Danville Area School District
Course Overview and Scope and Sequence

Course Title: Trigonometry and PreCalculus
Content Area: Math
Grade Level:
Date Developed: June 2023

COURSE OVERVIEW:
ANCHOR STANDARDS: A2.1.2.1.1 Simplify or evaluate expressions involving logarithms and exponents. A2.1.3.1.3 Write and/or solve exponential or logarithmic equations. A2.1.3.1.4 Write, solve, and/or apply linear or exponential growth or decay equations. A2.2.1.1.3 Determine the domain, range, and inverse of a relation. A2.2.1.1.4 Identify and/or determine the characteristics of an exponential, quadratic, or polynomial function. A2.2.2.1.1 Create, interpret, and/or use the equation, graph, or table of an exponential or logarithmic function. A2.2.2.1.3 Determine, use, and/or interpret minimum and maximum values over a specified interval of a graph of a polynomial, exponential, or logarithmic function. A2.2.2.1.4 Translate a polynomial, exponential, or logarithmic function from one representation of a function to another. A2.2.2.2.1 Identify or describe the effect of changing parameters within a family of functions.
KEY COURSE TEXT AND MATERIALS:
KEY ASSESSMENTS: Diagnostic: Formative: Summative:

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Preparing for Precalculus			Quiz on order of operations and complex numbers Quiz on equations and inequalities of lines	Textbook Order of operations worksheet Inequality notation and interval worksheet Equations and inequalities worksheet Linear equations worksheet 1 Linear equations worksheet 2	16 Days
Solving and Graphing Absolute Values, Quadratics, Cubics, Radical and Rational Functions			Quadratics quiz Absolute value quiz Quiz of quadratics, absolute value and cubics Radical function and equation quiz Rational function and equation quiz	Textbook Solving quadratics worksheet Quadratics notes Absolute value notes/packet Absolute value worksheet Cubic equations notes/packet Review of quadratics, absolute value and cubics worksheet	47 Days

				Radicals equation notes/packet Radicals review worksheet Rational equations notes/packet Simplifying rational expression worksheet Review of rational expressions and equations worksheet	
Exponential and Logarithmic Functions			Applications of exponential functions take home quiz	Textbook Exponential packet Compound interest examples worksheet Compound interest worksheet Worksheet 8-3 (Logarithm worksheet) Logarithmic functions worksheet Worksheet 8-4 (Rules of logarithms worksheet)	21 Days

				Review worksheet for logarithms	
Inverse and Composite Functions			Combination, composite and inverse quiz	Textbook Parent function worksheet Review worksheet of combination, composite and inverse functions	7 Days
Trigonomic Functions			Trig function quiz 1	Textbook Trig function worksheet 1 Worksheet of converting DD to DMS and radians Degree, radian and arc length review worksheet Speed quizzes Finding reference angles worksheet Special right triangle worksheet 30-45-60 degree and quadrantal worksheet Kuta worksheet for special angles	52 Days

				Amplitude worksheet Period worksheet Phase shift worksheet Vertical shift worksheet Graphing sine and cosine packet Graphing tangent worksheet Graphing tangent, secant, cosecant, and cotangent worksheet 1 Graphing tangent, secant, cosecant, and cotangent worksheet 2 Law of sines worksheet 1 Law of sines ambiguous case worksheet 1 Law of sine - mixed- worksheet Law of cosine worksheet	

				Law of cosine notes Law of sine and cosine and area of triangles worksheet Chapter 4 review packet Chapter 4 test	
Trigonometric Identities and Equations			Identities quiz 1 Identities quiz 2 Solving trig equations		20 Days

Danville Area School District
Course Overview and Scope and Sequence

Course Title: Probability and Statistics
Content Area: Mathematics
Grade Level: 12th Grade
Date Developed: June 2023

COURSE OVERVIEW: This course is a senior course that stresses fundamental statistics without the academic rigor of the Advanced Placement Statistics course. Topics will include: the gathering and analysis of data, description and display of a data set, uses for statistics, an introduction to probability theory, probability distributions, confidence intervals, and hypothesis testing.

ANCHOR STANDARDS:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.
CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.
CC.2.4.HS.B.3 Analyze linear models to make interpretations based on the data.
CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments.
CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
CC.2.4.HS.B.6 Use the concepts of independence and conditional probability to interpret data.
CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
1.A Identify the question to be answered or problem to be solved (not assessed).
1.B Identify key and relevant information to answer a question or solve a problem.
1.C Describe an appropriate method for gathering and representing data.
1.D Identify an appropriate inference method for confidence intervals.
1.E Identify an appropriate inference method for significance tests.
1.F Identify null and alternative hypotheses.
2.A Describe data presented numerically or graphically.
2.B Construct numerical or graphical representations of distributions.

2.C Calculate summary statistics, relative positions of points within a distribution, correlation, and predicted response.
2.D Compare distributions or relative positions of points within a distribution.
3.A Determine relative frequencies, proportions, or probabilities using simulation or calculations.
3.B Determine parameters for probability distributions.
3.C Describe probability distributions.
3.D Construct a confidence interval, provided conditions for inference are met.
3.E Calculate a test statistic and find a p-value, provided conditions for inference are met.
4.A Make an appropriate claim or draw an appropriate conclusion.
4.B Interpret statistical calculations and findings to assign meaning or assess a claim.
4.C Verify that inference procedures apply in a given situation.
4.D Justify a claim based on a confidence interval.
4.E Justify a claim using a decision based on significance tests.

KEY COURSE TEXT AND MATERIALS:

KEY ASSESSMENTS:
Diagnostic:
Formative:
Summative:

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Unit 1: Introduction to Statistics	1.A, 1.B, 1.C	CC.2.4.HS.B.1, CC.2.4.HS.B.2, CC.2.4.HS.B.4, CC.2.4.HS.B.5	Section 1.1 True/False Quiz Section 1.2 True/False Quiz	Chapter 1 Guided Notes	12 Days

			Section 1.3 True/False Quiz Chapter 1 Test Chapter 1 Case Study	Chapter 1 PowerPoint Chapter 1 Case Study Chapter 1 Quizzes Chapter 1 Test Textbook Whiteboard Wacom Tablet Chapter 1 Worksheets	
Unit 2: Descriptive Statistics	2.A, 2.B, 2.C, 2.D, 3.A	CC.2.4.HS.B.3	Section 2.1 True/False Quiz Section 2.2 True/False Quiz Section 2.3 True/False Quiz Section 2.4 True/False Quiz Section 2.5 True/False Quiz Section 2.1 Frequency Distribution Quiz Section 2.3 Measures of Central Tendency Quiz	Chapter 2 Guided Notes Chapter 2 PowerPoint Chapter 2 Case Study Chapter 2 Quizzes Chapter 2 Test Textbook Whiteboard Wacom Tablet Chapter 2 Worksheets	

			Section 2.4 Measures of Variation Quiz Chapter 2 Test Chapter 2 Case Study		
Unit 3: Probability	3.A, 3.B	CC.2.4.HS.B.6, CC.2.4.HS.B.7	3.1 True/False Quiz 3.2 True/False Quiz 3.3 True/False Quiz 3.4 True/False Quiz 3.1 Concepts of Probability Quiz 3.2-3.3 Addition and Multiplication Rule Quiz Chapter 3 Exam Chapter 3 Case Study	Chapter 3 Guided Notes Chapter 3 PowerPoint Chapter 3 Case Study Chapter 3 Quizzes Chapter 3 Test Textbook Whiteboard Wacom Tablet Chapter 3 Worksheets	
Unit 4: Discrete Probability Distributions	2.A, 2.C, 2.D, 3.B, 3.C		4.1 True/False Quiz 4.2 True/False Quiz 4.3 True/False Quiz 4.1 Probability Distributions Quiz 4.2 Binomial Distribution Quiz 4.3 Geometric Distribution Quiz	Chapter 4 Guided Notes Chapter 4 PowerPoint Chapter 4 Case Study Chapter 4 Quizzes Chapter 4 Test Textbook Whiteboard	

			4.3 Poisson Distribution Quiz Chapter 4 Exam Chapter 4 Case Study	Wacom Tablet Chapter 4 Worksheets	
Unit 5: Normal Probability Distribution	3.B, 3.C, 3.E		5.1 True/False 5.2 True/False 5.3 True/False 5.4 True/False 5.5 True/False 5.1 Quiz 5.2-5.3 Quiz 5.4 Quiz Chapter 5 Exam Chapter 5 Case Study	Chapter 5 Guided Notes Chapter 5 PowerPoint Chapter 5 Case Study Chapter 5 Quizzes Chapter 5 Test Textbook Whiteboard Wacom Tablet Chapter 5 Worksheets	
Unit 6: Confidence Intervals	1.D, 1.F, 3.D, 3.E, 4.A, 4.B, 4.D		6.1 True/False 6.2 True/False 6.3 True/False 6.4 True/False 6.1 Quiz 6.2 Quiz 6.3 Quiz Chapter 6 Exam Chapter 6 Case Study	Chapter 6 Guided Notes Chapter 6 PowerPoint Chapter 6 Case Study Chapter 6 Quizzes Chapter 6 Test Textbook Whiteboard Wacom Tablet	

				Chapter 6 Worksheets	
Unit 7: Hypothesis Testing with One Sample	1.F, 3.E, 4.B, 4.C, 4.E		7.1 True/False Quiz 7.2 True/False Quiz 7.3 True/False Quiz 7.4 True/False Quiz	Chapter 7 Guided Notes Chapter 7 PowerPoint Chapter 7 Case Study Chapter 7 Quizzes Chapter 7 Test Textbook Whiteboard Wacom Tablet Chapter 7 Worksheets	
Unit 9: Correlation and Regression	2.C	CC.2.4.HS.B.3	9.1 True/False 9.2 True/False 9.1-9.2 Quiz	Chapter 9 Guided Notes Chapter 9 PowerPoint Chapter 9 Quizzes Chapter 9 Test Textbook Whiteboard Wacom Tablet Chapter 9 Worksheets	

Danville Area School District
Course Overview and Scope and Sequence

Course Title: Algebra
Content Area: Mathematics
Grade Level: Grades 9-10
Date Developed: June 2023

COURSE OVERVIEW: Algebra is the first of three Algebra courses. This course is aligned to the Pennsylvania Keystone Assessment Anchors, focusing on operations with real numbers, solving single-variable equations and inequalities, graphing linear equations, and solving and applying proportions.

