Algebra II

Mathematics

Curriculum Guide

Developed: June 2016

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Vivian Valencia, Instructional Coach

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Mathematics Resources

Adopted Resources

9-12 *2013-2018*	**College Preparatory Math** **Website:** **http://cpm.org/**	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent Nancy Suazo, EVHS Department Chair Maria Mejia, CPM Account Manager

Mathematics Resources
Supplemental Curriculum Resources

| 9-12 | *Khan Academy*
Website: https://www.khanacademy.org/

Edgenuity
Website: https://learn.education2020.com/

Interactive Mathematics Program
Website: http://mathimp.org/

Teacher Tube
Website: http://www.teachertube.com/

ThatQuiz
Website: http://www.thatquiz.org/

Engage New York
Website: https://www.engageny.org/resource/regents-exams-mathematics- algebra-ii-sample-questions

Other On-Line Resources
  • https://www.illustrativemathematics.org/
  • http://www.insidemathematics.org/
  • http://greatminds.net/maps/math/home
  • http://curtismapper.pic.ucla.edu/MapApp/app/#/map
  • http://www.livebinders.com/play/play?id=953710#anchor
  • https://hcpss.instructure.com/courses/1609
  • http://www.ccsstoolbox.org/standards_content_mathematics.html
  • http://nrich.maths.org/frontpage
  • http://www.livebinders.com/play/play?id=1053386
  • http://www.ode.state.or.us/search/page/?id=4306
  • http://www.engageny.org
  • **www.kutasoftware.com**
  • **www.thatquiz.com** | **Office of Curriculum, Instruction & Assessment**
Myra L. Martinez, Associate Superintendent

Nancy Suazo, EVHS Department Chair
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Larry DeAguerro, Federal Programs (Title I)
Deirdra Montoya, Special Education Director
TBA, Assessment & RtI Facilitator |

Mathematics Resources
Adopted Curriculum

Grade Band	Resource	District Contact:
9-12	**Core Assessments** College Preparatory Math (CPM)	Nancy Suazo, Math Department Chair
9-12	**Supplemental Assessments** Common Core Coach Algebra II	Nancy Suazo, Math Department Chair
2-12	**STAR Math**	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach **Assessment Contact:** TBA, Assessment & RtI Facilitator
3-11	**PARCC**	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach **Assessment Contact:** TBA, Assessment & RtI Facilitator
7-12	**End of Course Exams (EoC)**	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach **Assessment Contact:** TBA, Assessment & RtI Facilitator

Grade Band	Resource	District Contact
Pre K *2013-2018*	**Creative Classroom** **Website:**	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Pre K Coordinator
K -6 *2013-2018*	 **Website:** www.pearsonsuccessnet.com	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach

Mathematics Resources
Adopted Curriculum

7-8 *2013-2018*	**College Preparatory Math (CPM)** **CPM teacher log in:** http://textbooks.cpm.org/?238090954324249223 **CPM student log in:** http://en8467.textbooks.cpm.org/?409553627727330301	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent Robert Quiñonez, CFVMS Assistant Principal
9-12 *2013-2018*	**College Preparatory Math (CPM)** **CPM teacher log in:** http://textbooks.cpm.org/?238090954324249223 **CPM student log in:** http://en8467.textbooks.cpm.org/?409553627727330301	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent Nancy Suazo, EVHS Department Chair

