Modeling with Mathematics • MP5: Use Appropriate Tools Strategically**		
Enduring Understandings:	**I can analyze data based on measures of central tendency and z-scores.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Available**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #1-1: I can calculate and interpret measures of central tendency, quartiles, range, and standard deviation and use these values	HSS-ID.1, HSS-ID.2, HSS-ID.3	Mean, median, mode, range, standard deviation, quartiles, Interquartile ranges, box and whisker plots, dot plots	Big Ideas Math 1 Text: Chapter 7	Mastery-To be created	MP1,MP4

to solve statistical problems.					
LT #1-2: I can describe distributions by identifying shape, center, spread and any possible outliers.	HSS-ID.A.2, HSS-ID.3	Skewed right, skewed left, symmetric, outlier and key terms from LT #1-1.	Big Ideas Math 1 Text: Chapter 7	Developmental level to be created.	MP4
LT #1-3: I can recognize data sets that are normally distributed and use normal distributions and *z*-scores to calculate probabilities.	HSS-ID.a.4	Normal distribution, mean, standard deviation,	Big Ideas Algebra 2 Text Section 11-1	Developmental level to be created.	MP5
LT #1-4: I can identify and analyze different methods for collecting data and as well as recognize bias in how data are collected.	HSS-IC.B.1	Random sample, self-selected sample, systematic sample, stratified sample, cluster sample, convenience sample, bias, unbiased	Big Ideas Algebra 2 Text section 11-3	Developmental level to be created.	MP5
LT #1-5: I can describe the difference between an observational study and an experiment and recognize how randomization applies to both.	HSS-IC.B.3	Observational study, experiment, survey, control group, placebo	Big Ideas Algebra 2 Text section 11-4	Developmental level to be created.	MP5
LT#1-6: I can make inferences and justify conclusions from a variety of statistical studies and experiments.	HSS-IC.B.2, HSS-IC.B.4, HSS-IC.B.5, HSS-IC.B.6	Descriptive statistics, inferential statistics, margin of error, randomized experimental, control group, treatment group	Big Ideas Algebra 2 Text section 11-5 and 11-6	Developmental level to be created.	MP4, MP5

UNIT 2 / THEME TITLE: LINEAR FUNCTION REVIEW					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**● MP1: Make sense of problems and persevere in solving them ● MP2: Reason abstractly and quantitatively ● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision**		
Enduring Understandings:	**I understand the application of a linear function as it relates to the domain and range, line of best fit, and systems of equations.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #2-1: I can model and interpret real-world situations using linear functions.	HSA-CED.A.2, HSF-IF.C.9, HSF-BF.A.1a, HSF-LE.A.2	Domain, range, slope, slope intercept form, point-slope form	Big Ideas Algebra 2 text section 1-3	Mastery-To be Created	MP1, MP2, MP4
LT #2-2: I can use basic linear regressions to model sets of data and use the equation for the line of best fit to make predictions.	HSS-ID.B.6a	Scatterplot, line of best fit	Big Ideas Algebra 2 text section 1-3 Graphing Calculators and Desmos	Mastery-To be created	MP5
LT #2-3: I can solve systems of linear equations in two variables graphically and algebraically.	HSA-CED.A.3, HSA-REI.C.6		Big Ideas Algebra 2 Text Graphing Calculators and Desmos	Mastery-To be created	MP1, MP5, MP6

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UNIT 3 / THEME TITLE: QUADRATIC EQUATIONS					
Estimated Time Frame:	**5 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP7: Look for and make use of structure ● MP8: Look for and make use of repeated reasoning**		
Enduring Understandings:	**I understand the differences between vertex, standard, and intercept form of quadratic equations as it relates graphical and real-world applications.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #3-1: I can identify the effects of transformations on a function and create equations given graphs.	HSF-BF.B.3	Parent function, transformation,translation,reflection, vertical stretch, vertical shrink	Big Ideas Algebra 2 Text sections 1-1 and 1-2 Desmos	Developmental level to be created.	MP7, MP8
LT #3-2: I understand the characteristics of quadratic functions and can represent quadratic functions graphically using a variety of forms (including transformations).	HSF-IF.C.7c, HSF-BF.B.3, HSF-IF.B.4, HSF-IF.C.9, HSA-APR.B.3, HSA-SSE.1	Quadratic function, parabola, vertex, axis of symmetry, vertex form, intercept (factored) form, standard form	Big Ideas Algebra 2 Text sections 2-1 and 2-2 Desmos	Mastery-To be created	MP7
LT #3-3: I can write an equation for a quadratic function in intercept form or vertex form given its graph.	HSA-CED.A.2, HSF-BF.A.1a		Big Ideas Algebra 2 Text section 2-4 Desmos	Mastery-To be created	MP7
LT #3-4: I can model and interpret real-world situations using quadratic functions.	HSS-ID.B.6a, HSF-IF.6		Big Ideas Algebra 2 Text sections 2-2 and 2-4 Illustrative Mathematics	Developmental level to be created.	MP4

UNIT 4 / THEME TITLE: QUADRATIC EQUATIONS AND COMPLEX NUMBERS					
Estimated Time Frame:	**5 weeks**	**Focal Standards for Mathematical Practice**	**● MP1: Make sense of problems and persevere in solving them ● MP2: Reason abstractly and quantitatively ● MP6: Attend to Precision ● MP7: Look for and make use structure**		
Enduring Understandings:	**I understand how to solve a quadratic equation by factoring, completing the square and the quadratic formula with complex solutions and can make an educated decision on the correct method for each equation or graph.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #4-1: I can solve quadratic equations using graphical representations.	HSA-REI.B.4b	Root of an equation, zero of a function, *x*-intercepts	Big Ideas Algebra 2 Text section 3-1 Desmos	Mastery-To be created	MP1, MP7
LT #4-2: I can factor quadratic expressions and can solve quadratic equations using factoring and the zero product property.	HSA-SSE.A.2, HSA-REI.B.4b, HSF-IF.C.8a, HSA-SSE.1	Factoring	Big Ideas Algebra 2 Text section 3-1	Mastery-To be created	MP1, MP2, MP7
LT #4-3: I can simplify radical expressions and solve quadratic equations using roots.	HSA-SSE.A.2, HSA-REI.B.4b, HSF-IF.C.8a	Properties of square roots	Big Ideas Algebra 2 Text Section 3-1	Mastery-To be created	MP6, MP7
LT #4-4: I understand the basic concept of imaginary numbers and can perform basic operations with imaginary numbers.	HSN-CN.A.1, HSN-CN.A.2, HSN-CN.C.7, HSA-REI.B.4b	complex number, imaginary number,	Big Ideas Algebra 2 Text Section 3-2	Developmental level to be created.	MP2
LT #4-5: I can solve quadratic equations using	HSN-CN.C.7 HSA-REI.B.4b HSF-IF.C.8a	Completing the square Perfect square trinomial Vertex form	Big Ideas Algebra 2 Text Section 3-3	Mastery-To be created	MP6, MP7

completing the square and the quadratic formula.	HSN-CN.C.7 HSA-REI.B.4b	Quadratic Formula Discriminant	Section 3-4		
LT #4-6:I can solve basic nonlinear systems of equations consisting of a linear equation and a quadratic equation.	HSA-CED.A.3 HSA-REI.C.7 HSA-REI.D.11	System of nonlinear and linear equations	Big Ideas Algebra 2 Text Section 3-5 Desmos	Developmental level to be created.	MP5, MP7

