SCANTRON®

AHSAA Homeschool Student Eligibility Exams Algebra II with Trigonometry		
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	28%
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.	

Standard Reference	Standard Text	Percentage of Test Items
	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. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	
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.	

Standard Reference	Standard Text	Percentage of Test Items
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	32%
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.	

Standard Reference	Standard Text	Percentage of Test Items
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.	
F-TF	Trigonometric Functions	
	Extend the domain of trigonometric functions using the unit circle	
F-TF.37	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	
F-TF.38	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.	
F-TF.39	Define the six trigonometric functions using ratios of the sides of a right triangle, coordinates on the unit circle, and the reciprocal of other functions.	
	Model periodic phenomena with trigonometric functions	
F-TF.40	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.	

Standard Reference	Standard Text	Percentage of Test Items
S	Statistics and Probability	11%
S-MD	Using Probability to Make Decisions	
	Use probability to evaluate outcomes of decisions	
S-MD.41	Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	
S-MD.42	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	Conditional Probability and the Rules of Probability	
	Understand independence and conditional probability and use them to interpret data	
S-CP.43	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.44	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.	
S-CP.45	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.46	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.47	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.48	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.49	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.50	Use permutations and combinations to compute probabilities of compound events and solve problems.	