

ALGEBRA II

HSCE	Activities	Resources/Materials	Assessment
L1 Reasoning About Numbers, Systems, and Quantitative Literacy			
L1.2 Representations and Relationships			
L1.2.1 Use mathematical symbols to represent quantitative relationships and situations.			
L1.3 Counting and Probabilistic Reasoning			
L1.3.1 Describe, explain, and apply various counting techniques; relate combinations to Pascal's triangle; know when to use each technique.	Chapter 11.6: Pg. 840 # 9, 12, 13 – 16, 17, 19, 21, 23 – 25, 29 – 37, 41 – 43		
L1.3.2 Define and interpret commonly used expressions of probability.	Chapter 11.2: Pg. 807+ #14 – 23, 25 – 33, 35 – 42, 44 - 48 Chapter 11.3: Pg. 815+ #10 – 28, 30 – 34, 37 - 46 Chapter 11.6: Pg. 840 # 9, 12, 13 – 16, 17, 19, 21, 23 – 25, 29 – 37, 41 – 43		
L1.3.3 Recognize and explain common probability misconceptions such as “hot streaks” and “being due.”			
L2 Calculation, Algorithms, And Estimation			
L2.1 Calculation Using Real and Complex Numbers			
L2.1.3 Explain the exponential relationship between a number and its base 10 logarithm, and use it to relate rules of logarithms to those of exponents in expressions involving numbers.	Chapter 7.3: pg. 509+ #1-47 odd		
L2.1.5 Add, subtract, and multiply complex numbers; use conjugates to simplify quotients of complex numbers.	Chapter 5.9: Pg. 386+ # 3-81 multiples of 3		
L2.2 Sequences and Iteration			
L2.2.1 Find the n th term in arithmetic, geometric, or other simple sequences.			
L2.2.2 Compute sums of finite arithmetic and geometric sequences.			
L2.2.3 Use iterative processes in such examples as computing compound interest or applying approximation procedures.			
L2.3 Measurement Units, Calculations, and Scales			
L2.3.2 Describe and interpret logarithmic relationships in such contexts as the Richter scale, the pH scale, or decibel measurements; solve applied problems.	Chapter 7.2: Pg. 501+ #1 - 33 odd, 37 - 45 odd Chapter 7.3: pg. 509+ #1-47 odd		

ALGEBRA II

HSCE	Activities	Resources/Materials	Assessment
	Chapter 7.4: Pg. 516+ #1-47 odd		
L2.4 Understanding Error			
L2.4.1 Determine what degree of accuracy is reasonable for measurements in a given situation; express accuracy through use of significant digits, error tolerance, or percent of error; describe how errors in measurements are magnified by computation; recognize accumulated error in applied situations.			
L2.4.2 Describe and explain round-off error, rounding, and truncating.			
L2.4.3 Know the meaning of and interpret statistical significance, margin of error, and confidence level.			
A1 Expressions, Equations, And Inequalities			
A1.1 Construction, Interpretation, and Manipulation of Expressions			
A1.1.1 Give a verbal description of an expression that is presented in symbolic form, write an algebraic expression from a verbal description, and evaluate expressions given values of the variables.	Chapter 5.1: Pg. 320+ #17 - 41 all, 46-50 all Chapter 5.3: Pg. 338+ #3 – 63 multiples of 3 Chapter 6.1: Pg. 410+ #3–48 every third, 28, 34, 45		
A1.1.4 Add, subtract, multiply, and simplify polynomials and rational expressions.	Chapter 6.1: Pg. 410+ #3–48 every third, 28, 34, 45 Chapter 6.2: Pg. 418+ #18–52 every third, 54 Chapter 8.2: Pg. 580+ #1 - 33 odd, 40,47,48,49 Chapter 8.3: Pg. 588+ #1-15 all		
A1.1.5 Divide a polynomial by a monomial.	Chapter 6.3: (Day 1) pg. 426+ #13, 15, 17, 34-36, 39-47 odd; (Day 2) #19-27 odd, 31-33, 40, 44, 48		
A1.1.6 Transform exponential and logarithmic expressions into equivalent forms using the properties of exponents and logarithms, including the inverse relationship between exponents and logarithms.	Chapter 7.3: pg. 509+ #1-47 odd		
A1.2 Solutions of Equations and Inequalities			
A1.2.2 Associate a given equation with a function whose zeros are the solutions of the equation.	Chapter 5.3: Pg. 338+ #3 – 63 multiples of 3		