ANCHOR STANDARDS:

CC.2.2.HS.D.1 Interpret the structure of expressions to represent a quantity in terms of its context.
A1.1.1.5.1, A1.1.1.5.2, A1.1.1.5.3, A2.1.2.2.1, A2.1.2.2.2

CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems.
A1.1.1.5.1, A1.1.1.5.2, A1.1.1.5.3, A2.1.2.1.1, A2.1.2.1.2, A2.1.2.1.3, A2.1.2.1.4, A2.1.2.2.1, A2.1.2.2.2

CC.2.2.HS.D.9 Use reasoning to solve equations and justify the solution method.
A1.1.1.4.1, A1.1.2.1.1, A1.1.2.1.2, A1.1.2.1.3, A1.1.2.2.1, A1.1.2.2.2, A1.1.3.1.1, A1.1.3.1.2, A1.1.3.1.3, A2.1.3.1.1, A2.1.3.1.2, A2.1.3.1.3, A2.1.3.1.4, A2.1.3.2.1, A2.1.3.2.2

CC.2.2.HS.D.10 Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.
A1.1.2.1.1, A1.1.2.1.2, A1.1.2.1.3, A1.1.2.2.1, A1.1.2.2.2, A1.1.3.1.1, A1.1.3.1.2, A1.1.3.1.3, A1.1.3.2.1, A1.1.3.2.2, A2.1.3.1.1, A2.1.3.1.2, A2.1.3.1.3, A2.1.3.1.4

KEY COURSE TEXT AND MATERIALS: Algebra I by Ron Larson and Paul Battaglia

KEY ASSESSMENTS:

Diagnostic: CDT, PVAAS Data, 8th Grade PSSA
Formative: Bellringer assignments, quizzes, exit tickets, graded assignments
Summative: Unit tests, Final Exam

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Expressions and Equations	CC.2.2.HS.D.1 CC.2.2.HS.D.2 CC.2.2.HS.D.9 CC.2.2.HS.D.10		Order of Operations Quiz Fractions Quiz One Step Equations Quiz Two Step Equations Quiz Two Step Equations with Fractions and Decimals Quiz Multi Step Equations Quiz Multi Step Equations with Fractions and Decimals Quiz	Expressions and Equations Notes Packet Worksheets/Quizzes Google Slides Activities Calculators Whiteboard Chromebooks	44 Days
Unit: Graphing Linear Equations	CC.2.2.HS.D.10		Inequality Quiz Compound Inequality Quiz	Linear Equations Notes Packet Worksheets/Quizzes	35 Days

				Google Slides Activities Calculators Whiteboard Chromebooks	
Unit: Simplifying Radicals	CC.2.2.8.B.1		Radical Quiz	Radical Packet Worksheets/Quizzes Google Slides Activities Calculators Whiteboard Chromebooks	5 Days
Unit: Exponent Properties	CC.2.2.8.B.1		Exponent Properties Quiz(Product) Exponent Properties Quiz(Quotient) Exponent Properties Quiz(Power) Exponent Properties Quiz(all)	Exponent Properties Packet Worksheets/Quizzes Google Slides Activities Calculators Whiteboard Chromebooks	20 Days
Unit: Factoring	CC.2.2.HS.D.3		GCF Quiz Factoring Quiz 1 Factoring Quiz 2 Factoring Quiz 3 Factoring Quiz 4 Factoring Exam	Factoring Packet Worksheets/Quizzes Google Slides Activities Calculators Whiteboard	30 Days

				Chromebooks	
Unit: Probability	CC.2.4.7.B.1 CC.2.4.7.B.3		Simple Probability Quiz Probability Quiz	Probability Packet Worksheets/Quizzes Google Slides Activities Calculators Whiteboard Chromebooks	10 Days
Unit: Review				Review Packet Google Slides Activities Calculators Whiteboard Chromebooks	45 Days

Danville Area School District
Course Overview and Scope and Sequence

Course Title: AP Calculus BC
Content Area: Math
Grade Level: 11-12
Date Developed: June 2023

COURSE OVERVIEW:
AP Calculus AB and AP Calculus BC focus on students' understanding of calculus concepts and provide experience with methods and applications. Through the use of big ideas of calculus (e.g., modeling change, approximation and limits, and analysis of functions), each course becomes a cohesive whole, rather than a collection of unrelated topics. Both courses require students to use definitions and theorems to build arguments and justify conclusions. The courses feature a multirepresentational approach to calculus, with concepts, results, and problems expressed graphically, numerically, analytically, and verbally. Exploring connections among these representations builds understanding of how calculus applies limits to develop important ideas, definitions, formulas, and theorems. A sustained emphasis on clear communication of methods, reasoning, justifications, and conclusions is essential. Teachers and students should regularly use technology to reinforce relationships among functions, to confirm written work, to implement experimentation, and to assist in interpreting results.

ANCHOR STANDARDS:
BIG IDEA 1: CHANGE (CHA) Using derivatives to describe rates of change of one variable with respect to another or using definite integrals to describe the net change in one variable over an interval of another allows students to understand change in a variety of contexts. It is critical that students grasp the relationship between integration and differentiation as expressed in the Fundamental Theorem of Calculus—a central idea in AP Calculus. BIG IDEA 2: LIMITS (LIM) Beginning with a discrete model and then considering the consequences of a limiting case allows us to model real-world behavior and to discover and understand important ideas, definitions, formulas, and theorems in calculus: for example, continuity, differentiation, integration, and series bc only. BIG IDEA 3: ANALYSIS OF FUNCTIONS (FUN) Calculus allows us to analyze the behaviors of functions by relating limits to differentiation, integration, and infinite series and relating each of these concepts to the others.

KEY COURSE TEXT AND MATERIALS: College Board; Text; Supplemental Materials Selected by Teacher
KEY ASSESSMENTS: Diagnostic: AP Calculus AB Exam Formative: Progress Checks, Quizzes, Exams Summative: AP Calculus BC Exam

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Unit 1: Chapters 2 and 3 - Limited Derivatives			L'Hopital's and Logarithmic Differentiation Quiz	Chapters 1-3 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	8 Days
Unit 2: Chapters 4 and 5 - Function Analysis and Integration			Graded problems from Chapter 4 Graded Free Response on Function Analysis Chapter 5 Test	Chapters 4 and 5 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators	11 Days

				Worksheets Assessments	
Unit 3: Chapter 6 - Applications of Definite Integral			Chapter 6 Test	Chapter 6 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	9 Days
Unit 4: Chapter 7 - Integrals Beyond Substitution			Integration by Parts Multiple Choice and Free Response Packet Graded Homework: p 521 #10, 12, 14, 20, 24, 26, 28, 30 Integration by Partial Fractions Worksheet Chapter 7 Test	Chapter 7 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets	15 Days
Unit 5: Chapter 8 - Differential Equation			Graded Free Response Questions 1987 BC 1	Chapter 8 Powerpoint notes Textbook	13 Days

			Graded Worksheet of Growth Problems Differential Equations Quiz	Whiteboards/Chalkboards Calculators Worksheets Assessments	
Unit 6: Chapter 9 - Infinite Series			Sequences and Series Quiz Graded Homework: p 637 #26-40 EVEN without a calculator to be graded, #42, 44, and 46 can be completed as bonus Convergence Methods Quiz Graded Free Response Questions (1995 BC 4, 2012 BC 4) Chapter 9 Test	Chapter 9 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	50 Days
Unit 7: Chapter 10 - Parametric and Polar Curves			Two Free Response Questions on Vectors and Parametric Equations	Chapter 10 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators	22 Days

			Vectors and Parametric Equations Quiz Two Free Response Questions on Polar Curves Polar Curves Quiz Chapter 10 Test	Worksheets Assessments	

Danville Area School District
Course Overview and Scope and Sequence

Course Title: AP Precalculus
Content Area: Math
Grade Level: 9-12
Date Developed: 8/11/2023

COURSE OVERVIEW: AP Precalculus centers on functions modeling dynamic phenomena. This research-based exploration of functions is designed to better prepare students for college-level calculus and provide grounding for other mathematics and science courses. In this course, students study a broad spectrum of function types that are foundational for careers in mathematics, physics, biology, health science, business, social science, and data science. Furthermore, as AP Precalculus may be the last mathematics course of a student's secondary education, the course is structured to provide a coherent capstone experience rather than exclusively focusing on preparation for future courses.

ANCHOR STANDARDS:

1. Algebraically manipulate functions, equations, and expressions.
2. Translate mathematical information between representations.
3. Communicate with precise language, and provide rationales for conclusions.

KEY COURSE TEXT AND MATERIALS: Precalculus

KEY ASSESSMENTS:
Diagnostic: Keystone Algebra Exam, PVAAS
Formative: Quizzes, Unit Exams, Personal Progress Checks
Summative: AP Precalculus Exam

SCOPE AND SEQUENCE				
Unit	PRIORITY STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Polynomial and Rational Functions	1 2 3	Quizzes; Unit Exam; Progress Checks	Text; College Board; Supplemental Materials	6-8 Weeks
Exponential and Logarithmic Functions	1 2 3	Quizzes; Unit Exam; Progress Checks	Text; College Board; Supplemental Materials	6-9 Weeks
Trigonometric and Polar Functions	1 2 3	Quizzes; Unit Exam; Progress Checks	Text; College Board; Supplemental Materials	7-10 Weeks
Functions Involving Parameters, Vectors, and Matrices	1 2 3	Quizzes; Unit Exam; Progress Checks	Text; College Board; Supplemental Materials	7 Weeks

Danville Area School District
Course Overview and Scope and Sequence

Course Title: AP Statistics
Content Area: Mathematics
Grade Level: Grades 10-12
Date Developed: June 2023

COURSE OVERVIEW:
ANCHOR STANDARDS: 1.A Identify the question to be answered or problem to be solved (not assessed). 1.B Identify key and relevant information to answer a question or solve a problem. 1.C Describe an appropriate method for gathering and representing data. 1.D Identify an appropriate inference method for confidence intervals. 1.E Identify an appropriate inference method for significance tests. 1.F Identify null and alternative hypotheses 2.A Describe data presented numerically or graphically. 2.B Construct numerical or graphical representations of distributions. 2.C Calculate summary statistics, relative positions of points within a distribution, correlation, and predicted response. 2.D Compare distributions or relative positions of points within a distribution. 3.A Determine relative frequencies, proportions, or probabilities using simulation or calculations. 3.B Determine parameters for probability distributions. 3.C Describe probability distributions. 3.D Construct a confidence interval, provided conditions for inference are met. 3.E Calculate a test statistic and find a p-value, provided conditions for inference are met. 4.A Make an appropriate claim or draw an appropriate conclusion. 4.B Interpret statistical calculations and findings to assign meaning or assess a claim.