UNIT 5 / THEME TITLE: POLYNOMIAL FUNCTIONS					
Estimated Time Frame:	**2 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP7: Look for and make use of structure**		
Enduring Understandings:	**I understand the operations of polynomial functions and I can graph the solutions set.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #5-1: I can add, subtract and multiply polynomials and understand that polynomials form a closed system analogous to the integers.	HSA-APR.A.1 HSA-APR.C.4 HSA-APR.C.5	Like Terms Identity	Big Ideas Algebra 2 Text Section 4-2	Mastery level to be created.	MP7
LT #5-2: I can divide and factor polynomial expressions.	HSA-APR.B.2 HSA-APR.D.6	Polynomial Long Division Synthetic Division Quotient Remainder	Big Ideas Algebra 2 Text Section 4-3	Developmental level to be created.	MP5, MP7
LT #5-3: I can solve simple polynomial equations, find zeros of simple polynomial functions, and create rough sketches of polynomials.	HSA-SSE.A.2 HSA-APR.B.2 HSA-APR.B.3 HSA-SSE.A.1 HSF-IF.7c	Factored Completely Factor by Grouping Quadratic Form Repeated Solution Roots of an Equation	Big Ideas Algebra 2 Text Section 4-4 Section 4-5 Desmos	Developmental level to be created.	MP4, MP7

UNIT 6 / THEME TITLE: RATIONAL EXPONENTS AND RADICAL FUNCTIONS					
Estimated Time Frame:	**4 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision ● MP7: Look for and make use of structure**		
Enduring Understandings:	**I understand the operations of radical functions, solutions of rational functions, and I can graph the function and its inverse.**				

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Learning Target	Idaho Content Standard	Key Terms	Resources Needed	Assessment (Tie to Enduring Understandings)	Special Attention to SMPs
LT #6-1: I understand how the properties of exponents extend to include rational exponents and that rational exponents can be used to represent radicals.	HSN-RN.A.1 HSN-RN.A.2	Nth root of a Index of a radical	Big Ideas Algebra 2 Text Section 5-1	Mastery-To be created	MP7
LT #6-2: I can simplify a variety of basic numeric expressions involving rational exponents and radicals.	HSN-RN.A.2	Simplest form of a radical Conjugate Like radicals	Big Ideas Algebra 2 Text Section 5-2	Developmental level to be created.	MP7
LT #6-3: I can represent square root and cube root functions graphically.	HSF-IF.5 HSF-IF.C.7b HSF-BF.B.3	Radical function	Big Ideas Algebra 2 Text Section 5-3 Desmos	Developmental level to be created.	MP4
LT #6-4: I can solve simple radical equations algebraically and graphically and understand how extraneous solutions may arise.	HSA-REI.A.1 HSA-REI.A.2	Radical Equations Extraneous Solutions	Big Ideas Algebra 2 Text Section 5-4 Desmos	Developmental level to be created.	MP5, MP6
LT #6-5: I can perform operations with functions.	HSF-IF.5 HSA-BF.A.1b	Domain Scientific Notation	Big Ideas Algebra 2 Text Section 5-5 Desmos	Developmental level to be created.	MP6, MP7
LT #6-6: I understand the basic concept of inverse functions.	HSA-CED.A.4 HSF-BF.B.4a	Inverse Functions	Big Ideas Algebra 2 Text Section 5-6 Desmos	Developmental level to be created.	MP7

UNIT 7 / THEME TITLE:EXPONENTIAL AND LOGARITHMIC FUNCTIONS			
Estimated Time Frame:	**4 weeks**	Focal Standards for Mathematical Practice	● **MP2: Reason abstractly and quantitatively** ● **MP4: Modeling with Mathematics** ● **MP7: Look for and make use of structure** ● **MP8: Look for and make use of repeated**

			reasoning		
Enduring Understandings:	**I understand the relationship between exponential and logarithmic functions and I can apply their properties to solve real-world problems.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #7-1: I understand the characteristics of exponential functions and can represent exponential functions graphically.	HSA-SSE.B.3c HSF-IF.C.7e HSF-IF.C.8b HSF-LE.A.2 HSF-LE.B.5 HSF-IF.C.7e HSF-BF.B.3, HSA-SSE.1	Exponential function Exponential growth function Natural base e	Big Ideas Algebra 2 Text Section 6-1 and 6-2 and 6-4 Desmos	Mastery-To be created	MP2, MP4, MP8
LT #7-2: I understand the characteristics of logarithmic functions and can represent basic logarithmic functions graphically.	HSF-IF.C.7e HSF-BF.B.3	Logarithmic function	Big Ideas Algebra 2 Text sections 6-3 and 6-4 Desmos	Developmental level to be created.	MP4, MP8
LT #7-3: I understand the properties of logarithms and can use them to rewrite basic logarithmic expression.	HSA-SSE.A.2	Base, properties of exponents	Big Ideas Algebra 2 Text section 6-5	Developmental level to be created.	MP7
LT #7-4: I can use logarithms to express solutions to basic exponential equations.	HSA-REI.A.1	Exponential equations, extraneous solution	Big Ideas Algebra 2 Text section 6-6	Developmental level to be created.	MP7
LT #7-5: I can model real-world situations using exponential functions and can distinguish between linear, exponential,	HSA-CED.A.1 HSA-CED.A.2, HSF-BF.A.1a, HSF-LE.A.2	Linear, quadratic, exponential, modeling	Big Ideas Algebra 2 Text section 6-7 Desmos	Developmental level to be created.	MP4

quadratic relationships given various representations.					