Mathematics Resources
Supplemental Curriculum Resources

Grade Band	Resource	District Contact:
Pre K *2016-2021*	***Insert Resource*** **Website:** Insert ***Insert Resource*** **Website:** Insert	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Pre K Coordinator Larry DeAguerro, Federal Programs (Title I) Deirdra Montoya, Special Education Director TBA, Assessment & RtI Facilitator
K -6 *2016-2021*	***Insert Resource*** **Website:** Insert ***Insert Resource*** **Website:** Insert	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach Larry DeAguerro, Federal Programs (Title I) Deirdra Montoya, Special Education Director TBA, Assessment & RtI Facilitator
7-8 *2016-2021*	***Insert Resource*** **Website:** Insert Edgenuity **Website:** Insert	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent Robert Quiñonez, CFVMS Assistant Principal Insert Name, Edgenuity Administrator Larry DeAguerro, Federal Programs (Title I) Deirdra Montoya, Special Education Director TBA, Assessment & RtI Facilitator
9-12 *2015-2020*	***Insert Resource*** **Website:** Edgenuity **Website:** Insert	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent Insert Name, EVHS Department Chair Insert Name, Edgenuity Administrator Larry DeAguerro, Federal Programs (Title I) Deirdra Montoya, Special Education Director TBA, Assessment & RtI Facilitator

Grade Band	Resource	District Contact:
Pre K *2016-2021*	***Insert Resource*** **Website:** Insert	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Pre K

Curriculum Resources
Supplemental Curriculum Assessments

	  PreK Observation & Portfolios	Coordinator **Assessment Contact:** TBA, Assessment & RtI Facilitator
K-1	**Envisions:** **Topic Book Assessments** **Topic Mat Assessments** **Renaissance Learning:** **STAR EARLY LITERACY (Numeracy)** **https://hosted39.renlearn.com/258790/default.aspx**	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach **Assessment Contact:** TBA, Assessment & RtI Facilitator
2-12	**Envisions:** **Topic Book Assessments** **Topic Mat Assessments (2nd)** **Renaissance Learning:** **STARMath** **https://hosted39.renlearn.com/258790/default.aspx**	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach **Assessment Contact:** TBA, Assessment & RtI Facilitator
3-11	**PARCC** 	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach **Assessment Contact:** TBA, Assessment & RtI Facilitator

7-12	**End of Course Exams (EoC)** NMPED Public Education Department **College Prepatory Math (CPM)** CPM **CPM teacher log in:** http://textbooks.cpm.org/?238090954324249223 **CPM student log in:** http://en8467.textbooks.cpm.org/?409553627727330301	**Office of Curriculum, Instruction & Assessment** Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach **Assessment Contact:** TBA, Assessment & RtI Facilitator

At A Glance Pacing Guide
Algebra II

UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	Resources (Core & Supplemental)	Assessments (Formative & Summative)
0. Expressions and Equations **Aug 16 – Sept 23**	• Perform arithmetic operations on polynomials. • Extend the properties of exponents to rational exponents. • Reason quantitatively and use units to solve problems. • Solve equations and inequalities in one variable. • Understand the concept of a function and use function notation. • Interpret expressions from functions in terms of the situation they model.	CC.9-12.N.RN.1 Extend the properties of exponents to rational exponents. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define $5^{1/3}$ to be the cube root of 5 because we want $[5^{1/3}]^3 = 5^{[(1/3) \times 3]}$ to hold, so $[5^{1/3}]^3$ must equal 5. CC.9-12.N.RN.2 Extend the properties of exponents to rational exponents. Rewrite expressions involving radicals and rational exponents using the properties of exponents. CC.9-12.N.Q.1 Reason quantitatively and use units to solve problems. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.* CC.9-12.N.Q.2 Reason quantitatively and use units to solve problems. Define appropriate quantities for the purpose of descriptive modeling.* CC.9-12.N.Q.3 Reason quantitatively and use units to solve problems. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.* CC.9-12.A.APR.1 Perform arithmetic operations on polynomials. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. CC.9-12.A.REI.4a Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x – p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. CC.9-12.A.REI.4b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the	**Core**: Adopted College Preparatory Mathematics **Chapter I Investigations and Functions** **Chapter 2 Transformations of Parent Graphs** **Chapter 3: Equivalent Forms** **A.2.3 Recursive Sequences** **Supplemental**: Interactive Mathematics Program Year 2: All About Alice, Solve It Year 3: Fireworks Year 4: World of Functions Triumph Learning **PARCC High School Algebra II Flashcard Study System** The Official ACT Prep	**Formative:** **College Preparatory Mathematics Math Task** 1.1.3, 1.1.4, 1.2.2 2.1.4, 2.1.5, 2.2.1, 2.2.2, 2.2.3, 3.1.1, 3.2.1, 3.2.3,3.2.4, 3.2.5 **Summative:** Common Core Coach Algebra II Assessment