4.C Verify that inference procedures apply in a given situation. 4.D Justify a claim based on a confidence interval. 4.E Justify a claim using a decision based on significance tests
KEY COURSE TEXT AND MATERIALS: College Board; Text; Teacher Created Supplemental Materials
KEY ASSESSMENTS: Diagnostic: None Formative: Quizzes, Personal Progress Checks, Unit Exams Summative: AP Statistics Exam

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Unit 1: Exploring and Understanding Data	VAR-1 UNC-1 VAR-2	1.A 2.A 2.B 2.C 2.D 3.A 4.B	Quiz center and spread Unit I project Unit I exam	Textbook Unit I Guide Notes Unit I Project Old Unit I exam for review	23 DAYS
Unit 2: Exploring Relationships Between Variables	VAR-1 UNC-1 UNC-1 DAT-1	1.A 2.B 2.C 2.D 3.A 4.B	Unit II project Unit II exam	Textbook Unit II guided notes Unit II project	26 DAYS

				Old unit II exam for review Unit II exam	
Unit 3: Gathering Data	VAR-1 DAT-2 VAR-3	1.A 1 B 1 C 4.A 4.B	Unit III projects Quiz Unit III exam	Unit III projects Quiz Unit III exam	15 DAYS
Unit 4: Randomness and Probability	VAR-1 UNC-2 VAR-4 VAR-5 UNC-3	1.A 2.B 3.A 3.B 3.C 4.B	Quiz on Probability Quiz on random variables Unit IV project Unit IV exam	Textbook Unit IV Guide Notes Unit IV Project Old Unit IV exam for review	30 DAYS
Unit 5: From the Data at Hand to the World at Large	VAR-1 VAR-6 UNC-3	1.A 3.A 3.B 3.C 4.B	Quiz on sampling distribution Quiz on confidence intervals of proportions Unit V project Unit V exam	Textbook Unit V Notes Unit V Project Old Unit V exam for review	28 DAYS
Unit 6: Learning About the World	VAR-1 UNC-4 VAR-6 DAT-3 UNC-5 UNC-4	1.A 1.B 1.D 1.E 1.F 3.D	Unit VI project Unit VI exam	Textbook Unit VI notes Unit VI Project Old Unit VI exam	14 DAYS

		3.E 4.A 4.B 4.C 4.D 4.E		for review	
Unit 7: Inference When Variables are Related	VAR-1 VAR-7 UNC-4 DAT-3	1.A 1.D 1.E 1.F 3.A 3.C 3.D 3.E 4.A 4.B 4.C 4.D	Unit VII project Unit VII exam	Textbook Unit VII notes Unit VII project	9 DAYS

Danville Area School District
Course Overview and Scope and Sequence

Course Title: AP Calculus AB
Content Area: Mathematics
Grade Level: Grades 11 and 12
Date Developed: June 2023

COURSE OVERVIEW: AP Calculus AB is designed for the serious mathematics student who wants to earn college credit. Instruction is aligned to the Advanced Placement Exam which is given in May each year. Course topics include, but are not limited to, limits, derivatives, application of derivatives, integrals, and application of integrals. A graphing calculator (TI-89 Titanium or the TI-Nspire CX II CAS) is required for this course. Students MUST take the Advanced Placement exam in the spring of the year. Prerequisites: Successful completion of Honors Trigonometry and Pre-Calculus, Introduction to Calculus, or teacher recommendation. Student data, such as grades and PVAAS scores may be utilized to determine placement.

ANCHOR STANDARDS:

- LIM-1.A Represent limits analytically using correct notation.
- LIM-1.B Interpret limits expressed in analytic notation.
- LIM-1.C Estimate limits of functions.
- LIM-1.D Determine the limits of functions using limit theorems.
- LIM-1.E Determine the limits of functions using equivalent expressions for the function or the squeeze theorem.
- LIM-2.A Justify conclusions about continuity at a point using the definition.
- LIM-2.B Determine intervals over which a function is continuous.
- LIM-2.C Determine values of x or solve for parameters that make discontinuous functions continuous, if possible.
- LIM-2.D Interpret the behavior of functions using limits involving infinity.
- LIM-3.A Interpret a limit as a definition of a derivative.
- LIM-4.A Determine limits of functions that result in indeterminate forms.
- LIM-5.A Approximate a definite integral using geometric and numerical methods.
- LIM-5.B Interpret the limiting case of the Riemann sum as a definite integral.

- LIM-5.C Represent the limiting case of the Riemann sum as a definite integral.
- FUN-1.A Explain the behavior of a function on an interval using the Intermediate Value Theorem.
- FUN-1.B Justify conclusions about functions by applying the Mean Value Theorem over an interval.
- FUN-1.C Justify conclusions about functions by applying the Extreme Value Theorem.
- FUN-2.A Explain the relationship between differentiability and continuity.
- FUN-3.A Calculate derivatives of familiar functions.
- FUN-3.B Calculate derivatives of products and quotients of differentiable functions.
- FUN-3.C Calculate derivatives of compositions of differentiable functions.
- FUN-3.D Calculate derivatives of implicitly defined functions.
- FUN-3.E Calculate derivatives of inverse and inverse trigonometric functions.
- FUN-3.F Determine higher order derivatives of a function.
- FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.
- FUN-4.B Calculate minimum and maximum values in applied contexts of analysis of functions.
- FUN-4.C Interpret minimum and maximum values calculated in applied contexts.
- FUN-4.D Determine critical points of implicit relations.
- FUN-4.E Justify conclusions about the behavior of an implicitly defined function based on evidence from its derivatives.
- FUN-5.A Represent accumulation functions using definite integrals.
- FUN-6.A Calculate a definite integral using areas and properties of definite integrals.
- FUN-6.B Evaluate definite integrals analytically using the Fundamental Theorem of Calculus.
- FUN-6.C Determine antiderivatives of functions and indefinite integrals, using knowledge of derivatives.
- FUN-6.D For integrands requiring substitution or rearrangements into equivalent forms:
    - (a) Determine indefinite integrals.
    - (b) Evaluate definite integrals.
- FUN-7.A Interpret verbal statements of problems as differential equations involving a derivative expression.
- FUN-7.B Verify solutions to differential equations.
- FUN-7.C Estimate solutions to differential equations.
- FUN-7.D Determine general solutions to differential equations.
- FUN-7.E Determine particular solutions to differential equations.
- FUN-7.F Interpret the meaning of a differential equation and its variables in context.
- FUN-7.G Determine general and particular solutions for problems involving differential equations in context.
- CHA-2.A Determine average rates of change using difference quotients.
- CHA-2.B Represent the derivative of a function as the limit of a difference quotient.
- CHA-2.C Determine the equation of a line tangent to a curve at a given point.
- CHA-2.D Estimate derivatives.
- CHA-3.A Interpret the meaning of a derivative in context.
- CHA-3.B Calculate rates of change in applied contexts.

- CHA-3.C Interpret rates of change in applied contexts.
- CHA-3.D Calculate related rates in applied contexts.
- CHA-3.E Interpret related rates in applied contexts.
- CHA-3.F Approximate a value on a curve using the equation of a tangent line.
- CHA-4.A Interpret the meaning of areas associated with the graph of a rate of change in context.
- CHA-4.B Determine the average value of a function using definite integrals.
- CHA-4.C Determine values for positions and rates of change using definite integrals in problems involving rectilinear motion.
- CHA-4.D Interpret the meaning of a definite integral in accumulation problems.
- CHA-4.E Determine net change using definite integrals in applied contexts.
- CHA-5.A Calculate areas in the plane using the definite integral.
- CHA-5.B Calculate volumes of solids with known cross sections using definite integrals.
- CHA-5.C Calculate volumes of solids of revolution using definite integrals.

KEY COURSE TEXT AND MATERIALS: Calculus for AP by Ron Larson and Paul Battaglia

KEY ASSESSMENTS:
Diagnostic: AP Precalculus Exam, PVAAS data, practice AP Exams
Formative: Concept quizzes, exit tickets, graded assignments
Summative: Unit tests, half-chapter quizzes, Final Exam, AP Exam

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Preparation for Calculus	Review from Keystone Algebra I: A1.1.1.1, A1.1.1.3, A1.1.1.5, A1.1.2.1, A1.2.2.1 Review from Keystone Algebra II:	A1.1.1.1.2, A1.1.1.3.1, A1.1.1.5.1, A1.1.5.2, A1.1.1.5.3, A1.1.2.1.1, A1.1.2.1.3, A1.2.2.1.1, A1.2.2.1.2, A1.2.2.1.3, A1.2.2.1.4, A2.1.1.1.1, A2.1.1.1.2, A2.1.2.1.1, A2.1.2.1.2, A2.1.2.1.3,	Unit review exam	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	9-10 days

	A2.1.2.1, A2.1.2.2, A2.1.3.1, A2.1.3.2, A2.2.1.1, A2.2.2.1	A2.1.2.1.4, A2.1.2.2.1, A2.1.2.2.2, A2.1.3.1.1, A2.1.3.1.2, A2.1.3.1.3, A2.1.3.1.4, A2.1.3.2.2, A2.2.1.1.3, A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.2, A2.2.2.1.3, A2.2.2.1.4			
Limits and Continuity	LIM-1.A, LIM-1.B, LIM-1.C, LIM-1.D, LIM-1.E, LIM-2.A, LIM-2.B, LIM-2.C, LIM-2.D	LIM-2.A.1, LIM-2.A.2, LIM-2.B.1, LIM-2.B.2, LIM-2.C.1, LIM-2.C.2, LIM-2.D.1, LIM-2.D.2, LIM-2.D.3, LIM-2.D.4, LIM-2.D.5.	Unit quiz, multiple choice graded assignment, free response graded assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12-13 days
Evaluating Derivatives, Part 1	CHA-2.A, CHA-2.B, CHA-2.C, CHA-2.D, CHA-3.B, CHA-3.C FUN-2.A, FUN-3.A, FUN-3.B, FUN-3.F LIM-3.A	CHA-2.A.1, CHA-2.B.1, CHA-2.B.2, CHA-2.B.2, CHA-2.B.3, CHA-2.B.4, CHA-2.C.1, CHA-2.D.1, CHA-2.D.2, FUN-2.A.1, FUN-2.A.2, FUN-3.A.1, FUN-3.A.2, FUN-3.A.3, FUN-3.A.4, FUN-3.B.1, FUN-3.B.2, FUN-3.B.3, FUN-3.B.1, FUN-3.B.2, FUN-3.B.3, FUN-3.F.1, FUN-3.F.2, LIM-3.A.1	Unit exam, quiz, multiple choice graded assignment, free response graded assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	17-18 days
Evaluating Derivatives, Part 2	FUN-3.A, FUN-3.B, FUN-3.C, FUN-3.D, FUN-3.E, FUN-3.F	FUN-3.A.1, FUN-3.A.2, FUN-3.A.3, FUN-3.A.4, FUN-3.B.1, FUN-3.B.2, FUN-3.B.3 FUN-3.C.1,	Unit exam, graded free response assignment, AP Classroom	Textbook assignments, teacher created materials. All materials will be	17-18 days