UNIT 8 / THEME TITLE: RATIONAL FUNCTIONS					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP6: Attend to Precision ● MP7: Look for and make use of structure**		
Enduring Understandings:	**I can apply transformations to the graphs of rational functions in relation to the asymptotes and find solutions to basic rational equations.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #8-1: I understand the characteristics of rational functions and can graphically represent them.	HSF-BF.B.3	Rational function, domain, range, asymptote	Big Ideas Algebra 2 Text sections 7-1 and 7-2 Desmos	Developmental level-To be created	MP4, MP7
LT #8-2: I can add, subtract, multiply and divide rational expressions.	HSA-APR.D.6, HSA-APR.D.7,	Common denominator, least common multiple, reciprocal, rational expression,	Big Ideas Algebra 2 Text sections 7-3 and 7-4	Developmental level to be created.	MP6
LT #8-3: I can solve basic rational equations.	HSA-REI.A.2	Proportion, extraneous solution	Big Ideas Algebra 2 Text section 7-5	Developmental level to be created.	MP6

UNIT 9/ THEME TITLE: Right Triangle Trigonometry					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision**		
Enduring Understandings:	**I understand how to determine the correct way to solve trigonometric equations using ratios, special right triangles and the Law of Sines or Cosines.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**

LT #9-1: I can use trigonometric functions with right triangles and non-right triangles to solve real-world and mathematical problems.	HSF-TF.C.8	Sine, cosine, tangent, cosecant, secant, cotangent, right triangle, hypotenuse, pythagorean theorem, law of sines, law of cosines	Big Ideas Algebra 2 Text section 9-1	Mastery-To be created	MP4, MP5, MP6

UNIT 10/ THEME TITLE: THE UNIT CIRCLE					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**● MP2: Reason abstractly and quantitatively ● MP4: Modeling with Mathematics ● MP6: Attend to Precision ● MP7: Look for and make use of structure**		
Enduring Understandings:	**I understand the relationship between degrees and radians on the unit circle and I can use either measurement in all quadrants.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #10-1: I can use radians and degrees to measure angles and convert between the two units of measure.	HSF-TF.A.1	radian	Big Ideas Algebra 2 Text section 9-2	Mastery-To be created	MP6
LT #10-2:I understand the characteristics of trigonometric functions and can represent trigonometric functions graphically.	HSF-IF.C.7e, HSF-BF.B.3, HSF-TF.A.2, HSF-TF.A.5	Sine, cosine, amplitude, periodic function, cycle, period, midline	Big Ideas Algebra 2 Text section 9-4 Desmos	Developmental level to be created.	MP2, MP4, MP7

Coeur d'Alene Public Schools
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COURSE PACING GUIDE
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D R A F T

Course Title:	Algebra 2	**Course Number:**	2330
Department / Grade Level:	Mathematics / Grades 09-12	**Date:**	December 5, 2018

PHILOSOPHY OF INSTRUCTION: The Coeur d'Alene School District will challenge each student to develop and extend mathematical proficiency and literacy through a focused and coherent curriculum, highest quality mathematics teaching, and assessments that meet the learning needs of each student.

Using the Common Core Standards as a foundation, the curriculum will emphasize depth over breadth with a focus on the foundational concepts and processes of mathematics. In order to address the demands of a changing world, our district 's mathematics instruction will prepare students to innovate, think critically, problem solve, communicate, and collaborate—therefore becoming inspired for future study.

SCOPE AND SEQUENCE:

Quarter 1 (9 Weeks) Sept-Oct	Quarter 2 (9 Weeks) Nov- ½ January	Quarter 3 (9 Weeks) Last ½ Jan-March	Quarter 4 (9 Weeks) April-June
• Unit #1: Statistics (3 weeks) • Unit #2: Linear Function Review (3 weeks) • Unit #3: Quadratic Functions (5 weeks)	• Unit #4: Quadratic Equations and Complex Numbers (5 weeks) • Unit #5: Polynomial Functions (2 Weeks)	• Unit #6: Rational Exponents and Radical Functions (3 Weeks) • Unit #7: Exponential and Logarithmic Functions (4 Weeks) • Unit #8: Rational Functions (4 Weeks)	• Unit #9: Right Triangle Trigonometry (3 Weeks) • Unit #10: Trigonometric Functions (3 weeks)

UNIT / THEME TITLE: UNIT #1: STATISTICS					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**• MP1: Make sense of problems and persevere in solving them • MP4: Modeling with Mathematics • MP5: Use Appropriate Tools Strategically**		
Enduring Understandings:	**I can analyze data based on measures of central tendency and z-scores.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Available**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #1-1: I can calculate and interpret measures of central tendency, quartiles, range, and standard deviation and use these values	HSS-ID.1, HSS-ID.2, HSS-ID.3	Mean, median, mode, range, standard deviation, quartiles, Interquartile ranges, box and whisker plots, dot plots	Big Ideas Math 1 Text: Chapter 7	Mastery-To be created	MP1,MP4

to solve statistical problems.					
LT #1-2: I can describe distributions by identifying shape, center, spread and any possible outliers.	HSS-ID.A.2, HSS-ID.3	Skewed right, skewed left, symmetric, outlier and key terms from LT #1-1.	Big Ideas Math 1 Text: Chapter 7	Developmental level to be created.	MP4
LT #1-3: I can recognize data sets that are normally distributed and use normal distributions and *z*-scores to calculate probabilities.	HSS-ID.a.4	Normal distribution, mean, standard deviation,	Big Ideas Algebra 2 Text Section 11-1	Developmental level to be created.	MP5
LT #1-4: I can identify and analyze different methods for collecting data and as well as recognize bias in how data are collected.	HSS-IC.B.1	Random sample, self-selected sample, systematic sample, stratified sample, cluster sample, convenience sample, bias, unbiased	Big Ideas Algebra 2 Text section 11-3	Developmental level to be created.	MP5
LT #1-5: I can describe the difference between an observational study and an experiment and recognize how randomization applies to both.	HSS-IC.B.3	Observational study, experiment, survey, control group, placebo	Big Ideas Algebra 2 Text section 11-4	Developmental level to be created.	MP5
LT#1-6: I can make inferences and justify conclusions from a variety of statistical studies and experiments.	HSS-IC.B.2, HSS-IC.B.4, HSS-IC.B.5, HSS-IC.B.6	Descriptive statistics, inferential statistics, margin of error, randomized experimental, control group, treatment group	Big Ideas Algebra 2 Text section 11-5 and 11-6	Developmental level to be created.	MP4, MP5