ALGEBRA II

HSCE	Activities	Resources/Materials	Assessment
	Chapter 5.5: Pg. 353 # 3-63 multiples of 3		
A1.2.5	Solve polynomial equations and equations involving rational expressions and justify steps in the solution.	Chapter 6.4: Pg. 433+ #18-45 every third, 46 Chapter 6.5: Pg. 442+ # 15-29 odd, 44-46 Chapter 8.5: Pg. 605 # 1-12 all, 19-27 and 40 Chapter 8.6: Pg. 614 # 1 – 59 odd	
A1.2.7	Solve exponential and logarithmic equations and justify steps in the solution.	Chapter 7.5: Pg. 526 # 1-39 odd, 40,48,49,50	
A1.2.8	Solve an equation involving several variables (with numerical or letter coefficients) for a designated variable, and justify steps in the solution.	Chapter 3.1: Pg. 186+ # 15-49 every other odd; Pg. 194+ # 15-23, 28-31	
A1.2.9	Know common formulas and apply appropriately in contextual situations.	Chapter 5.2: Pg. 328+ #1-37 odd, and 43,46 Chapter 5.3: Pg. 338+ #3 – 63 multiples of 3 Chapter 5.4: Pg. 345+ #1-33 odd Chapter 5.6: Pg. 361 # 3-48 multiples of 3 Chapter 7.1: Pg. 493+ #1 - 21 all, 24 -27all Chapter 7.6: Pg. 534 # 1 – 35 odd 41,42,43	
A1.2.10	Use special values of the inverse trigonometric functions to solve trigonometric equations over specific intervals.	Chapter 13.4: Pg. 954 #16-24 all, 26-29 all, 39-45 odds Chapter 14.6: Pg. 1031+ 9-15 odd, 19-31 odd	
A2	Functions		
A2.1	Definitions, Representations, and Attributes of Functions		
A2.1.1	Determine whether a relationship (given in contextual, symbolic, tabular, or graphical form) is a function, and identify its domain and range.	Chapter 7.1: Pg. 493+ #1 - 21 all, 24 -27all Chapter 7.3: pg. 509+ #1-47 odd Chapter 7.6: Pg. 534 # 1 – 35 odd 41,42,43 Chapter 7.7: Pg. 542 # 1 – 31 odd, 33 – 47 all	
A2.1.2	Read, interpret, and use function notation, and	Chapter 7.3: pg. 509+ #1-47 odd	