		FUN-3.D.1, FUN-3.E.1, FUN-3.F.1, FUN-3.F.2	assignment	posted on Google Classroom.	
Applications of Derivatives, Part 1	CHA-3.D, CHA-3.E, CHA-3.F, FUN-1.B, FUN-1.C, FUN-4.A, FUN-4.B, FUN-4.C	CHA-3.D.1, CHA-3.D.2, CHA-3.E.1, CHA-3.F.1, CHA-3.F.2, FUN-1.B.1, FUN-1.C.1, FUN-4.A.1, FUN-4.A.2, FUN-4.A.3, FUN-4.A.4, FUN-4.A.5, FUN-4.A.6, FUN-4.B.1, FUN-4.C.1	Unit exam, quiz, multiple choice graded assignment, free response graded assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	15-16 days
Applications of Derivatives, Part 2	CHA-3.D, CHA-3.E, CHA-3.F, FUN-1.B, FUN-1.C, FUN-4.A, FUN-4.B, FUN-4.C	CHA-3.D.1, CHA-3.D.2, CHA-3.E.1, CHA-3.F.1, CHA-3.F.2, FUN-1.B.1, FUN-1.C.1, FUN-4.A.1, FUN-4.A.2, FUN-4.A.3, FUN-4.A.4, FUN-4.A.5, FUN-4.A.6, FUN-4.B.1, FUN-4.C.1	Unit exam, quiz, multiple choice graded assignment, free response graded assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom	19-20 days
Integration	FUN-6.A, FUN-6.B, FUN-6.C, FUN-7.B, LIM-5.A, LIM-5.B	FUN-6.A.1, FUN-6.A.2, FUN-6.A.3, FUN-6.B.1, FUN-6.B.2, FUN-6.B.3, FUN-6.C.1, FUN-6.C.2, FUN-6.C.3, FUN-7.B.1, FUN-7.B.2, LIM-5.A.1, LIM-5.A.2, LIM-5.A.3, LIM-5.A.4, LIM-5.B.1, LIM-5.B.2	Unit exam, quizzes, multiple choice graded assignments, free response graded assignments	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom	30-31 days
Applications of Integration	CHA-5.A, CHA-5.B, CHA-5.C, FUN-7.A,	CHA-5.A.1, CHA-5.A.2, CHA-5.A.3, CHA-5.B.1,	Unit exam, quizzes, multiple	Textbook assignments,	24-25 days

	FUN-7.B, FUN-7.C, FUN-7.D, FUN-7.E, FUN-7.F, FUN-7.G, LIM-4.A	CHA-5.B.2, CHA-5.B.3, CHA-5.C.1, CHA-5.C.2, FUN-7.A.1, FUN-7.B.1, FUN-7.B.2, FUN-7.C.1, FUN-7.C.2, FUN-7.C.3, FUN-7.D.1, FUN-7.D.2 FUN-7.E.1, FUN-7.E.2, FUN-7.E.3, FUN-7.F.1, FUN-7.F.2, FUN-7.G, LIM-4.A.1, LIM-4.A.2	choice graded assignments, free response graded assignments	teacher created materials. All materials will be posted on Google Classroom	
AP Exam Preparation	All standards listed in the Anchors/Standards are reviewed here.	All standards listed in the Anchors/Standards are reviewed here	Released exam (2013), Final Exam (secure exam from Course Audit), Free Response questions from past years	The College Board created materials via secure documents through the Course Audit and AP Classroom.	13-24 days (pending start of the school year and date of the AP Exam)
Post AP Exam	All standards listed in the Anchors/Standards are reviewed here.	All standards listed in the Anchors/Standards are reviewed here.	Free Response Questions (current and past), enrichment assignments	The College Board created materials via secure documents through the Course Audit and AP Classroom, teacher created materials.	8-15 days (pending the end of the school year date and the date of the AP Exam)

Danville Area School District
Course Overview and Scope and Sequence

Course Title: Honors Algebra II
Content Area: Mathematics
Grade Level:
Date Developed: June 2023

COURSE OVERVIEW:
ANCHOR STANDARDS: A2.2.1.1 Analyze and/or use patterns or relations. A2.1.1.1 Represent and/or use imaginary numbers in equivalent forms (e.g., square roots and exponents). A2.1.1.2 Apply the order of operations in computation and in problem solving situations. A2.1.3.1 Write and/or solve nonlinear equations using various methods. A2.1.2.2 Simplify expressions involving polynomials. A2.2.2.1 Create, interpret, and/or use polynomial, exponential, and/or logarithmic functions and their equations, graphs, or tables. A2.2.2.2 Describe and/or determine families of functions. A2.1.2.1 Use exponents, roots, and/or absolute values to represent equivalent forms or to solve problems A2.1.3.2 Describe and/or determine change.
KEY COURSE TEXT AND MATERIALS: Textbook Simplifying Expressions Worksheet Linear Application Worksheet Absolute Value Equation Worksheet Function Worksheet

Writing Linear Equations Worksheet
Application Worksheet
Systems Worksheet
Linear Programming Worksheet
Axis of Symmetry
Standard Form
Imaginary unit
Dividing Polynomials Worksheet
Polynomial Functions Worksheet
Graphing Worksheet
Factoring Worksheet
Remainder and Factor Thm Packet
Pascal's Triangle Worksheet
Review Packet
Exam
Radical Worksheet
Exponent Worksheet
Solving Equations Worksheet
Composition Worksheet
Review Worksheet
Exponential Functions Worksheet
Log Properties Worksheet
Log Equations Worksheet
Application Packet
Review
Rational Graphing Packet 1
Rational Graphing Packet 2
Rational Equations Worksheet

KEY ASSESSMENTS:
Diagnostic:

Formative: Summative:

SCOPE AND SEQUENCE				
Unit	STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Unit 1: Equations and Inequalities		Quiz on expressions and equations. Quiz on Absolute value and inequalities.	Textbook Simplifying Expressions Worksheet Linear Application Worksheet Absolute Value Equation Worksheet	15 Days
Unit 2: Linear Relations and Functions	A2.2.1.1	Linear Models Quiz Graphing absolute value and piecewise functions Quiz	Textbook Function Worksheet Writing Linear Equations Worksheet Application Worksheet Absolute Value Graphing Worksheet	11 Days
Unit 3: Systems of Equations and Inequalities	A2.2.1.1	Systems Quiz Linear Programming Quiz Exam	Textbook Systems Worksheet	14 Days

			Linear Programming Worksheet	
Unit 4: Quadratic Functions and Relations	A2.1.1.1 A2.1.1.2 A2.1.3.1 A2.1.2.2 A2.2.1.1	Graphing Quiz Factoring Quiz Complex/ Completing the Square Quiz Quadratic Formula Quiz Exam	Textbook Factoring Worksheet Radical Worksheet Completing the Square Worksheet Quadratic Word Problems Worksheet Review Packet	25 Days
Unit 5: Polynomial and Polynomial Functions	A2.1.2.2 A2.1.3.1 A2.1.2.2 A2.2.1.1 A2.2.2.1 A2.2.2.2	Polynomial Quiz Graphing Quiz Remainder and Factor Thm Quiz Pascal's Triangle Quiz	Dividing Polynomials Worksheet Polynomial Functions Worksheet Graphing Worksheet Factoring Worksheet Remainder and Factor Thm Packet Pascal's Triangle Worksheet Review Packet Exam	24 Days

Unit 6: Inverses and Radical Functions and Relations	A2.1.3.1 A2.1.1.1 A2.2.1.1 A2.2.2.1 A2.2.2.2	Operation and Conjugate Quiz Exponent Quiz Equation Quiz Composition and Inverse Quiz Graphing Quiz Exam	Textbook Radical Worksheet Exponent Worksheet Solving Equations Worksheet Composition Worksheet Review Worksheet Graphing Worksheet Review Packet	33 Days
Unit 7: Exponential and Logarithmic Functions and Relations	A2.1.2.1 A2.1.3.1 A2.2.1.1 A2.2.2.1 A2.2.2.2	Exponential Graphing Quiz Log Properties Quiz Log Equations Quiz Exam	Textbook Exponential Functions Worksheet Log Properties Worksheet Log Equations Worksheet Application Packet Review	23 Days
Unit 8: Rational Functions and Relations	A2.1.3.2 A2.1.2.2 A2.2.1.1 A2.2.2.1	Adding/Subtracting/ Multiplying/Dividing Rational Expressions Quiz Graphing Rational Equations Quiz	Textbook Rational Graphing Packet 1 Rational Graphing Packet 2 Rational Equations Worksheet	25 Days

		Solving Rational Equations Quiz Exam	Review	

Danville Area School District
Course Overview and Scope and Sequence

Course Title: Introduction to Calculus
Content Area: Mathematics
Grade Level: Grades 11 and 12
Date Developed: August 2023

COURSE OVERVIEW: This course is designed for the student that wants to take an honors level course without the academic rigor of the Advanced Placement Calculus AB course. Topics will include conic sections, limits, derivatives, application of derivatives, basic integrals and their application. If a student has received credit for AP Calculus AB, the student is not eligible to take this course. Prerequisites: Successful completion of Honors Trigonometry/Pre Calculus or Trigonometry and Pre-Calculus, or teacher recommendation.

ANCHOR STANDARDS:

- LIM-1.A Represent limits analytically using correct notation.
- LIM-1.B Interpret limits expressed in analytic notation.
- LIM-1.C Estimate limits of functions.
- LIM-1.D Determine the limits of functions using limit theorems.
- LIM-1.E Determine the limits of functions using equivalent expressions for the function or the squeeze theorem.
- LIM-2.A Justify conclusions about continuity at a point using the definition.
- LIM-2.B Determine intervals over which a function is continuous.
- LIM-2.C Determine values of x or solve for parameters that make discontinuous functions continuous, if possible.
- LIM-2.D Interpret the behavior of functions using limits involving infinity.
- LIM-3.A Interpret a limit as a definition of a derivative.
- LIM-4.A Determine limits of functions that result in indeterminate forms.
- LIM-5.A Approximate a definite integral using geometric and numerical methods.
- LIM-5.B Interpret the limiting case of the Riemann sum as a definite integral.
- LIM-5.C Represent the limiting case of the Riemann sum as a definite integral.

- FUN-1.A Explain the behavior of a function on an interval using the Intermediate Value Theorem.
- FUN-1.B Justify conclusions about functions by applying the Mean Value Theorem over an interval.
- FUN-1.C Justify conclusions about functions by applying the Extreme Value Theorem.
- FUN-2.A Explain the relationship between differentiability and continuity.
- FUN-3.A Calculate derivatives of familiar functions.
- FUN-3.B Calculate derivatives of products and quotients of differentiable functions.
- FUN-3.C Calculate derivatives of compositions of differentiable functions.
- FUN-3.D Calculate derivatives of implicitly defined functions.
- FUN-3.E Calculate derivatives of inverse and inverse trigonometric functions.
- FUN-3.F Determine higher order derivatives of a function.
- FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.
- FUN-4.B Calculate minimum and maximum values in applied contexts of analysis of functions.
- FUN-4.C Interpret minimum and maximum values calculated in applied contexts.
- FUN-4.D Determine critical points of implicit relations.
- FUN-4.E Justify conclusions about the behavior of an implicitly defined function based on evidence from its derivatives.
- FUN-5.A Represent accumulation functions using definite integrals.
- FUN-6.A Calculate a definite integral using areas and properties of definite integrals.
- FUN-6.B Evaluate definite integrals analytically using the Fundamental Theorem of Calculus.
- FUN-6.C Determine antiderivatives of functions and indefinite integrals, using knowledge of derivatives.
- FUN-6.D For integrands requiring substitution or rearrangements into equivalent forms:
    - (a) Determine indefinite integrals.
    - (b) Evaluate definite integrals.
- FUN-7.A Interpret verbal statements of problems as differential equations involving a derivative expression.
- FUN-7.B Verify solutions to differential equations.
- FUN-7.C Estimate solutions to differential equations.
- FUN-7.D Determine general solutions to differential equations.
- FUN-7.E Determine particular solutions to differential equations.
- FUN-7.F Interpret the meaning of a differential equation and its variables in context.
- FUN-7.G Determine general and particular solutions for problems involving differential equations in context.
- CHA-2.A Determine average rates of change using difference quotients.
- CHA-2.B Represent the derivative of a function as the limit of a difference quotient.
- CHA-2.C Determine the equation of a line tangent to a curve at a given point.
- CHA-2.D Estimate derivatives.
- CHA-3.A Interpret the meaning of a derivative in context.
- CHA-3.B Calculate rates of change in applied contexts.
- CHA-3.C Interpret rates of change in applied contexts.