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UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	Resources (Core & Supplemental)	Assessments (Formative & Summative)
		quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. CC.9-12.F.IF.1 Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x). CC.9-12.F.IF.2 Understand the concept of a function and use function notation. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. CC.9-12.F.IF.3 Understand the concept of a function and use function notation. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1 (n is greater than or equal to 1). CC.9-12.F.LE.5 Construct and compare linear, quadratic, and exponential models and solve problems. Interpret the parameters in a linear or exponential function in terms of a context.*	Guide 2016-2017 Making Number Talks Matter Engage New York www.engagenewyork.com Khan Academy www.kahnacademy.com Teachertube www.teachertube.com Thatquiz www.thatquiz.com	
1. Polynomial, Rational, and Radical Relationships	• Perform arithmetic operations with complex numbers. • Use complex numbers in polynomial	CC.9-12.N.CN.1 Perform arithmetic operations with complex numbers. Know there is a complex number i such that i^2 = −1, and every complex number has the form a + bi with a and b real. CC.9-12.N.CN.2 Perform arithmetic operations with complex numbers. Use the relation i^2 = −1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. CC.9-12.N.CN.7 Use complex numbers in polynomial identities and	**Core**: Adopted College Preparatory Mathematics (CPM) **Chapter 8: Polynomials** **Supplemental:** Interactive Mathematics	**Formative: College Preparatory Mathematics Math Task** 8.1.1, 8.1.2, 8.1.3, 8.2.1, 8.2.2, 8.2.3,

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UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	Resources (Core & Supplemental)	Assessments (Formative & Summative)
Sep 26 – Nov 22	identities and equations. • Interpret the structure of expressions. • Write expressions in equivalent forms to solve problems. • Understand the relationship between zeroes and factors of polynomials. • Use polynomial identities to solve problems. • Rewrite rational expressions. • Understand solving equations as a process of reasoning and explain the reasoning. • Represent and solve equations and inequalities graphically. • Analyze functions using different representations.	equations. Solve quadratic equations with real coefficients that have complex solutions. CC.9-12.N.CN.8 (+) Use complex numbers in polynomial identities and equations. Extend polynomial identities to the complex numbers. For example, rewrite $x^2 + 4$ as $(x + 2i)(x – 2i)$. CC.9-12.N.CN.9 (+) Use complex numbers in polynomial identities and equations. Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials. CC.9-12.A.SSE.1 Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context.* CC.9-12.A.SSE.1a Interpret parts of an expression, such as terms, factors, and coefficients.* CC.9-12.A.SSE.1b Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.* CC.9-12.A.SSE.2 Interpret the structure of expressions. Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 – y^4$ as $(x^2)^2 – (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 – y^2)(x^2 + y^2)$. CC.9-12.A.SSE.4 Write expressions in equivalent forms to solve problems. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments.* CC.9-12.A.APR.2 Understand the relationship between zeros and factors of polynomial. Know and apply the Remainder Theorem: For a polynomial p(x) and a number a, the remainder on division by x – a is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x). CC.9-12.A.APR.3 Understand the relationship between zeros and factors of polynomials. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	Program Year 3: Fireworks Triumph Learning Common Core Coach Algebra 2 The Official ACT Prep Guide 2016-2017 **PARCC High School Algebra II Flashcard Study System** Making Number Talks Matter Engage New York www.engagenewyork.com Khan Academy Teachertube Thatquiz	8.3.1, 8.3.2, 8.3.3 **Summative:** Common Core Coach Algebra 2 Assessments