UNIT 2 / THEME TITLE: LINEAR FUNCTION REVIEW					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**● MP1: Make sense of problems and persevere in solving them ● MP2: Reason abstractly and quantitatively ● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision**		
Enduring Understandings:	**I understand the application of a linear function as it relates to the domain and range, line of best fit, and systems of equations.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #2-1: I can model and interpret real-world situations using linear functions.	HSA-CED.A.2, HSF-IF.C.9, HSF-BF.A.1a, HSF-LE.A.2	Domain, range, slope, slope intercept form, point-slope form	Big Ideas Algebra 2 text section 1-3	Mastery-To be Created	MP1, MP2, MP4
LT #2-2: I can use basic linear regressions to model sets of data and use the equation for the line of best fit to make predictions.	HSS-ID.B.6a	Scatterplot, line of best fit	Big Ideas Algebra 2 text section 1-3 Graphing Calculators and Desmos	Mastery-To be created	MP5
LT #2-3: I can solve systems of linear equations in two variables graphically and algebraically.	HSA-CED.A.3, HSA-REI.C.6		Big Ideas Algebra 2 Text Graphing Calculators and Desmos	Mastery-To be created	MP1, MP5, MP6

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UNIT 3 / THEME TITLE: QUADRATIC EQUATIONS					
Estimated Time Frame:	**5 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP7: Look for and make use of structure ● MP8: Look for and make use of repeated reasoning**		
Enduring Understandings:	**I understand the differences between vertex, standard, and intercept form of quadratic equations as it relates graphical and real-world applications.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #3-1: I can identify the effects of transformations on a function and create equations given graphs.	HSF-BF.B.3	Parent function, transformation,translation,reflection, vertical stretch, vertical shrink	Big Ideas Algebra 2 Text sections 1-1 and 1-2 Desmos	Developmental level to be created.	MP7, MP8
LT #3-2: I understand the characteristics of quadratic functions and can represent quadratic functions graphically using a variety of forms (including transformations).	HSF-IF.C.7c, HSF-BF.B.3, HSF-IF.B.4, HSF-IF.C.9, HSA-APR.B.3, HSA-SSE.1	Quadratic function, parabola, vertex, axis of symmetry, vertex form, intercept (factored) form, standard form	Big Ideas Algebra 2 Text sections 2-1 and 2-2 Desmos	Mastery-To be created	MP7
LT #3-3: I can write an equation for a quadratic function in intercept form or vertex form given its graph.	HSA-CED.A.2, HSF-BF.A.1a		Big Ideas Algebra 2 Text section 2-4 Desmos	Mastery-To be created	MP7
LT #3-4: I can model and interpret real-world situations using quadratic functions.	HSS-ID.B.6a, HSF-IF.6		Big Ideas Algebra 2 Text sections 2-2 and 2-4 Illustrative Mathematics	Developmental level to be created.	MP4

UNIT 4 / THEME TITLE: QUADRATIC EQUATIONS AND COMPLEX NUMBERS					
Estimated Time Frame:	**5 weeks**	**Focal Standards for Mathematical Practice**	**● MP1: Make sense of problems and persevere in solving them ● MP2: Reason abstractly and quantitatively ● MP6: Attend to Precision ● MP7: Look for and make use structure**		
Enduring Understandings:	**I understand how to solve a quadratic equation by factoring, completing the square and the quadratic formula with complex solutions and can make an educated decision on the correct method for each equation or graph.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #4-1: I can solve quadratic equations using graphical representations.	HSA-REI.B.4b	Root of an equation, zero of a function, *x*-intercepts	Big Ideas Algebra 2 Text section 3-1 Desmos	Mastery-To be created	MP1, MP7
LT #4-2: I can factor quadratic expressions and can solve quadratic equations using factoring and the zero product property.	HSA-SSE.A.2, HSA-REI.B.4b, HSF-IF.C.8a, HSA-SSE.1	Factoring	Big Ideas Algebra 2 Text section 3-1	Mastery-To be created	MP1, MP2, MP7
LT #4-3: I can simplify radical expressions and solve quadratic equations using roots.	HSA-SSE.A.2, HSA-REI.B.4b, HSF-IF.C.8a	Properties of square roots	Big Ideas Algebra 2 Text Section 3-1	Mastery-To be created	MP6, MP7
LT #4-4: I understand the basic concept of imaginary numbers and can perform basic operations with imaginary numbers.	HSN-CN.A.1, HSN-CN.A.2, HSN-CN.C.7, HSA-REI.B.4b	complex number, imaginary number,	Big Ideas Algebra 2 Text Section 3-2	Developmental level to be created.	MP2
LT #4-5: I can solve quadratic equations using	HSN-CN.C.7 HSA-REI.B.4b HSF-IF.C.8a	Completing the square Perfect square trinomial Vertex form	Big Ideas Algebra 2 Text Section 3-3	Mastery-To be created	MP6, MP7

completing the square and the quadratic formula.	HSN-CN.C.7 HSA-REI.B.4b	Quadratic Formula Discriminant	Section 3-4		
LT #4-6:I can solve basic nonlinear systems of equations consisting of a linear equation and a quadratic equation.	HSA-CED.A.3 HSA-REI.C.7 HSA-REI.D.11	System of nonlinear and linear equations	Big Ideas Algebra 2 Text Section 3-5 Desmos	Developmental level to be created.	MP5, MP7

UNIT 5 / THEME TITLE: POLYNOMIAL FUNCTIONS					
Estimated Time Frame:	**2 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP7: Look for and make use of structure**		
Enduring Understandings:	**I understand the operations of polynomial functions and I can graph the solutions set.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #5-1: I can add, subtract and multiply polynomials and understand that polynomials form a closed system analogous to the integers.	HSA-APR.A.1 HSA-APR.C.4 HSA-APR.C.5	Like Terms Identity	Big Ideas Algebra 2 Text Section 4-2	Mastery level to be created.	MP7
LT #5-2: I can divide and factor polynomial expressions.	HSA-APR.B.2 HSA-APR.D.6	Polynomial Long Division Synthetic Division Quotient Remainder	Big Ideas Algebra 2 Text Section 4-3	Developmental level to be created.	MP5, MP7
LT #5-3: I can solve simple polynomial equations, find zeros of simple polynomial functions, and create rough sketches of polynomials.	HSA-SSE.A.2 HSA-APR.B.2 HSA-APR.B.3 HSA-SSE.A.1 HSF-IF.7c	Factored Completely Factor by Grouping Quadratic Form Repeated Solution Roots of an Equation	Big Ideas Algebra 2 Text Section 4-4 Section 4-5 Desmos	Developmental level to be created.	MP4, MP7