- CHA-3.D Calculate related rates in applied contexts.
- CHA-3.E Interpret related rates in applied contexts.
- CHA-3.F Approximate a value on a curve using the equation of a tangent line.
- CHA-4.A Interpret the meaning of areas associated with the graph of a rate of change in context.
- CHA-4.B Determine the average value of a function using definite integrals.
- CHA-4.C Determine values for positions and rates of change using definite integrals in problems involving rectilinear motion.
- CHA-4.D Interpret the meaning of a definite integral in accumulation problems.
- CHA-4.E Determine net change using definite integrals in applied contexts.
- CHA-5.A Calculate areas in the plane using the definite integral.
- CHA-5.B Calculate volumes of solids with known cross sections using definite integrals.
- CHA-5.C Calculate volumes of solids of revolution using definite integrals.

KEY COURSE TEXT AND MATERIALS: Calculus for AP by Ron Larson and Paul Battaglia

KEY ASSESSMENTS:
Diagnostic: AP Precalculus Exam, PVAAS data
Formative: Concept quizzes, exit tickets, graded assignments
Summative: Unit tests, half-chapter quizzes, Final Exam

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Preparation for Calculus	Review from Keystone Algebra I: A1.1.1.1, A1.1.1.3, A1.1.1.5, A1.1.2.1, A1.2.2.1 Review from Keystone Algebra II: A2.1.2.1, A2.1.2.2,	A1.1.1.1.2, A1.1.1.3.1, A1.1.1.5.1, A1.1.5.2, A1.1.1.5.3, A1.1.2.1.1, A1.1.2.1.3, A1.2.2.1.1, A1.2.2.1.2, A1.2.2.1.3, A1.2.2.1.4, A2.1.1.1.1, A2.1.1.1.2, A2.1.2.1.1, A2.1.2.1.2, A2.1.2.1.3, A2.1.2.1.4, A2.1.2.2.1,	Unit review exam	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	9-10 days

	A2.1.3.1, A2.1.3.2, A2.2.1.1, A2.2.2.1	A2.1.2.2.2, A2.1.3.1.1, A2.1.3.1.2, A2.1.3.1.3, A2.1.3.1.4, A2.1.3.2.2, A2.2.1.1.3, A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.2, A2.2.2.1.3, A2.2.2.1.4			
Limits and Continuity	LIM-1.A, LIM-1.B, LIM-1.C, LIM-1.D, LIM-1.E, LIM-2.A, LIM-2.B, LIM-2.C, LIM-2.D	LIM-2.A.1, LIM-2.A.2, LIM-2.B.1, LIM-2.B.2, LIM-2.C.1, LIM-2.C.2, LIM-2.D.1, LIM-2.D.2, LIM-2.D.3, LIM-2.D.4, LIM-2.D.5.	Unit quiz, multiple choice graded assignment, free response graded assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12-13 days
Evaluating Derivatives, Part 1	CHA-2.A, CHA-2.B, CHA-2.C, CHA-2.D, CHA-3.B, CHA-3.C FUN-2.A, FUN-3.A, FUN-3.B, FUN-3.F LIM-3.A	CHA-2.A.1, CHA-2.B.1, CHA-2.B.2, CHA-2.B.2, CHA-2.B.3, CHA-2.B.4, CHA-2.C.1, CHA-2.D.1, CHA-2.D.2, FUN-2.A.1, FUN-2.A.2, FUN-3.A.1, FUN-3.A.2, FUN-3.A.3, FUN-3.A.4, FUN-3.B.1, FUN-3.B.2, FUN-3.B.3, FUN-3.B.1, FUN-3.B.2, FUN-3.B.3, FUN-3.F.1, FUN-3.F.2, LIM-3.A.1	Unit exam, quiz, multiple choice graded assignment, free response graded assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	17-18 days
Evaluating Derivatives, Part 2	FUN-3.A, FUN-3.B, FUN-3.C, FUN-3.D, FUN-3.E, FUN-3.F	FUN-3.A.1, FUN-3.A.2, FUN-3.A.3, FUN-3.A.4, FUN-3.B.1, FUN-3.B.2, FUN-3.B.3 FUN-3.C.1,	Unit exam, graded free response assignment, AP Classroom assignment	Textbook assignments, teacher created materials. All materials will be posted on Google	17-18 days

		FUN-3.D.1, FUN-3.E.1, FUN-3.F.1, FUN-3.F.2		Classroom.	
Applications of Derivatives, Part 1	CHA-3.D, CHA-3.E, CHA-3.F, FUN-1.B, FUN-1.C, FUN-4.A, FUN-4.B, FUN-4.C	CHA-3.D.1, CHA-3.D.2, CHA-3.E.1, CHA-3.F.1, CHA-3.F.2, FUN-1.B.1, FUN-1.C.1, FUN-4.A.1, FUN-4.A.2, FUN-4.A.3, FUN-4.A.4, FUN-4.A.5, FUN-4.A.6, FUN-4.B.1, FUN-4.C.1	Unit exam, quiz, multiple choice graded assignment, free response graded assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	15-16 days
Applications of Derivatives, Part 2	CHA-3.D, CHA-3.E, CHA-3.F, FUN-1.B, FUN-1.C, FUN-4.A, FUN-4.B, FUN-4.C	CHA-3.D.1, CHA-3.D.2, CHA-3.E.1, CHA-3.F.1, CHA-3.F.2, FUN-1.B.1, FUN-1.C.1, FUN-4.A.1, FUN-4.A.2, FUN-4.A.3, FUN-4.A.4, FUN-4.A.5, FUN-4.A.6, FUN-4.B.1, FUN-4.C.1	Unit exam, quiz, multiple choice graded assignment, free response graded assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom	19-20 days
Integration	FUN-6.A, FUN-6.B, FUN-6.C, FUN-7.B, LIM-5.A, LIM-5.B	FUN-6.A.1, FUN-6.A.2, FUN-6.A.3, FUN-6.B.1, FUN-6.B.2, FUN-6.B.3, FUN-6.C.1, FUN-6.C.2, FUN-6.C.3, FUN-7.B.1, FUN-7.B.2, LIM-5.A.1, LIM-5.A.2, LIM-5.A.3, LIM-5.A.4, LIM-5.B.1, LIM-5.B.2	Unit exam, quizzes, multiple choice graded assignments, free response graded assignments	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom	30-31 days
Applications of Integration	CHA-5.A, CHA-5.B, CHA-5.C, FUN-7.A,	CHA-5.A.1, CHA-5.A.2, CHA-5.A.3, CHA-5.B.1,	Unit exam, quizzes, multiple	Textbook assignments,	24-25 days

	FUN-7.B, FUN-7.C, FUN-7.D, FUN-7.E, FUN-7.F, FUN-7.G, LIM-4.A	CHA-5.B.2, CHA-5.B.3, CHA-5.C.1, CHA-5.C.2, FUN-7.A.1, FUN-7.B.1, FUN-7.B.2, FUN-7.C.1, FUN-7.C.2, FUN-7.C.3, FUN-7.D.1, FUN-7.D.2 FUN-7.E.1, FUN-7.E.2, FUN-7.E.3, FUN-7.F.1, FUN-7.F.2, FUN-7.G, LIM-4.A.1, LIM-4.A.2	choice graded assignments, free response graded assignments	teacher created materials. All materials will be posted on Google Classroom	
Final Exam Review	All standards listed in the Anchors/Standards are reviewed here.	All standards listed in the Anchors/Standards are reviewed here	Released exam (2013), Final Exam (secure exam from Course Audit), Free Response questions from past years	The College Board created materials via secure documents through the Course Audit and AP Classroom.	13-24 days (pending start of the school year and date of the AP Exam)

Danville Area School District
Course Overview and Scope and Sequence

Course Title: Keystone Algebra I
Content Area: Mathematics
Grade Level: Grades 9-12
Date Developed: June 2023

COURSE OVERVIEW: Keystone Algebra I is the second of three Algebra courses. This course is aligned to the Pennsylvania Keystone Assessment Anchors, focuses on simplifying Algebraic expressions, graphing / interpreting linear equations and inequalities, solving systems of equations, analyzing functions, simplifying exponents, factoring, simplifying rational expressions, probability, and data analysis including "line of best fit." The Keystone Algebra I Exam will be administered during the fourth marking period. Prerequisites: Successful Completion of an Algebra course

ANCHOR STANDARDS:

- A1.1.1.1.2 Simplify square roots.
- A1.1.1.2.1 Find the Greatest Common Factor and/or the Least Common Multiple for sets of monomials.
- A1.1.1.3.1 Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems.
- A1.1.1.4.1 Use estimation to solve problems.
- A1.1.1.5.1 Add, subtract, and/or multiply polynomial expressions (express answers in simplest form.)
- A1.1.1.5.2 Factor algebraic expressions, including difference of squares and trinomials (after factoring out all monomial factors)
- A1.1.1.5.3 Simplify/reduce a rational algebraic expression.
- A1.1.2.1.1 Write, solve, and/or apply a linear equation. (including absolute value equations)
- A1.1.2.1.2 Use and/or identify an algebraic property to justify and step in an equation-solving process.
- A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation.
- A1.1.2.2.1 Write and/or solve a system of linear equations using graphing, substitution, and/or elimination.
- A1.1.2.2.2 Interpret solutions to problems in the context of the problem situation.

- A1.1.3.1.1 Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).
- A1.1.3.1.2 Identify or graph the solution set to a linear inequality on a number line.
- A1.1.3.1.3 Interpret solutions to problems in the context of the problem situation.
- A1.1.3.2.1 Write and/or solve a system of linear inequalities using graphing.
- A1.1.3.2.2 Interpret solutions to problems in the context of the problem situation.
- A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.