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UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	Resources (Core & Supplemental)	Assessments (Formative & Summative)
		CC.9-12.A.APR.4 Use polynomial identities to solve problems. Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 – y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples. CC.9-12.A.APR.5 (+) Use polynomial identities to solve problems. Know and apply that the Binomial Theorem gives the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. (The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.) CC.9-12.A.APR.6 Rewrite rational expressions. Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system. CC.9-12.A.APR.7 (+) Rewrite rational expressions. Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions. CC.9-12.A.REI.2 Understand solving equations as a process of reasoning and explain the reasoning. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.		
2. Modeling with Functions	• Create equations that describe numbers or relationships. • Interpret functions that arise in	CC.9-12.A.CED.1 Create equations that describe numbers or relationship. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.* CC.9-12.A.CED.2 Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on	**Core: Adopted** College Preparatory Mathematics (CPM) **Chapter 3: Equivalent Forms**	**Formative: College Preparatory Mathematics** 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3,

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UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	Resources (Core & Supplemental)	Assessments (Formative & Summative)
Nov 28 – Jan 31	applications in terms of context. • Analyze functions using different representations. • Build a function that models a relationship between two quantities. • Build new functions from existing functions. • Construct and compare linear, quadratic, and exponential models and solve problems. • Solve systems of equations.	coordinate axes with labels and scales.* CC.9-12.A.CED.3 Create equations that describe numbers or relationship. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.* CC.9-12.A.CED.4 Create equations that describe numbers or relationship. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.* CC.9-12.A.REI.5 Solve systems of equations. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. CC.9-12.A.REI.6 Solve systems of equations. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. CC.9-12.F.IF.4 Interpret functions that arise in applications in terms of the context. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* CC.9-12.F.IF.5 Interpret functions that arise in applications in terms of the context. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.* CC.9-12.F.IF.6 Interpret functions that arise in applications in terms	**Chapter 4: Solving and Intersections** **Supplemental**: Interactive Mathematics Program Year 2: Solve It Year 3: Meadows or Malls Triumph Learning Common Core Coach Algebra 2 The Official ACT Prep Guide 2016-2017 **PARCC High School Algebra II Flashcard Study System** Making Number Talks Matter Engage New York Khan Academy Teachertube Thatquiz	3.2.4, 3.2.5 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4 **Summative:** Common Core Coach Algebra 2 Assessments

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		of the context. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*		
		CC.9-12.F.IF.7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.*		
		CC.9-12.F.IF.7e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.*		
		CC.9-12.F.IF.8 Analyze functions using different representations. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.		
		CC.9-12.F.IF.8a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.		
		CC.9-12.F.IF.8b Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{(12t)}$, $y = (1.2)^{(t/10)}$, and classify them as representing exponential growth and decay.		
		CC.9-12.F.IF.9 Analyze functions using different representations. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.		
		CC.9-12.F.BF.1b Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.		
		CC.9-12.F.BF.3 Build new functions from existing functions. Identify		

UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	Resources (Core & Supplemental)	Assessments (Formative & Summative)
		the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them. CC.9-12.F.BF.4 Build new functions from existing functions. Find inverse functions. CC.9-12.F.BF.4a Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. For example, f(x) =2(x^3) or f(x) = (x+1)/(x-1) for x ≠ 1 (x not equal to 1). CC.9-12.F.BF.4b (+) Verify by composition that one function is the inverse of another. CC.9-12.F.BF.4c (+) Read values of an inverse function from a graph or a table, given that the function has an inverse. CC.9-12.F.BF.4d (+) Produce an invertible function from a non-invertible function by restricting the domain. CC.9-12.F.LE.4 Construct and compare linear, quadratic, and exponential models and solve problems. For exponential models, express as a logarithm the solution to ab^(ct) = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.*		
3. Trigonometric Functions	• Extend the domain of trigonometric functions using the unit circle. • Model periodic phenomena with trigonometric	CC.9-12.F.TF.1 Extend the domain of trigonometric functions using the unit circle. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. CC.9-12.F.TF.2 Extend the domain of trigonometric functions using the unit circle. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle. CC.9-12.F.TF.5 Model periodic phenomena with trigonometric	**Core**: Adopted College Preparatory Mathematics (CPM) **Chapter 7: Trigonometric Functions** **Chapter 12: Analytic**	**Formative: College Preparatory Mathematics Math Task** 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, 7.1.6,