UNIT 6 / THEME TITLE: RATIONAL EXPONENTS AND RADICAL FUNCTIONS					
Estimated Time Frame:	**4 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision ● MP7: Look for and make use of structure**		
Enduring Understandings:	**I understand the operations of radical functions, solutions of rational functions, and I can graph the function and its inverse.**				

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Date of Last Update: 05-December, 2018

Learning Target	Idaho Content Standard	Key Terms	Resources Needed	Assessment (Tie to Enduring Understandings)	Special Attention to SMPs
LT #6-1: I understand how the properties of exponents extend to include rational exponents and that rational exponents can be used to represent radicals.	HSN-RN.A.1 HSN-RN.A.2	Nth root of a Index of a radical	Big Ideas Algebra 2 Text Section 5-1	Mastery-To be created	MP7
LT #6-2: I can simplify a variety of basic numeric expressions involving rational exponents and radicals.	HSN-RN.A.2	Simplest form of a radical Conjugate Like radicals	Big Ideas Algebra 2 Text Section 5-2	Developmental level to be created.	MP7
LT #6-3: I can represent square root and cube root functions graphically.	HSF-IF.5 HSF-IF.C.7b HSF-BF.B.3	Radical function	Big Ideas Algebra 2 Text Section 5-3 Desmos	Developmental level to be created.	MP4
LT #6-4: I can solve simple radical equations algebraically and graphically and understand how extraneous solutions may arise.	HSA-REI.A.1 HSA-REI.A.2	Radical Equations Extraneous Solutions	Big Ideas Algebra 2 Text Section 5-4 Desmos	Developmental level to be created.	MP5, MP6
LT #6-5: I can perform operations with functions.	HSF-IF.5 HSA-BF.A.1b	Domain Scientific Notation	Big Ideas Algebra 2 Text Section 5-5 Desmos	Developmental level to be created.	MP6, MP7
LT #6-6: I understand the basic concept of inverse functions.	HSA-CED.A.4 HSF-BF.B.4a	Inverse Functions	Big Ideas Algebra 2 Text Section 5-6 Desmos	Developmental level to be created.	MP7

UNIT 7 / THEME TITLE:EXPONENTIAL AND LOGARITHMIC FUNCTIONS			
Estimated Time Frame:	**4 weeks**	Focal Standards for Mathematical Practice	● **MP2: Reason abstractly and quantitatively** ● **MP4: Modeling with Mathematics** ● **MP7: Look for and make use of structure** ● **MP8: Look for and make use of repeated**

			reasoning		
Enduring Understandings:	**I understand the relationship between exponential and logarithmic functions and I can apply their properties to solve real-world problems.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #7-1: I understand the characteristics of exponential functions and can represent exponential functions graphically.	HSA-SSE.B.3c HSF-IF.C.7e HSF-IF.C.8b HSF-LE.A.2 HSF-LE.B.5 HSF-IF.C.7e HSF-BF.B.3, HSA-SSE.1	Exponential function Exponential growth function Natural base e	Big Ideas Algebra 2 Text Section 6-1 and 6-2 and 6-4 Desmos	Mastery-To be created	MP2, MP4, MP8
LT #7-2: I understand the characteristics of logarithmic functions and can represent basic logarithmic functions graphically.	HSF-IF.C.7e HSF-BF.B.3	Logarithmic function	Big Ideas Algebra 2 Text sections 6-3 and 6-4 Desmos	Developmental level to be created.	MP4, MP8
LT #7-3: I understand the properties of logarithms and can use them to rewrite basic logarithmic expression.	HSA-SSE.A.2	Base, properties of exponents	Big Ideas Algebra 2 Text section 6-5	Developmental level to be created.	MP7
LT #7-4: I can use logarithms to express solutions to basic exponential equations.	HSA-REI.A.1	Exponential equations, extraneous solution	Big Ideas Algebra 2 Text section 6-6	Developmental level to be created.	MP7
LT #7-5: I can model real-world situations using exponential functions and can distinguish between linear, exponential,	HSA-CED.A.1 HSA-CED.A.2, HSF-BF.A.1a, HSF-LE.A.2	Linear, quadratic, exponential, modeling	Big Ideas Algebra 2 Text section 6-7 Desmos	Developmental level to be created.	MP4

quadratic relationships given various representations.					

UNIT 8 / THEME TITLE: RATIONAL FUNCTIONS					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP6: Attend to Precision ● MP7: Look for and make use of structure**		
Enduring Understandings:	**I can apply transformations to the graphs of rational functions in relation to the asymptotes and find solutions to basic rational equations.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #8-1: I understand the characteristics of rational functions and can graphically represent them.	HSF-BF.B.3	Rational function, domain, range, asymptote	Big Ideas Algebra 2 Text sections 7-1 and 7-2 Desmos	Developmental level-To be created	MP4, MP7
LT #8-2: I can add, subtract, multiply and divide rational expressions.	HSA-APR.D.6, HSA-APR.D.7,	Common denominator, least common multiple, reciprocal, rational expression,	Big Ideas Algebra 2 Text sections 7-3 and 7-4	Developmental level to be created.	MP6
LT #8-3: I can solve basic rational equations.	HSA-REI.A.2	Proportion, extraneous solution	Big Ideas Algebra 2 Text section 7-5	Developmental level to be created.	MP6

UNIT 9/ THEME TITLE: Right Triangle Trigonometry					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision**		
Enduring Understandings:	**I understand how to determine the correct way to solve trigonometric equations using ratios, special right triangles and the Law of Sines or Cosines.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**

LT #9-1: I can use trigonometric functions with right triangles and non-right triangles to solve real-world and mathematical problems.	HSF-TF.C.8	Sine, cosine, tangent, cosecant, secant, cotangent, right triangle, hypotenuse, pythagorean theorem, law of sines, law of cosines	Big Ideas Algebra 2 Text section 9-1	Mastery-To be created	MP4, MP5, MP6

UNIT 10/ THEME TITLE: THE UNIT CIRCLE					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	**● MP2: Reason abstractly and quantitatively ● MP4: Modeling with Mathematics ● MP6: Attend to Precision ● MP7: Look for and make use of structure**		
Enduring Understandings:	**I understand the relationship between degrees and radians on the unit circle and I can use either measurement in all quadrants.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #10-1: I can use radians and degrees to measure angles and convert between the two units of measure.	HSF-TF.A.1	radian	Big Ideas Algebra 2 Text section 9-2	Mastery-To be created	MP6
LT #10-2:I understand the characteristics of trigonometric functions and can represent trigonometric functions graphically.	HSF-IF.C.7e, HSF-BF.B.3, HSF-TF.A.2, HSF-TF.A.5	Sine, cosine, amplitude, periodic function, cycle, period, midline	Big Ideas Algebra 2 Text section 9-4 Desmos	Developmental level to be created.	MP2, MP4, MP7

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COURSE PACING GUIDE
ALP ALGEBRA 2
Date of Last Update: 05-December, 2018

DRAFT

Course Title:	ALP Algebra 2	**Course Number:**	2337
Department / Grade Level:	Mathematics / Grades 09-12	**Date:**	December 5, 2018

PHILOSOPHY OF INSTRUCTION: The Coeur d'Alene School District will challenge each student to develop and extend mathematical proficiency and literacy through a focused and coherent curriculum, highest quality mathematics teaching, and assessments that meet the learning needs of each student.