- A1.2.1.1.2 Determine whether a relation is a function, given a set of points or a graph.
- A1.2.1.1.3 Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table.)
- A1.2.1.2.1 Create, interpret, and/or use the equation, graph, or table of a function.
- A1.2.1.2.2 Translate from one representation of a linear function to another (i.e., graph, table, and equation)
- A1.2.2.1.1 Identify, describe, and/or use constant rates of change
- A1.2.2.1.2 Apply the concept of linear rate of change to solve problems.
- A1.2.2.1.3 Write or identify a linear equation when given the graph of a line, two points on a line, or the slope and a point on the line (including parallel and perpendicular situations) Note: Linear equation may be in point-slope, standard, and/or slope-intercept form
- A1.2.2.1.4 Determine the slope and/or y-intercept represented by a linear equation or graph.
- A1.2.2.2.1 Draw, identify, and/or write an equation for a line of best fit for a scatter plot.
- A1.2.3.1.1 Calculate and/or interpret the range, quartiles, and interquartile range of data.
- A1.2.3.2.1 Estimate or calculate to make predictions based on a circle, line, bar graph, measures of central tendency, or other representation.
- A1.2.3.2.2 Analyze data, make predictions, and/or answer questions based on displayed data (box–and–whisker plot, stem–and–leaf plot, scatter plot, measures of central tendency, or other representations)
- A1.2.3.2.3 Make predictions using the equations or graphs of best–fit lines of scatter plots.
- A1.2.3.3.1 Find probabilities for compound events and represent as a fraction, decimal, or percent

KEY COURSE TEXT AND MATERIALS: Algebra I by Ron Larson and Paul Battaglia

KEY ASSESSMENTS:
Diagnostic: CDT, PVAAS data
Formative: Bellringer assignments, quizzes, exit tickets, graded assignments
Summative: Unit tests, Final Exam, Keystone Algebra I Exam

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Algebra Review	A1.1.1.4.1, A1.1.2.1.1, A1.1.2.1.2, A1.1.2.1.3, A1.1.3.1.1, A1.1.3.1.2, A1.1.3.1.3		Bellringer problems, exit tickets, quizzes (3), Keystone Algebra I Exam MC preparation assignment, Keystone Algebra I Open Ended Response Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	21-22 days
Exponent Rules	A1.1.1.3.1, A1.1.2.1.3		Bellringer problems, exit tickets, unit exam, quizzes (2), Keystone Algebra I Exam MC preparation assignment, Keystone Algebra I Open Ended Response Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12-13 days
Simplifying Polynomials	A1.1.1.5.1, A1.1.2.1.3		Bellringer problems, exit tickets, unit exam, quizzes	Textbook assignments, teacher created materials. All	13-14 days

			(2), Keystone Algebra I Exam MC preparation assignment, Keystone Algebra I Open Ended Response Assignment	materials will be posted on Google Classroom.	
Factoring Polynomials	A1.1.1.5.2, A1.1.2.1.3		Bellringer problems, exit tickets, unit exam, quiz, Keystone Algebra I Exam MC preparation assignment, Keystone Algebra I Open Ended Response Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	18-19 days
LCM/GCF, Rational Expressions, Radical Expressions	A1.1.1.1.2, A1.1.1.5.3, A1.1.2.1.3		Bellringer problems, exit tickets quizzes (3), Keystone Algebra I Exam MC preparation assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	13 days
Data Analysis and Probability	A1.2.3.1.1, A1.2.3.2.1, A1.2.3.2.2, A1.2.3.3.1		Bellringer problems, unit exam, quizzes (2), Keystone	Textbook assignments, teacher created materials. All	21-22 days

			Algebra I Exam MC preparation assignment, Keystone Algebra I Open Ended Response Assignment	materials will be posted on Google Classroom	
Graphing Linear Equations	A1.2.1.1.1, A1.2.1.2.1, A1.2.1.2.2, A1.2.2.1.1, A1.2.2.1.2, A1.2.2.1.3, A1.2.2.1.4		Bellringer problems, exit tickets, unit exam, quizzes (3), Keystone Algebra I Exam MC preparation assignment, Keystone Algebra I Open Ended Response Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom	21-22 days
Functions and Scatterplots	A1.2.1.1.2, A1.2.1.1.3, A1.2.1.2.1, A1.2.1.2.2, A1.2.2.2.1, A1.2.3.2.3		Bellringer problems, exit tickets, unit exam,quizzes (2), Keystone Algebra I Exam MC preparation assignment, Keystone Algebra I Open Ended Response Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom	9 days

Systems of Equations	A1.1.2.2.1, A1.1.2.2.2, A1.1.3.2.1, A1.1.3.2.2		Bellringer problems, exit tickets, unit exam, quizzes (2), Keystone Algebra I Exam MC preparation assignment, Keystone Algebra I Open Ended Response Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom	19-20 days
Absolute Value	A1.1.2.1.1, A1.1.2.1.2, A1.1.2.1.3, A1.1.3.1.1, A1.1.3.1.2, A1.1.3.1.3		Bellringer problems, quizzes (2)	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom	6 days
Keystone Algebra I Exam Preparation/Final Exam Review	All standards listed in the Anchors/Standards are reviewed here.	All standards listed in the Anchors/Standards are reviewed here	Review modules for Module 1 and Module 2 of the Keystone Exam, practice problems from the Keystone Algebra I Released Items	Teacher created review materials, Keystone Algebra I Released Items. All materials will be posted on Google Classroom	17-23 days (pending start of the school year and date of the Keystone Algebra I Exam)

Danville Area School District
Course Overview and Scope and Sequence

Course Title: Keystone Algebra II Concepts
Content Area: Mathematics
Grade Level: 9th - 12th
Date Developed: June 2023

COURSE OVERVIEW: Compare and order; add and subtract rational numbers. Multiply and divide rational numbers. Use the FOIL method to multiply binomials. Use various techniques to factor polynomials.
ANCHOR STANDARDS: CC.2.2.HS.D.1 Interpret the structure of expressions to represent a quantity in terms of its context. CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems. CC.2.2.HS.D.1 Interpret the structure of expressions to represent a quantity in terms of its context. CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships. CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations. CC.2.2.HS.D.1 Interpret the structure of expressions to represent a quantity in terms of its context. CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships. CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships. CC.2.2.HS.D.10 Represent, solve and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically. CC.2.2.HS.D.1 Interpret the structure of expressions to represent a quantity in terms of its context. CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations. CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships. CC.2.2.HS.D.10 Represent, solve and interpret equations/inequalities and systems of equations/inequalities algebraically and

graphically.
CC.2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.
CC.2.1.HS.F.7 Apply concepts of complex numbers in polynomial identities and quadratic equations to solve problems.
CC.2.2.HS.C.4 Interpret the effects transformations have on functions and find the inverses of function
CC.2.2.HS.D.3 Extend the knowledge of arithmetic operations and apply to polynomials.
CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.
CC.2.1.6.E.3, CC.2.1.8.E.1, CC.2.1.8.E.4, CC.2.1.HS.F.1, CC.2.1.HS.F.2, CC.2.1.HS.F.3
CC.2.1.HS.F.4, CC.2.1.HS.F.5, CC.2.2.7.B.3, CC.2.2.8.B.1, CC.2.2.8.B.2, CC.2.2.8.B.3
CC.2.2.8.C.1, CC.2.2.8.C.2, CC.2.2.HS.C.1, CC.2.2.HS.C.2, CC.2.2.HS.C.3, CC.2.2.HS.C.4
CC.2.2.HS.C.5, CC.2.2.HS.C.6, CC.2.2.HS.D.1, CC.2.2.HS.D.10, CC.2.2.HS.D.2, CC.2.2.HS.D.3
CC.2.2.HS.D.5, CC.2.2.HS.D.6, CC.2.2.HS.D.7, CC.2.2.HS.D.8, CC.2.2.HS.D.9, CC.2.4.7.B.3
CC.2.4.8.B.1, CC.2.4.HS.B.1, CC.2.4.HS.B.2, CC.2.4.HS.B.3, CC.2.4.HS.B.4, CC.2.4.HS.B.5

KEY COURSE TEXT AND MATERIALS: Algebra 2 by Carter, Cuevas, Day, Malloy, Casey ,and Holliday

KEY ASSESSMENTS:
Diagnostic: Keystone Algebra Exam
Formative:Quizzes and Chapter Test
Summative: Final Exam

SCOPE AND SEQUENCE

Unit	STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Preparing for Advanced Algebra	CC.2.2.HS.D.1 CC.2.2.HS.D.2	Exit Tickets 0-4 and 0-5 Quiz 0-2 and 0-3 Quiz	Getting To Know You Icebreaker Activity Bell Ringers 0-4 Worksheets (Algebra I) 0-5 Worksheets (Algebra I)	10 Days

			0-2 Worksheets (Algebra II) 0-3 Worksheets (Algebra II)	
Equations and Inequalities	CC.2.2.HS.D. 1 CC.2.2.HS.D.7	Exit Tickets 1-1 and 1-2 Quiz: Simplifying Expressions 1-3 Quiz: Solving Equations	I-84 Graphing Calculators Bell Ringers 1-1 Worksheets: Study Guide and Intervention, Skills Practice, and Practice 1.2 Worksheets: Study Guide and Intervention and Practice 1.3 Worksheets: Kuta One-Step Equations, Kuta Two-Step Equations, Kuta Multi-Step Equations, Study Guide and Intervention, and Word Problem Practice LAB 1.3 Worksheet:	30 Days

			Graphing Calculator Activity 1.4 Worksheets: Study Guide and Intervention, Practice, and Word Problem Practice worksheets 1.5 Worksheets: Study Guide and Intervention, Practice, and Word Problem Practice worksheets 1.6 Worksheets: Study Guide and Intervention, Skills Practice, Practice, and Word Problem Practice R&R Lesson Materials: Product Worksheet, Lesson HyperDoc, and Equation Worksheet Standardized Test Practice Worksheet	

Linear Relations and	CC.2.2.HS.C.2 CC.2.2.HS.D.1 CC.2.2.HS.D.7		TI-84 Graphing Calculators Graph Paper Section Worksheets Slope Points Cards Equation Doors PDF Standardized Test Practice Worksheets	20 Days
Systems of Equations and Inequalities	CC.2.2.HS.D.7 CC.2.2.HS.D.10		TI-84 Graphing Calculators Graph Paper Section Worksheets Standardized Test Practice Worksheets	
Quadratic Functions and Relations	CC.2.2.HS.D.1 CC.2.2.HS.C.2 CC.2.2.HS.D.7 CC.2.1.HS.F.6 CC.2.1.HS.F.7 CC.2.2.HS.C.4		TI-84 Graphing Calculators Graph Paper Section Worksheets Standardized Test Practice Worksheets	

Polynomials and Polynomial Functions	CC.2.2.HS.D.3 CC.2.2.HS.C.2		TI-84 Graphing Calculators Graph Paper Section Worksheets -Standardized Test Practice Worksheets	
Statistics and Probability	CC.2.4.HS.B.		TI-84 Graphing Calculators Graph Paper Section Worksheets Standardized Test Practice Worksheets	15 Days
Keystone Exam Review and Remediation		CC.2.1.6.E.3, CC.2.1.8.E.1, CC.2.1.8.E.4, CC.2.1.HS.F.1, CC.2.1.HS.F.2, CC.2.1.HS.F.3 CC.2.1.HS.F.4, CC.2.1.HS.F.5, CC.2.2.7.B.3, CC.2.2.8.B.1, CC.2.2.8.B.2, CC.2.2.8.B.3	Keystone Anchor inventory / checklist TI-84 Graphing Calculators Graph Paper Section Worksheets	25 Days