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Feb 1 – Mar 17	<mark>functions.</mark> • <mark>Prove and apply trigonometric identities.</mark>	functions. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.* CC.9-12.F.TF.8 Prove and apply trigonometric identities. Prove the Pythagorean identity $(\sin A)^2 + (\cos A)^2 = 1$ and use it to find sin A, cos A, or tan A, given sin A, cos A, or tan A, and the quadrant of the angle.	**Trigonometry** **Supplemental**: Interactive Mathematics Program Year 4: High Dive The Official ACT Prep Guide 2016-2017 **PARCC High School Algebra II Flashcard Study System** Triumph Learning Common Core Coach, Algebra 2 Making Number Talks Matter Engage New York Khan Academy Teachertube Thatquiz	7.1.7,7.2.1, 7.2.2, 7.2.3, 7.2.4 12.1.3, 12.1.4, 12.2.1, 12.2.2, 12.2.3 **Summative:** Common Core Coach Algebra 2 Assessments

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4. Inferences and Conclusions from Data Mar 20 – Apr 21	• Summarize, represent, and interpret data on single count or measurement variable. • Understand and evaluate random processes underlying statistical experiments. • Make inferences and justify conclusions from sample surveys, experiments, and observational studies. • Summarize, represent, and interpret data on two categorical and quantitative variables. • Understand independence and conditional probability and use them to interpret data. • Use the rules of	CC.9-12.S.IC.6 Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Evaluate reports based on data.* CC.9-12.S.CP.1 Understand independence and conditional probability and use them to interpret data. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").* CC.9-12.S.CP.2 Understand independence and conditional probability and use them to interpret data. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.* CC.9-12.S.CP.3 Understand independence and conditional probability and use them to interpret data. Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.* CC.9-12.S.CP.4 Understand independence and conditional probability and use them to interpret data. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.* CC.9-12.S.CP.5 Understand independence and conditional probability and use them to interpret data. Recognize and explain the concepts of conditional probability and independence in	**Core**: Adopted College Preparatory Mathematics (CPM) **Chapter 9: Randomization and Normal Distributions** **Chapter 11: Simulating Sampling Variability** **Supplemental**: Interactive Mathematics Program Year 1: Game of Pig Year 3: Pennant Fever Year 4: Is There Really a Difference? Triumph Learning Common Core Coach Algebra 2 The Official ACT Prep Guide 2016-2017 **PARCC High School Algebra II Flashcard Study System** Making Number Talks Matter Engage New York	**Formative:** **College Preparatory Mathematics Math Task** 9.2.1, 9.2.2 11.1.1, 11.1.2, 11.1.3 **Summative:** Common Core Coach Algebra 2 Assessments

UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	Resources (Core & Supplemental)	Assessments (Formative & Summative)
	probability to compute probabilities of compound events in a uniform probability model.	everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.* CC.9-12.S.CP.6 Use the rules of probability to compute probabilities of compound events in a uniform probability model. Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.* CC.9-12.S.CP.7 Use the rules of probability to compute probabilities of compound events in a uniform probability model. Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answer in terms of the model.* CC.9-12.S.CP.8 (+) Use the rules of probability to compute probabilities of compound events in a uniform probability model. Apply the general Multiplication Rule in a uniform probability model, P(A and B) = [P(A)]x[P(B|A)] =[P(B)]x[P(A|B)], and interpret the answer in terms of the model.* CC.9-12.S.CP.9 (+) Use the rules of probability to compute probabilities of compound events in a uniform probability model. Use permutations and combinations to compute probabilities of compound events and solve problems.*	Khan Academy Teachertube Thatquiz	
5. Conics Apr 24 – May 19	• Translate between the geometric description and the equation for a conic section.	CC.9-12.G.GPE.1 Translate between the geometric description and the equation for a conic section. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	**Core**: Adopted College Preparatory Mathematics (CPM) Geometry Volume 2 **Chapter 12: Conics and Closure** **Supplemental**: Interactive Mathematics Program Year 2: Orchard Hideout	**Formative: College Preparatory Mathematics Geometry Volume 2** 12.1.1, 12.1.2, 12.1.3, 12.1.4 **Summative:** Common Core Coach Algebra 2 Assessments