Using the Common Core Standards as a foundation, the curriculum will emphasize depth over breadth with a focus on the foundational concepts and processes of mathematics. In order to address the demands of a changing world, our district 's mathematics instruction will prepare students to innovate, think critically, problem solve, communicate, and collaborate—therefore becoming inspired for future study.

SCOPE AND SEQUENCE:

Quarter 1 (9 Weeks) Sept-Oct	Quarter 2 (9 Weeks) Nov- ½ January	Quarter 3 (9 Weeks) Last ½ Jan-March	Quarter 4 (9 Weeks) April-June
• Unit #1: Statistics (3 weeks) • Unit #2: Linear Function Review (3 weeks) • Unit #3: Quadratic Functions (5 weeks)	• Unit #4: Quadratic Equations and Complex Numbers (5 weeks) • Unit #5: Polynomial Functions (2 Weeks)	• Unit #6: Rational Exponents and Radical Functions (3 Weeks) • Unit #7: Exponential and Logarithmic Functions (4 Weeks) • Unit #8: Rational Functions (3 Weeks)	• Unit #9: Right Triangle Trigonometry (3 Weeks) • Unit #10: Trigonometric Functions (4 weeks)

UNIT / THEME TITLE: UNIT #1: STATISTICS					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	• MP1: Make sense of problems and persevere in solving them • MP2: Reason abstractly and quantitatively • MP4: Modeling with Mathematics • MP5: Use Appropriate Tools Strategically		
Enduring Understandings:	**I can analyze data based on measures of central tendency and z-scores.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Available**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #1-1: I can calculate and interpret measures of central tendency, quartiles, range,	HSS-ID.1, HSS-ID.2, HSS-ID.3	Mean, median, mode, range, standard deviation, quartiles, Interquartile ranges, box and whisker plots, dot plots	Big Ideas Math 1 Chapter 7	Mastery-To be created	MP1, MP4

and standard deviation and use these values to solve statistical problems.					
LT #1-2: I can describe distributions by identifying shape, center, spread and any possible outliers.	HSS-ID.A.2, HSS-ID.3	Skewed right, skewed left, symmetric, outlier and key terms from LT #1-1.	Big Ideas Math 1 Chapter 7	Developmental level to be created.	MP4
LT #1-3: I can recognize data sets that are normally distributed and use normal distributions and *z*-scores to calculate probabilities.	HSS-ID.a.4	Normal distribution, mean, standard deviation,	Big Ideas Algebra 2 Text Section 11-1	Developmental level to be created.	MP5
LT #1-4: I can identify and analyze different methods for collecting data and as well as recognize bias in how data are collected.	HSS-IC.B.1	Random sample, self-selected sample, systematic sample, stratified sample, cluster sample, convenience sample, bias, unbiased	Big Ideas Algebra 2 Text section 11-3	Developmental level to be created.	MP5
LT #1-5: I can describe the difference between an observational study and an experiment and recognize how randomization applies to both.	HSS-IC.B.3	Observational study, experiment, survey, control group, placebo	Big Ideas Algebra 2 Text section 11-4	Developmental level to be created.	MP2
LT #1-6: I can make inferences and justify conclusions from a variety of statistical	HSS-IC.A.2 HSS-IC.B.4 HSS-IC.B.5 HSS-IC.B.6	Descriptive statistics, inferential statistics, margin of error, randomized comparative	Big Ideas Algebra 2 sections 11-5 and 11-6	Developmental	MP4, MP5

observational studies and experiments.		experiment, control group, placebo group			

UNIT 2 / THEME TITLE: LINEAR FUNCTION REVIEW					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	● MP1: Make sense of problems and persevere in solving them ● MP2: Reason abstractly and quantitatively ● MP3: Construct viable arguments and critique the of others ● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision		
Enduring Understandings:	**I understand the application of a linear function as it relates to the domain and range, line of best fit, and systems of equations.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources available**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #2-1: I can model and interpret real-world situations using linear functions.	HSA-CED.A.2, HSF-IF.C.9, HSF-BF.A.1a, HSF-LE.A.2	Domain, range, slope, slope intercept form, point-slope form	Big Ideas Algebra 2 text section 1-3	Mastery-To be Created	MP1, MP4, MP2
LT #2-2: I can use basic linear regressions to model sets of data and use the equation for the line of best fit to make predictions.	HSS-ID.B.6a	Scatterplot, line of best fit	Big Ideas Algebra 2 text section 1-3 Graphing calculators, Desmos.com	Mastery-To be created	MP5
LT #2-3: I can solve systems of linear equations in two and three variables graphically and algebraically.	HSA-CED.A.3, HSA-REI.C.6		Big Ideas Algebra 2 Text section 1-4 Desmos.com	Mastery-To be created	MP1, MP5, MP6

UNIT 3 / THEME TITLE: QUADRATIC EQUATIONS			
Estimated Time Frame:	**5 weeks**	**Focal Standards for Mathematical Practice**	● MP1: Make sense of problems and persevere in solving them