		CC.2.2.8.C.1, CC.2.2.8.C.2, CC.2.2.HS.C.1, CC.2.2.HS.C.2, CC.2.2.HS.C.3, CC.2.2.HS.C.4 CC.2.2.HS.C.5, CC.2.2.HS.C.6, CC.2.2.HS.D.1, CC.2.2.HS.D.10, CC.2.2.HS.D.2, CC.2.2.HS.D.3 CC.2.2.HS.D.5, CC.2.2.HS.D.6, CC.2.2.HS.D.7, CC.2.2.HS.D.8, CC.2.2.HS.D.9, CC.2.4.7.B.3 CC.2.4.8.B.1, CC.2.4.HS.B.1, CC.2.4.HS.B.2, CC.2.4.HS.B.3, CC.2.4.HS.B.4, CC.2.4.HS.B.5 CC.2.4.HS.B.7		

Danville Area School District
Course Overview and Scope and Sequence

Course Title: Keystone Geometry
Content Area: Mathematics
Grade Level: Grades 9 - 11
Date Developed: June 2023

COURSE OVERVIEW: Course topics focus on the Pennsylvania state Keystone anchors, as well as selected SAT content domains, and include, but are not limited to, angles and segments, parallel lines, triangles and their congruence and similarity, parallelograms and other polygons, circles, area and volume, transformations, and the application of basic trigonometric functions
ANCHOR STANDARDS: CC.2.3.HS.A.1 Use geometric figures and their properties to represent transformations in the plane. CC.2.3.HS.A.2 Apply rigid transformations to determine and explain congruence. CC.2.3.HS.A.3 Verify and apply geometric theorems as they relate to geometric figures. CC.2.3.HS.A.5 Create justifications based on transformations to establish similarity of plane figures. CC.2.3.HS.A.6 Verify and apply theorems involving similarity as they relate to plane figures. CC.2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles. CC.2.3.HS.A.8 Apply geometric theorems to verify properties of circles. CC.2.3.HS.A.9 Extend the concept of similarity to determine arc lengths and areas of sectors of circles. CC.2.3.HS.A.11 Apply coordinate geometry to prove simple geometric theorems algebraically. CC.2.3.HS.A.12 Explain volume formulas and use them to solve problems. CC.2.3.HS.A.13 Analyze relationships between two-dimensional and three-dimensional objects. CC.2.3.HS.A.14 Apply geometric concepts to model and solve real world problems. G.1.1.1.1 Identify, determine, and/or use the radius, diameter, segment, and/or tangent of a circle. G.1.1.1.2 Identify, determine, and/or use the arcs, semicircles, sectors, and/or angles of a circle. G.1.1.1.3 Use chords, tangents, and secants to find missing arc measures or missing segment measures. G.1.1.1.4 Identify and/or use the properties of a sphere or cylinder.

G.1.2.1.1 Identify and/or use properties of triangles.
G.1.2.1.2 Identify and/or use properties of quadrilaterals.
G.1.2.1.3 Identify and/or use properties of isosceles and equilateral triangles.
G.1.2.1.4 Identify and/or use properties of regular polygons.
G.1.2.1.5 Identify and/or use properties of pyramids and prisms.
G.1.3.1.1 Identify and/or use properties of congruent and similar polygons or solids.
G.1.3.1.2 Identify and/or use proportional relationships in similar figures.
G.1.3.2.1 Write, analyze, complete, or identify formal proofs (e.g., direct and/or indirect proofs/proofs by contradiction).
G.2.1.1.1 Use the Pythagorean theorem to write and/or solve problems involving right triangles.
G.2.1.1.2 Use trigonometric ratios to write and/or solve problems involving right triangles.
G.2.1.2.1 Calculate the distance and/or midpoint between two points on a number line or on a coordinate plane.
G.2.1.2.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic equations).
G.2.1.2.3 Use slope, distance, and/or midpoint between two points on a coordinate plane to establish properties of a two-dimensional shape.
G.2.2.1.1 Use properties of angles formed by intersecting lines to find the measures of missing angles.
G.2.2.1.2 Use properties of angles formed when two parallel lines are cut by a transversal to find the measures of missing angles.
G.2.2.2.1 Estimate area, perimeter, or circumference of an irregular figure.
G.2.2.2.2 Find the measurement of a missing length, given the perimeter, circumference, or area.
G.2.2.2.3 Find the side lengths of a polygon with a given perimeter to maximize the area of the polygon.
G.2.2.2.4 Develop and/or use strategies to estimate the area of a compound/composite figure.
G.2.2.2.5 Find the area of a sector of a circle.
G.2.2.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, and area (e.g., How does changing the length of the radius of a circle affect the circumference of the circle?).
G.2.3.1.1 Calculate the surface area of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet.
G.2.3.1.2 Calculate the volume of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet.
G.2.3.1.3 Find the measurement of a missing length given the surface area or volume.
G.2.3.2.1 Describe how a change in the linear dimension of a figure affects its surface area or volume (e.g., How does changing the length of the edge of a cube affect the volume of the cube?).

KEY COURSE TEXT AND MATERIALS: Geometry by Carter, Cuevas, Day, and Malloy (McGraw Hill)

KEY ASSESSMENTS:
Diagnostic: Keystone Algebra I Exam, PVAAS data
Formative: Concept quizzes, exit tickets, graded assignments

Summative: Unit tests, half-chapter quizzes, final exam

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Unit: Tools of Geometry	CC.2.3.HS.A.11 CC.2.3.HS.A.13	G.1.1.1.1 G.2.1.2.1 G.2.1.2.3 G.2.2.1.1	Quizzes Homework Checks Graded Assignment Bellringers Exit Tickets	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	19 Days
Unit: Parallel & Perpendicular Lines	CC.2.3.HS.A.3	G.2.1.2.2 G.2.2.1.1 G.2.2.1.2	Quizzes Unit Exam Homework Checks Graded Assignment Bellringers Exit Tickets SAT Prep Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	23 Days
Unit: Congruent Triangles	CC.2.3.HS.A.13	G.1.2.1.1 G.1.2.1.3	Quizzes Unit Exam Homework Checks Bellringers Exit Tickets	Textbook assignments, teacher created materials. All materials will be posted on Google	12 Days

			Open Ended Response	Classroom.	
Unit: Relationships in Triangles	CC.2.3.HS.A.13	G.1.2.1.1	Quizzes Homework Checks Graded Assignment Bellringers Exit Tickets Open Ended Response	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12 Days
Unit: Quadrilaterals	CC.2.3.HS.A.13	G.1.2.1.2	Quizzes Unit Exam Homework Checks Graded Assignment Bellringers Exit Tickets Open Ended Response	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	22 Days
Unit: Proportions & Similarity	CC.2.3.HS.A.1 CC.2.3.HS.A.2 CC.2.3.HS.A.5 CC.2.3.HS.A.6	G.1.3.1.1 G.1.3.1.2	Quizzes Chapter Exam Homework Checks Q & A Check Understandings	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	15 Days
Unit: Right Triangles and Trigonometry	CC.2.3.HS.A.1 CC.2.3.HS.A.2 CC.2.3.HS.A.5 CC.2.3.HS.A.6 CC.2.3.HS.A.7	G.1.2.1.1 G.1.3.1.2 G.2.1.1.1 G.2.1.1.2	Quizzes Chapter Exam Homework Checks Q & A	Textbook assignments, teacher created materials. All materials will be	20 Days

	CC.2.3.HS.A.9 CC.2.3.HS.A.13		Check Understandings	posted on Google Classroom.	
Unit: Transformation & Symmetry	CC.2.3.HS.A.2	G.1.3.1.1 G.1.3.1.2	Unit Quiz Homework Checks Bellringers Exit Tickets	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	8 Days
Unit: Circles	CC.2.3.HS.A.8 CC.2.3.HS.A.9 CC.2.3.HS.A.13	G.1.1.1.1 G.1.1.1.2 G.1.1.1.3 G.2.1.1.1 G.2.2.1.1 G.2.2.2.2	Quizzes Unit Exam Homework Checks Graded Assignment Bellringers Exit Tickets SAT Prep Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	20 Days
Unit: Areas of Polygons and Circles	CC.2.3.HS.A.3 CC.2.3.HS.A.8 CC.2.3.HS.A.9 CC.2.3.HS.A.13	G.1.1.1.2 G.1.2.1.1 G.1.2.1.4 G.2.2.2.2 G.2.2.2.4 G.2.2.2.5	Quizzes Unit Exam Homework Checks Bellringers Exit Tickets SAT Prep Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12 Days
Unit: Surface Area and Volume	CC.2.3.HS.A.14	G.1.1.1.4 G.1.2.1.4 G.1.2.1.5 G.2.2.2.4 G.2.3.1.1 G.2.3.1.3 G.2.3.2.1	Quizzes Unit Exam Homework Checks Graded Assignment Bellringers Exit Tickets	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12 Days

Danville Area School District
Course Overview and Scope and Sequence

Course Title: Keystone Geometry Honors
Content Area: Mathematics
Grade Level: Grades 9 - 11
Date Developed: June 2023

COURSE OVERVIEW: Course topics focus on the Pennsylvania state Keystone anchors, as well as selected SAT content domains, and include, but are not limited to, angles and segments, an in-depth study of two-column proofs, parallel lines, triangles and their congruence and similarity, parallelograms and other polygons, circles, area and volume, transformations, and the application of basic trigonometric functions. Students will be required to complete honors level work at a pace designed to prepare them for additional honors caliber and advanced placement coursework. Enrichment will occur through in-depth analysis of all topics as well as acceleration towards trigonometric skills. Prerequisites: Successful completion of Keystone Algebra I. Student data such as CDT's and PVAAS may also be utilized for placement.

ANCHOR STANDARDS:
CC.2.3.HS.A.1 Use geometric figures and their properties to represent transformations in the plane.
CC.2.3.HS.A.2 Apply rigid transformations to determine and explain congruence.
CC.2.3.HS.A.3 Verify and apply geometric theorems as they relate to geometric figures.
CC.2.3.HS.A.5 Create justifications based on transformations to establish similarity of plane figures.
CC.2.3.HS.A.6 Verify and apply theorems involving similarity as they relate to plane figures.
CC.2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles.
CC.2.3.HS.A.8 Apply geometric theorems to verify properties of circles.
CC.2.3.HS.A.9 Extend the concept of similarity to determine arc lengths and areas of sectors of circles.
CC.2.3.HS.A.11 Apply coordinate geometry to prove simple geometric theorems algebraically.
CC.2.3.HS.A.12 Explain volume formulas and use them to solve problems.
CC.2.3.HS.A.13 Analyze relationships between two-dimensional and three-dimensional objects.
CC.2.3.HS.A.14 Apply geometric concepts to model and solve real world problems.