ALGEBRA II

HSCE	Activities	Resources/Materials	Assessment
evaluate a function at a value in its domain.			
A2.1.3 Represent functions in symbols, graphs, tables, diagrams, or words, and translate among representations.	Chapter 1.9: Pg. 71+ #11-22, 29- 49 odd Chapter 2.9: Pg. 161+ #9-25, 27-38 Chapter 7.1: Pg. 493+ #1 - 21 all, 24 -27all Chapter 7.2: Pg. 501+ #1 - 33 odd, 37 - 45 odd Chapter 7.3: pg. 509+ #1-47 odd Chapter 7.6: Pg. 534 # 1 – 35 odd 41,42,43		
A2.1.6 Identify the zeros of a function, the intervals where the values of a function are positive or negative, and describe the behavior of a function as X approaches positive or negative infinity, given the symbolic and graphical representations.	Chapter 5.3: Pg. 338+ #3 – 63 multiples of 3 Chapter 5.5: Pg. 353 # 3-63 multiples of 3 Chapter 6.5: Pg. 442+ # 15-29 odd, 44-46 Chapter 6.6: Pg. 449+ # 12–36 every third, 48, 55 Chapter 6.7: Pg. 457+ # 15-41 odd, 40, 42 Chapter 7.1: Pg. 493+ #1 - 21 all, 24 -27all Chapter 7.3: pg. 509+ #1-47 odd Chapter 7.6: Pg. 534 # 1 – 35 odd 41,42,43 Chapter 7.7: Pg. 542 # 1 – 31 odd, 33 – 47 all		
A2.1.7 Identify and interpret the key features of a function from its graph or its formula(s).	Chapter 6.7: Pg. 457+ # 15-41 odd, 40, 42 Chapter 7.7: Pg. 542 # 1 – 31 odd, 33 – 47 all Chapter 14.1: Pg. 995+ 8-11, 13-35 odd Chapter 14.2: Pg. 1001+ 11-25 odds 27-32 all 36-40		
A2.2 Operations and Transformations with Functions			
A2.2.1 Combine functions by addition, subtraction, multiplication, and division.	Chapter 6.1: Pg. 410+ #3–48 every third, 28, 34, 45 Chapter 9.4: Pg. 686+ # 15-33 all,		

ALGEBRA II

HSCE	Activities	Resources/Materials	Assessment
	45-47 all		
A2.2.2	Apply given transformations to parent functions, and represent symbolically.	Chapter 1.9: Pg. 71+ #11-22, 29- 49 odd Chapter 2.9: Pg. 161+ #9-25, 27-38 Chapter 6.8: Pg. 463+ # 15-27 odd, 18, 22, 24 Chapter 5.1: Pg. 320+ #17 - 41 all, 46-50 all	
A2.2.3	Recognize whether a function (given in tabular or graphical form) has an inverse, and recognize simple inverse pairs.		
A2.3 Representations of Functions			
A2.3.1	Identify a function as a member of a family of functions based on its symbolic or graphical representation; recognize that different families of functions have different asymptotic behavior.	Chapter 1.9: Pg. 71+ #11-22, 29- 49 odd Chapter 6.7: Pg. 457+ # 15-41 odd, 40, 42 Chapter 5.1: Pg. 320+ #17 - 41 all, 46-50 all	
A2.3.3	Write the general symbolic forms that characterize each family of functions.	Chapter 1.9: Pg. 71+ #11-22, 29- 49 odd Chapter 9.5: Pg. 694+ #12-20 all and 24-35 all	
A2.4 Models of Real-World Situations Using Families of Functions			
A2.4.1	Identify the family of functions best suited for modeling a given real-world situation.	Chapter 1.9: Pg. 71+ #11-22, 29- 49 odd Chapter 6.9: Pg. 469+ # 6-13 all Chapter 9.6: Pg. 702+ #6-12; Practice A	
A2.4.2	Adapt the general symbolic form of a function to one that fits the specifications of a given situation by using the information to replace arbitrary constants with numbers.		
A2.4.3	Using the adapted general symbolic form, draw reasonable conclusions about the situation being modeled.		
A3 Families of Functions			
A3.2 Exponential and Logarithmic Functions			
A3.2.2	Interpret the symbolic forms and recognize the graphs of exponential and logarithmic functions.	Chapter 7.7: Pg. 542 # 1 – 31 odd, 33 – 47 all	
A3.2.3	Apply properties of exponential and logarithmic	Chapter 7.1: Pg. 493+ #1 - 21 all, 24	