At A Glance Pacing Guide
Algebra II

UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	Resources (Core & Supplemental)	Assessments (Formative & Summative)
			Triumph Learning Common Core Coach Algebra 2 The Official ACT Prep Guide 2016-2017 **PARCC High School Algebra II Flashcard Study System** Making Number Talks Matter Engage New York Khan Academy Teachertube Thatquiz	

New Mexico Public Education Department

Assessment Blueprint

Mathematics: Algebra II

End-of-Course (EoC) Exam

Version 006

Spring 2015

Purpose Statement

Mathematics: Algebra II

The Algebra II End-of-Course assessment is designed to measure student proficiency of the Common Core State Standards pertaining to Algebra II. This course-level assessment is provided to all students who have completed Algebra II (STARS code 2041) or related courses. Intended as a final exam for the course, this is a summative assessment covering a wide range of content, skills, and applications. Scores are reported to the teacher, school, district, and state levels for the purposes of student grades, curriculum review, student graduation requirements, and the optional use for the Educator Effectiveness System.

Blueprint Table—Mathematics-Algebra II EoC

Based on CCSS High School: Algebra

(NOTE: Graphing calculators are essential tools for students to maximize their understanding of the content. Students should be allowed to use graphing calculators on the EoC)

Standard/ Content ID	Content Statement
N-RN.2	**Real number system** Rewrite expressions involving radicals and rational exponents using the properties of exponents.

A-SSE.2,3,4	**Seeing structure in expressions**
	2. Use the structure of an expression to identify ways to rewrite it. *For example, see x4 –y4 as (x2)2 – (y2)2, thus recognizing it as a difference of squares that can be factored as (x2 –y2)(x2 + y2).*
	3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
	    a. Factor a quadratic expression to reveal the zeros of the function it defines.
	    b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
	    c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression* 1.15t *can be rewritten as* (1.151/12)12t ≈ 1.01212t *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
	4. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.*

A-APR.2,3	**Arithmetic with polynomials and rational expressions** 2. Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$. 3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Standard/ Content ID	Content Statement
A-REI.2,11	**Reasoning with equations and inequalities** 2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. 11. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.
F-IF.4,6	**Interpreting functions** 4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* 6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

F-BF.1	**Building functions**
	1. Write a function that describes a relationship between two quantities.
	    a. Determine an explicit expression, a recursive process, or steps for calculation from a context.
	    b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*

S-IC.3,4, 6	**Making inferences and justifying conclusions** 3. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. 4. Use data from a sample survey to estimate a population mean or proportion; develop a

Standard/ Content ID	Content Statement
	margin of error through the use of simulation models for random sampling. 6. Evaluate reports based on data.

Algebra II EoC Reporting Category Alignment Framework					
Reporting Categories	Common Core Standard	DOK (Item number by DOK)			Grand Total
		1	2	3	
Reporting Category #1	N.RN.2		#1		1
	A.SSE.2	#2			1
	A.SSE.3		#3, #5,#19		3
	A.SSE.4			#23	1
Reporting Category #2	A.APR.2		#4		1
	A.APR.3	#6	#22	#7	3
Reporting Category #3	A.REI.2		#8, #9		2
	A.REI.11		#10, #11, #12		3
Reporting Category #4	F.IF.4	#13, #14	#15, #16		4
	F.IF.6			#20	1
	F.BF.1			#21	1
Reporting Category #5	S.IC.3	#17			1
	S.IC.4	#25	#18, #26		3
	S.IC.6			#24	1
Grand Total		6	15	5	26