G.1.1.1.1 Identify, determine, and/or use the radius, diameter, segment, and/or tangent of a circle.
G.1.1.1.2 Identify, determine, and/or use the arcs, semicircles, sectors, and/or angles of a circle.
G.1.1.1.3 Use chords, tangents, and secants to find missing arc measures or missing segment measures.
G.1.1.1.4 Identify and/or use the properties of a sphere or cylinder.
G.1.2.1.1 Identify and/or use properties of triangles.
G.1.2.1.2 Identify and/or use properties of quadrilaterals.
G.1.2.1.3 Identify and/or use properties of isosceles and equilateral triangles.
G.1.2.1.4 Identify and/or use properties of regular polygons.
G.1.2.1.5 Identify and/or use properties of pyramids and prisms.
G.1.3.1.1 Identify and/or use properties of congruent and similar polygons or solids.
G.1.3.1.2 Identify and/or use proportional relationships in similar figures.
G.1.3.2.1 Write, analyze, complete, or identify formal proofs (e.g., direct and/or indirect proofs/proofs by contradiction).
G.2.1.1.1 Use the Pythagorean theorem to write and/or solve problems involving right triangles.
G.2.1.1.2 Use trigonometric ratios to write and/or solve problems involving right triangles.
G.2.1.2.1 Calculate the distance and/or midpoint between two points on a number line or on a coordinate plane.
G.2.1.2.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic equations).
G.2.1.2.3 Use slope, distance, and/or midpoint between two points on a coordinate plane to establish properties of a two-dimensional shape.
G.2.2.1.1 Use properties of angles formed by intersecting lines to find the measures of missing angles.
G.2.2.1.2 Use properties of angles formed when two parallel lines are cut by a transversal to find the measures of missing angles.
G.2.2.2.1 Estimate area, perimeter, or circumference of an irregular figure.
G.2.2.2.2 Find the measurement of a missing length, given the perimeter, circumference, or area.
G.2.2.2.3 Find the side lengths of a polygon with a given perimeter to maximize the area of the polygon.
G.2.2.2.4 Develop and/or use strategies to estimate the area of a compound/composite figure.
G.2.2.2.5 Find the area of a sector of a circle.
G.2.2.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, and area (e.g., How does changing the length of the radius of a circle affect the circumference of the circle?).
G.2.3.1.1 Calculate the surface area of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet.
G.2.3.1.2 Calculate the volume of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet.
G.2.3.1.3 Find the measurement of a missing length given the surface area or volume.
G.2.3.2.1 Describe how a change in the linear dimension of a figure affects its surface area or volume (e.g., How does changing the length of the edge of a cube affect the volume of the cube?).

KEY COURSE TEXT AND MATERIALS: Geometry by Carter, Cuevas, Day, and Malloy (McGraw Hill)

KEY ASSESSMENTS:
Diagnostic: Keystone Algebra I Exam, PVAAS data
Formative: Concept quizzes, exit tickets, graded assignments
Summative: Unit tests, half-chapter quizzes, final exam

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Unit: Tools of Geometry	CC.2.3.HS.A.11 CC.2.3.HS.A.13	G.1.1.1.1 G.2.1.2.1 G.2.1.2.3 G.2.2.1.1	Quizzes Homework Checks Graded Assignment Bellringers Exit Tickets	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	19 Days
Unit: Parallel & Perpendicular Lines	CC.2.3.HS.A.3	G.2.1.2.2 G.2.2.1.1 G.2.2.1.2	Quizzes Unit Exam Homework Checks Graded Assignment Bellringers Exit Tickets Open Ended Response	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	23 Days

Unit: Congruent Triangles	CC.2.3.HS.A.13	G.1.2.1.1 G.1.2.1.3	Quizzes Unit Exam Homework Checks Graded Assignment Bellringers Exit Tickets Open Ended Response	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12 Days
Unit: Relationships in Triangles	CC.2.3.HS.A.13	G.1.2.1.1	Quizzes Homework Checks Graded Assignment Bellringers Exit Tickets Open Ended Response	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12 Days
Unit: Quadrilaterals	CC.2.3.HS.A.13	G.1.2.1.2	Quizzes Unit Exam Homework Checks Graded Assignment Bellringers Exit Tickets Open Ended Response	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	22 Days
Unit: Proportions & Similarity	CC.2.3.HS.A.1 CC.2.3.HS.A.2 CC.2.3.HS.A.5 CC.2.3.HS.A.6	G.1.3.1.1 G.1.3.1.2	Quizzes Chapter Exam Homework Checks Q & A Check Understandings	Textbook assignments, teacher created materials. All materials will be posted on Google	15 Days

				Classroom.	
Unit: Right Triangles and Trigonometry	CC.2.3.HS.A.1 CC.2.3.HS.A.2 CC.2.3.HS.A.5 CC.2.3.HS.A.6 CC.2.3.HS.A.7 CC.2.3.HS.A.9 CC.2.3.HS.A.13	G.1.2.1.1 G.1.3.1.2 G.2.1.1.1 G.2.1.1.2	Quizzes Chapter Exam Homework Checks Q & A Check Understandings	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	20 Days
Unit: Transformation & Symmetry	CC.2.3.HS.A.2	G.1.3.1.1 G.1.3.1.2	Unit Quiz Homework Checks Bellringers Exit Tickets	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	8 Days
Unit: Circles	CC.2.3.HS.A.8 CC.2.3.HS.A.9 CC.2.3.HS.A.13	G.1.1.1.1 G.1.1.1.2 G.1.1.1.3 G.2.1.1.1 G.2.2.1.1 G.2.2.2.2	Quizzes Unit Exam Homework Checks Graded Assignment Bellringers Exit Tickets SAT Prep Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	20 Days
Unit: Areas of Polygons and Circles	CC.2.3.HS.A.3 CC.2.3.HS.A.8 CC.2.3.HS.A.9 CC.2.3.HS.A.13	G.1.1.1.2 G.1.2.1.1 G.1.2.1.4 G.2.2.2.2 G.2.2.2.4 G.2.2.2.5	Quizzes Unit Exam Homework Checks Bellringers Exit Tickets SAT Prep Assignment	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12 Days

Unit: Surface Area and Volume	CC.2.3.HS.A.14	G.1.1.1.4 G.1.2.1.4 G.1.2.1.5 G.2.2.2.4 G.2.3.1.1 G.2.3.1.3 G.2.3.2.1	Quizzes Unit Exam Homework Checks Graded Assignment Bellringers Exit Tickets Open Ended Response	Textbook assignments, teacher created materials. All materials will be posted on Google Classroom.	12 Days

Danville Area School District
Course Overview and Scope and Sequence

Course Title: Keystone Algebra 2
Content Area: Math
Grade Level:
Date Developed: June 2023

COURSE OVERVIEW: This course is the last of three Algebra courses. This course is aligned to the Pennsylvania Keystone Assessment Anchors, focuses on complex numbers, solving/graphing quadratic equations, solving/graphing exponential and logarithmic equations, solving/graphing rational equations, applications of functions, simplifying racial expressions, solving radical equations, sequences and series, and probability. Prerequisites: Successful completion of Keystone Algebra I and successful completion of Keystone Geometry. (Keystone Geometry may be taken concurrently.)

ANCHOR STANDARDS:
A2.1.2.1.2 Simplify/evaluate expressions involving positive and negative exponents and/or roots.
A2.1.3.2.2 Use algebraic processes to solve a formula for a given variable.
A2.2.1.1.3 Determine the domain, range, or inverse of a relation.
A2.2.2.2.1 Identify or describe the effect of changing parameters within a family of functions (e.g., $y = x^2$ and $y = x^2 + 3$)
A2.1.2.1.1 Simplify/evaluate expressions involving multiplying with exponents, powers of powers, and powers of products.
A2.2.1.1.4 Identify and/or determine the characteristics of an exponential, quadratic, or polynomial function.
A2.2.2.1.4 Translate a polynomial, exponential, or logarithmic function from one representation to another (graph, table, and equation).
A2.1.2.2.1 Factor algebraic expressions, including difference of squares and trinomials.
A2.1.3.1.1 Write and/or solve quadratic equations.
A2.1.1.1.1 Simplify/write square roots in terms of *i*.
A2.1.2.1.3 Simplify/evaluate expressions involving positive and negative exponents and/or roots.
A2.1.2.1.3 Simplify/evaluate expressions involving multiplying with exponents, powers of powers, and powers of products.

A2.1.2.2.2 Simplify rational algebraic expressions. A2.1.1.1.1 Simplify/write square roots in terms of *i*. A2.1.1.1.2 Simplify/evaluate expressions involving powers of *i*. A2.1.1.2.1 Add and subtract complex numbers. A2.1.1.2.2 Multiply and divide complex numbers.. A2.1.3.1.2 Solve equations involving rational and/or radical expressions.
KEY COURSE TEXT AND MATERIALS:
KEY ASSESSMENTS: Diagnostic: Formative: Summative:

SCOPE AND SEQUENCE				
Unit	STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Unit 1: Chapter 1-Equations and Inequalities	A2.1.2.1.2 A2.1.3.2.2	Evaluating Expressions and Solving Equations Quiz Solving and Graphing Inequalities Quiz	Chapter 1 Powerpoint notes Textbook Whiteboards/Chalk boards Calculators Worksheets Assessments	12 Days

Unit 2: Chapter 2-Functions, Equations, and Graphs (Equations of Lines)	A2.2.1.1.3 A2.2.2.2.1	Graded Assignment on Equations of Lines and Inequalities Functions, Domain and Range, Function Notation, and Absolute Value Functions and Inequalities Quiz	Chapter 2 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	17 Days
Unit 3: Chapter 3-Systems of Equations and Inequalities		Solving Systems of Equations Quiz Linear Programming Graded Assignment (collected as part of the Chapter 3 Test Chapter 3 Test	Chapter 3 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	15 Days
Unit 4: Chapter 4 Quadratic Functions and Relations	A2.1.2.1.1 A2.2.1.1.4 A2.2.2.1.4 A2.2.2.2.1 A2.1.2.2.1 A2.1.3.1.1 A2.1.1.1.1 A2.1.2.1.3	Graphing Quadratics Quiz Factoring Quiz Solving Quadratics Quiz Completing the Square Quiz Chapter 4 Test	Chapter 4 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	30 Days

Unit 5: Chapter 5- Polynomials and Polynomial Functions	A2.1.2.1.3 A2.1.2.2.2 A2.2.1.1.4	Polynomial Operations Quiz Polynomial Functions Quiz Solving Polynomials by Factoring Quiz Chapter 5 Test	Chapter 5 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	25 Days
Unit 6 Chapter 6, Part 1 Radical Functions and Equations	A2.1.2.1.2 A2.1.1.1.1 A2.1.1.1.2 A2.1.1.2.2 A2.1.1.2.1 A2.2.1.1.3 A2.2.2.2.1 A2.1.3.1.2	Radical Operations Quiz 6-3 Skills Practice Graded Worksheet Graded Assignment on Rational Exponents using the Roots, Radicals, and Exponents Worksheet Solving Radical Equations and Inequalities Graded Assignment Chapter 6, Part 1 Test	Chapter 6 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	27 Days

Unit 7: Chapter 6, Part 2-Functions and Inverses	A2.2.1.1.3	Function Operations Worksheet as a Graded Assignment Function Operations and Inverses Graded Assignment	Chapter 6 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	7 Days
Unit 8: Chapter 8 - Rational Functions and Equations	A2.2.1.1.3 A2.1.2.2.2 A2.2.2.2.1	Rational Expressions Quiz Solving Rational Equations Graded Assignment Graphing Rational Functions Quiz Solving Rational Inequalities Graded Assignment	Chapter 8 Powerpoint notes Textbook Whiteboards/Chalkboards Calculators Worksheets Assessments	19 Days