SCANTRON®

AHSAA Homeschool Student Eligibility Exams Algebra II		
Standard Reference	**Standard Text**	**Percentage of Test Items**
N	Number and Quantity	29%
N-CN	The Complex Number System	
	Perform arithmetic operations with complex numbers.	
N-CN.1	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.	
N-CN.2	Use the relation $i^2 = –1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	
N-CN.3	Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.	
	Use complex numbers in polynomial identities and equations.	
N-CN.4	Solve quadratic equations with real coefficients that have complex solutions.	
N-CN.5	Extend polynomial identities to the complex numbers.	
N-CN.6	Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	
N-VM	Vector and Matrix Quantities	
	Perform operations on matrices and use matrices in applications.	
N-VM.7	Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.	
N-VM.8	Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.	
N-VM.9	Add, subtract, and multiply matrices of appropriate dimensions.	
N-VM.10	Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.	
N-VM.11	Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.	
A	Algebra	31%
A-SSE	Seeing Structure in Expressions	
	Interpret the structure of expressions	
A-SSE.12	Interpret expressions that represent a quantity in terms of its context.	
A-SSE.12.a	Interpret parts of an expression, such as terms, factors, and coefficients.	
A-SSE.12.b	Interpret complicated expressions by viewing one or more of their parts as a single entity.	
A-SSE.13	Use the structure of an expression to identify ways to rewrite it.	

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	Write expressions in equivalent forms to solve problems	
A-SSE.14	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.	
A-APR	Arithmetic with Polynomials and Rational Expressions	
	Perform arithmetic operations on polynomials	
A-APR.15	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.	
	Understand the relationship between zeros and factors of polynomials	
A-APR.16	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).	
A-APR.17	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.	
	Use polynomial identities to solve problems	
A-APR.18	Prove polynomial identities and use them to describe numerical relationships.	
	Rewrite rational expressions	
A-APR.19	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.	
A-CED	Creating Equations	
	Create equations that describe numbers or relationships	
A-CED.20	Create equations and inequalities in one variable and use them to solve problems.	
A-CED.21	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	
A-CED.22	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.	
A-CED.23	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	

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A-REI	Reasoning with Equations and Inequalities	
	Understand solving equations as a process of reasoning and explain the reasoning	
A-REI.24	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	
	Solve equations and inequalities in one variable	
A-REI.25	Recognize when the quadratic formula gives complex solutions, and write them as a ± bi for real numbers a and b.	
	Solve systems of equations	
A-REI.26	Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).	
	Represent and solve equations and inequalities graphically	
A-REI.27	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	Functions	29%
F-CS	Conic Sections	
	Understand the graphs and equations of conic sections.	
F-CS.28	Create graphs of conic sections, including parabolas, hyperbolas, ellipses, circles, and degenerate conics, from second-degree equations.	
F-CS.28.a	Formulate equations of conic sections from their determining characteristics.	
F-IF	Interpreting Functions	
	Interpret functions that arise in applications in terms of the context	
F-IF.29	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	
	Analyze functions using different representations	
F-IF.30	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	
F-IF.30.a	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	
F-IF.30.b	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	
F-IF.30.c	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	

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F-IF.31	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	
F-IF.32	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	
F-BF	Building Functions	
	Build a function that models a relationship between two quantities	
F-BF.33	Write a function that describes a relationship between two quantities.	
F-BF.33.a	Combine standard function types using arithmetic operations.	
	Build new functions from existing functions	
F-BF.34	Identify 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.	
F-BF.35	Find inverse functions.	
F-BF.35.a	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.	
F-LE	Linear, Quadratic, and Exponential Models	
	Construct and compare linear, quadratic, and exponential models and solve problems	
F-LE.36	For exponential models, express as a logarithm the solution to ab to the ct power = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.	
S	Statistics and Probability	11%
S-MD	Using Probability to Make Decisions	
	Use probability to evaluate outcomes of decisions	
S-MD.37	Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	
S-CP	Conditional Probability and the Rules of Probability	
	Understand independence and conditional probability and use them to interpret data	
S-MD.38	Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	
S-CP.39	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”).	
S-CP.40	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.	

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S-CP.41	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.	
S-CP.42	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.	
	Use the rules of probability to compute probabilities of compound events in a uniform probability model	
S-CP.43	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.	
S-CP.44	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.	
S-CP.45	Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B), and interpret the answer in terms of the model.	
S-CP.46	Use permutations and combinations to compute probabilities of compound events and solve problems.	