ALGEBRA II

HSCE	Activities	Resources/Materials	Assessment
functions.	-27all Chapter 7.4: Pg. 516+ #1-47 odd		
A3.6 Rational Functions			
A3.6.1 Write the symbolic form and sketch the graph of simple rational functions.	Chapter 8.4: Pg. 597 #1-41 odd		
A3.6.2 Analyze graphs of simple rational functions and understand the relationship between the zeros of the numerator and denominator, and the function's intercepts, asymptotes, and domain.	Chapter 8.1: Pg. 573+ #1 – 35 odd, 28,30,40,41 Chapter 8.4: Pg. 597 #1-41 odd		
A3.7 Trigonometric Functions			
A3.7.1 Use the unit circle to define sine and cosine; approximate values of sine and cosine; use sine and cosine to define the remaining trigonometric functions; explain why the trigonometric functions are periodic.	Chapter 13.3: Pg. 947 #19-34 all, 47, 51-53 all		
A3.7.2 Use the relationship between degree and radian measures to solve problems.	Chapter 13.3: Pg. 947 #19-34 all, 47, 51-53 all Knowing Your Unit Circle and Radian/Degree Worksheet: Pg. 947 #40-48 even; 13.3 Practice A (or B)		
A3.7.3 Use the unit circle to determine the exact values of sine and cosine, for integer multiples of $\pi/6$ and $\pi/4$.	Knowing Your Unit Circle and Radian/Degree Worksheet: Pg. 947 #40-48 even; 13.3 Practice A (or B)		
A3.7.3 Graph the sine and cosine functions; analyze graphs by noting domain, range, period, amplitude, and location of maxima and minima.			
A3.7.5 Graph transformations of basic trigonometric functions (involving changes in period, amplitude, phase, and midline) and understand the relationship between constants in the formula and the transformed graph.	Chapter 14.2: Pg. 1001+ 11-25 odds 27-32 all 36-40		
G1 Figures and Their Properties			
G1.7 Conic Sections and Their Properties			
G1.7.1 Find an equation of a circle given its center and radius; given the equation of a circle, find its center and radius.	Chapter 10.2: Pg. 732+ #1 - 27 odd, 33, 34		
G1.7.2 Identify and distinguish among geometric representations of parabolas, circles, ellipses, and hyperbolas; describe their symmetries, and explain	Chapter 10.1: Pg. 726+ #1 - 35 odd, 37 - 40all Chapter 10.2: Pg. 732+ #1 - 27 odd,		

ALGEBRA II

HSCE	Activities	Resources/Materials	Assessment
how they are related to cones.	33, 34 Chapter 10.3: pg. 740+ #1 - 33 odd; + #2 – 32 even, 38, 39 Chapter 10.4: Pg. 748+ #1 -33 odd Chapter 10.5: Pg. 755+ # 1 - 41 odd Chapter 10.6: Pg. 764 # 1 – 13 odd, 14 – 17, 22 – 27, 43, 45		
G1.7.3 Graph ellipses and hyperbolas with axes parallel to the x - and y -axes, given equations.	Chapter 10.3: : pg. 740+ #1 - 33 odd; + #2 – 32 even, 38, 39 Chapter 10.4: Pg. 748+ #1 -33 odd		
S1 Univariate Data – Examining Distributions			
S1.1 Producing and Interpreting Plots			
S1.1.1 Construct and interpret dot plots, histograms, relative frequency histograms, bar graphs, basic control charts, and box plots with appropriate labels and scales; determine which kinds of plots are appropriate for different types of data; compare data sets and interpret differences based on graphs and summary statistics.	Chapter 2.7: Pg. 146+ #5-14, 16-23, 25-33 Chapter 11.5: Worksheet 11.5		
S1.1.2 Given a distribution of a variable in a data set, describe its shape, including symmetry or skewness, and state how the shape is related to measures of center (mean and median) and measures of variation (range and standard deviation) with particular attention to the effects of outliers on these measures.	Chapter 11.5: Worksheet 11.5		
S1.2 Measures of Center and Variation			
S1.2.1 Calculate and interpret measures of center including: mean, median, and mode; explain uses, advantages and disadvantages of each measure given a particular set of data and its context.	Chapter 11.5: Pg. 833+ #13 – 34, 36, 40 - 43		
S1.2.2 Estimate the position of the mean, median, and mode in both symmetrical and skewed distributions, and from a frequency distribution or histogram.	Chapter 11.5: Worksheet 11.5		
S1.2.3 Compute and interpret measures of variation, including percentiles, quartiles, interquartile range, variance, and standard deviation.	Chapter 11.5: Pg. 833+ #13 – 34, 36, 40 - 43		
S1.3 The Normal Distribution			
S1.3.1 Explain the concept of distribution and the relationship between summary statistics for a data			