			● MP2: Reason abstractly and quantitatively ● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically MP7: Look for and make use of structure ● MP8: Look for and make use of repeated reasoning		
Enduring Understandings:	**I understand the differences between vertex, standard, and intercept form of quadratic equations as it relates to graphical and real-world applications.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Available**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #3-1: I can identify the effects of transformations on a function and create equations given graphs.	HSF-BF.B.3	Parent function, transformation,translation,reflection, vertical stretch, vertical shrink	Big Ideas Algebra 2 Text sections 1-1 and 1-2 Desmos.com	Developmental level to be created.	MP7, MP8
LT #3-2: I understand the characteristics of quadratic functions and can represent quadratic functions graphically using a variety of forms (including transformations).	HSF-IF.C.7c, HSF-BF.B.3, HSF-IF.B.4, HSF-IF.C.9, HSA-APR.B.3 HSA-SSE.A.1	Quadratic function, parabola, vertex, axis of symmetry, vertex form, intercept (factored) form, standard form	Big Ideas Algebra 2 Text sections 2-1 and 2-2 Desmos.com	Mastery-To be created	MP7
LT #3-3: I can write an equation for a quadratic function in intercept form, vertex form and standard form given its graph.	HSA-CED.A.2, HSF-BF.A.1a		Big Ideas Algebra 2 Text section 2-4 Desmos.com	Mastery-To be created	MP5
LT #3-4: I can model and interpret real-world situations using quadratic functions.	HSS-ID.B.6a HSF-IF.B.6		Big Ideas Algebra 2 Text sections 2-2 and 2-4 illustrativemathematics.org	Developmental level to be created.	MP4, MP2

LT #3-5: I can use technology to perform a quadratic regression analysis.	HSS-ID.B.6a	Quadratic Regression	Big Ideas Algebra 2 Text 2-4 Graphing calculators, Desmos.com	Developmental to be created	MP4

UNIT 4 / THEME TITLE: QUADRATIC EQUATIONS AND COMPLEX NUMBERS					
Estimated Time Frame:	**5 weeks**	**Focal Standards for Mathematical Practice**	● MP1: Make sense of problems and persevere in solving them ● MP2: Reason abstractly and quantitatively ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision MP7: Look for and make use of structure ● MP8: Look for and make use of repeated reasoning		
Enduring Understandings:	**I understand how to solve a quadratic equation by factoring, completing the square and the quadratic formula with complex solutions and can make an educated decision on the correct method for each equation or graph.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #4-1: I can solve quadratic equations using graphical representations.	HSA-REI.B.4b HSA-SSE.A.2	Root of an equation, zero of a function, *x*-intercepts	Big Ideas Algebra 2 Text section 3-1	Mastery-To be created	MP1, MP7
LT #4-2: I can factor quadratic expressions and can solve quadratic equations using factoring and the zero product property.	HSA-SSE.A.2, HSA-REI.B.4b, HSF-IF.C.8a HSA-SSE.A.1	Factoring	Big Ideas Algebra 2 Text section 3-1	Mastery-To be created	MP1, MP2, MP7
LT #4-3: I can simplify radical expressions and solve quadratic equations using roots.	HSA-SSE.A.2, HSA-REI.B.4b, HSF-IF.C.8a	Properties of square roots	Big Ideas Algebra 2 Text Section 3-1	Mastery-To be created	MP6, MP7

LT #4-4: I understand the basic concept of imaginary numbers and can perform basic operations with imaginary numbers.	HSN-CN.A.1, HSN-CN.A.2, HSN-CN.C.7, HSA-REI.B.4b	complex number, imaginary number,	Big Ideas Algebra 2 Text Section 3-2	Developmental level to be created.	MP2
LT #4-5: I can solve quadratic equations using completing the square and the quadratic formula.	HSN-CN.C.7 HSA-REI.B.4b HSF-IF.C.8a HSN-CN.C.7 HSA-REI.B.4b	Completing the square Perfect square trinomial Vertex form Quadratic Formula Discriminant	Big Ideas Algebra 2 Text Section 3-3 Section 3-4	Mastery-To be created	MP6, MP7
LT #4-6:I can solve basic nonlinear systems of equations consisting of a linear equation and a quadratic equation.	HSA-CED.A.3 HSA-REI.C.7 HSA-REI.D.11	System of nonlinear and linear equations	Big Ideas Algebra 2 Text Section 3-5	Developmental level to be created.	MP5, MP7

UNIT 5 / THEME TITLE: POLYNOMIAL FUNCTIONS					
Estimated Time Frame:	**2 weeks**	**Focal Standards for Mathematical Practice**	● MP2: Reason abstractly and quantitatively ● MP3: Construct viable arguments and critique the of others ● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision ● MP7: Look for and make use of structure		
Enduring Understandings:	**I understand the operations of polynomial functions and I can graph the solution set.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Available**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #5-1: I can add, subtract and multiply polynomials and understand that polynomials form	HSA-APR.A.1 HSA-APR.C.4 HSA-APR.C.5	Like Terms Identity	Big Ideas Algebra 2 Text	Mastery level to be created.	MP6

a closed system analogous to the integers.					
LT #5-2: I can divide and factor polynomial expressions.	HSA-APR.B.2 HSA-APR.D.6	Polynomial Long Division Synthetic Division Quotient Remainder	Big Ideas Algebra 2 Text Section 4-3	Developmental level to be created.	MP5, MP7
LT #5-3: I can solve simple polynomial equations, find zeros of simple polynomial functions, and create rough sketches of polynomials.	HSA-SSE.A.2 HSA-APR.B.2 HSA-APR.B.3 HSA--SSE.A.1	Factored Completely Factor by Grouping Quadratic Form Repeated Solution Roots of an Equation	Big Ideas Algebra 2 Text Section 4-4 Section 4-5 Desmos.com	Developmental level to be created.	MP4, MP7

UNIT 6 / THEME TITLE: RATIONAL EXPONENTS AND RADICAL FUNCTIONS					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	● MP1: Make sense of problems and persevere in solving them ● MP2: Reason abstractly and quantitatively ● MP3: Construct viable arguments and critique the of others ● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision ● MP7: Look for and make use of structure		
Enduring Understandings:	**I understand the operations of radical functions, solutions of radical functions, and I can graph the function and its inverse.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Needed**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #6-1: I understand how the properties of exponents extend to include rational exponents and that rational exponents can be used to represent radicals.	HSN-RN.A.1 HSN-RN.A.2	Nth root of a Index of a radical	Big Ideas Algebra 2 Text Section 5-1	Mastery-To be created	MP7

LT #6-2: I can simplify a variety of basic numeric expressions involving rational exponents and radicals.	HSN-RN.A.2	Simplest form of a radical Conjugate Like radicals	Big Ideas Algebra 2 Text Section 5-2	Developmental level to be created.	MP6
LT #6-3: I can represent square root and cube root functions graphically.	HSF-IF.C.7b HSF-BF.B.3 HSF-IF.B.5	Radical function	Big Ideas Algebra 2 Text Section 5-3 Desmos.com	Developmental level to be created.	MP4
LT #6-4: I can solve simple radical equations algebraically and graphically and understand how extraneous solutions may arise.	HSA-REI.A.1 HSA-REI.A.2	Radical Equations Extraneous Solutions	Big Ideas Algebra 2 Text Section 5-4	Developmental level to be created.	MP2, MP5
LT #6-5: I can perform operations with functions including the composition of functions.	HSA-BF.A.1b HSF-IF.B.5	Domain Scientific Notation	Big Ideas Algebra 2 Text Section 5-5	Developmental level to be created.	MP6
LT #6-6: I understand the basic concept of inverse functions.	HSA-CED.A.4 HSF-BF.B.4a	Inverse Functions	Big Ideas Algebra 2 Text Section 5-6 Desmos.com	Developmental level to be created.	MP7

UNIT 7 / THEME TITLE:EXPONENTIAL AND LOGARITHMIC FUNCTIONS					
Estimated Time Frame:	**4 weeks**	Focal Standards for Mathematical Practice	● MP2: Reason abstractly and quantitatively ● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision MP7: Look for and make use of structure ● MP8: Look for and make use of repeated reasoning		
Enduring Understandings:	**I understand the relationship between exponential and logarithmic functions and I can apply their properties to solve real-world problems.**				

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COURSE PACING GUIDE
ALP ALGEBRA 2
Date of Last Update: 05-December, 2018

Learning Target	Idaho Content Standard	Key Terms	Resources Available	Assessment (Tie to Enduring Understandings)	Special Attention to SMPs
LT #7-1: I understand the characteristics of exponential functions and can represent exponential functions graphically.	HSA-SSE.B.3c HSF-IF.C.7e HSF-IF.C.8b HSF-LE.A.2 HSF-LE.B.5 HSF-IF.C.7e HSF-BF.B.3 HSA-SSE.A.1b	Exponential function Exponential growth function Natural base e	Big Ideas Algebra 2 Text Section 6-1 and 6-2 and 6-4 Desmos.com	Mastery-To be created	MP4, MP8
LT #7-2: I understand the characteristics of logarithmic functions and can represent basic logarithmic functions graphically.	HSF-IF.C.7e HSF-BF.B.3	Logarithmic function	Big Ideas Algebra 2 Text sections 6-3 and 6-4	Developmental level to be created.	MP4, MP8
LT #7-3: I understand the properties of logarithms and can use them to rewrite basic logarithmic expression.	HSA-SSE.A.2	Base, properties of exponents	Big Ideas Algebra 2 Text section 6-5	Developmental level to be created.	MP7
LT #7-4: I can use logarithms to express solutions to basic exponential equations.	HSA-REI.A.1	Exponential equations, extraneous solution	Big Ideas Algebra 2 Text section 6-6	Developmental level to be created.	MP5
LT #7-5: I can model real-world situations using exponential functions and can distinguish between linear, exponential, quadratic relationships given various representations.	HSA-CED.A.2, HSF-BF.A.1a, HSF-LE.A.2 HSA-CED.A.1	Linear, quadratic, exponential, modeling	Big Ideas Algebra 2 Text section 6-7 illustrativemathematics.org	Developmental level to be created.	MP4, MP2

UNIT 8 / THEME TITLE: RATIONAL FUNCTIONS					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	• MP4: Modeling with Mathematics • MP5: Use Appropriate Tools Strategically • MP6: Attend to Precision		
Enduring Understandings:	**I can apply transformations to the graphs of rational functions in relation to the asymptotes and find solutions to basic rational equations.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Available**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #8-1: I understand the characteristics of rational functions and can represent rational functions graphically.	HSF-BF.B.3	Rational function, domain, range, asymptote	Big Ideas Algebra 2 text section 7-2 Desmos.com	Developmental levet-To be created	MP4
LT #8-2: I can add, subtract, multiply and divide rational expressions.	HSA-APR.D.6, HSA-APR.D.7,	Common denominator, least common multiple, reciprocal, rational expression,	Big Ideas Algebra 2 Text sections 7-3 and 7-4	Developmental level to be created.	MP6
LT #8-3: I can solve basic rational equations.	HSA-REI.A.2	Proportion, extraneous solution	Big Ideas Algebra 2 Text section 7-5	Developmental level to be created.	MP5

UNIT 9/ THEME TITLE: RIGHT TRIANGLE TRIGONOMETRY					
Estimated Time Frame:	**3 weeks**	**Focal Standards for Mathematical Practice**	• MP2: Reason abstractly and quantitatively • MP4: Modeling with Mathematics • MP5: Use Appropriate Tools Strategically		
Enduring Understandings:	**I understand how to determine the correct way to solve trigonometric equations using ratios, special right triangles and the Law of Sines or Cosines.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Available**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #9-1: I can use trigonometric functions with right triangles and non-right triangles to solve	HSF-TF.C.8	Sine, cosine, tangent, cosecant, secant, cotangent, right triangle, hypotenuse, Pythagorean theorem,	Big Ideas Algebra 2 Text section 9-1	Mastery-To be created	MP4, MP5, MP2

real-world and mathematical problems.		law of sines, law of cosines			

UNIT 10/ THEME TITLE: THE UNIT CIRCLE					
Estimated Time Frame:	**4 weeks**	**Focal Standards for Mathematical Practice**	● MP4: Modeling with Mathematics ● MP5: Use Appropriate Tools Strategically ● MP6: Attend to Precision		
Enduring Understandings:	**I understand the relationship between degrees and radians on the unit circle and I can use either measurement in all quadrants.**				
Learning Target	**Idaho Content Standard**	**Key Terms**	**Resources Available**	**Assessment** (Tie to Enduring Understandings)	**Special Attention to SMPs**
LT #10-1: I can use radians and degrees to measure angles and convert between the two units of measure.	HSF-TF.A.1	radian	Big Ideas Algebra 2 Text section 9-2	Mastery-To be created	MP6
LT #10-2: I can use the unit circle to define trigonometric functions of any angle.	HSF-TF.A.2	Unit Circle, quadrantal angle, reference angle, radius, initial side, terminal side, standard position, coterminal, sector, central angle	Big Ideas Algebra 2 Text section 9-2 and 9-3	Developmental level to be created.	MP5
LT #10-3:I understand the characteristics of trigonometric functions and can represent trigonometric functions graphically.	HSF-IF.C.7e, HSF-BF.B.3 HSF-TF.B.5	Sine, cosine, amplitude, periodic function, cycle, period, midline	Big Ideas Algebra 2 Text section 9-4 Desmos.com	Developmental level to be created.	MP4