ALGEBRA II

HSCE	Activities	Resources/Materials	Assessment
	set and parameters of a distribution.		
S1.3.2	Describe characteristics of the normal distribution, including its shape and the relationships among its mean, median, and mode.		
S1.3.3	Know and use the fact that about 68%, 95%, and 99.7% of the data lie within one, two, and three standard deviations of the mean, respectively in a normal distribution.		
S1.3.4	Calculate z -scores, use z -scores to recognize outliers, and use z -scores to make informed decisions.		
S2: Bivariate Data-Examining Relationships			
S2.1 Scatterplots and Correlation			
S2.1.1	Construct a scatterplot for a bivariate data set with appropriate labels and scales	Chapter 2.7: Pg. 146+ #5-14, 16-23, 25-33	
S2.1.2	Given a scatterplot, identify patterns, clusters, and outliers. Recognize no correlation, weak correlation, and strong correlation.		
S2.1.3	Estimate and interpret Pearson's correlation coefficient for a scatterplot of a bivariate data set. Recognize that correlation measures the strength of linear association.		
S2.1.4	Differentiate between correlation and causation. Know that a strong correlation does not imply a cause-and-effect relationship. Recognize the role of lurking variables in correlation.		
S2.2 Linear Regression			
S2.2.1	For bivariate data that appear to form a linear pattern, find the least squares regression line by estimating visually and by calculating the equation of the regression line. Interpret the slope of the equation for a regression line.	Chapter 2.7: Pg. 146+ #5-14, 16-23, 25-33	
S2.2.2	Use the equation of the least squares regression line to make appropriate predictions.	Chapter 2.7: Pg. 146+ #5-14, 16-23, 25-33	
S3 Samples, Surveys, and Experiments			
S3.1 Data Collection and Analysis			
S3.1.1	Know the meanings of a sample from a population and a census of a population, and distinguish between sample statistics and population parameters.		
S3.1.2	Identify possible sources of bias in data collection		

ALGEBRA II

HSCE	Activities	Resources/Materials	Assessment
and sampling methods and simple experiments; describe how such bias can be reduced and controlled by random sampling; explain the impact of such bias on conclusions made from analysis of the data; and know the effect of replication on the precision of estimates.			
S3.1.3 Distinguish between an observational study and an experimental study, and identify, in context, the conclusions that can be drawn from each.			
S4 Probability Models and Probability Calculation			
S4.1 Probability			
S4.1.1 Understand and construct sample spaces in simple situations.	Chapter 11.3: Pg. 815+ #10 – 28, 30 – 34, 37 - 46		
S4.1.2 Define mutually exclusive events, independent events, dependent events, compound events, complementary events, and conditional probabilities; and use the definitions to compute probabilities.	Chapter 11.2: Pg. 807+ #14 – 23, 25 – 33, 35 – 42, 44 - 48 Chapter 11.3: Pg. 815+ #10 – 28, 30 – 34, 37 - 46 Chapter 11.4: Pg. 823+ # 12 – 26, 28 – 34, 36, 37		
S4.2 Application and Representation			
S4.2.1 Compute probabilities of events using tree diagrams, formulas for combinations and permutations, Venn diagrams, or other counting techniques.	Chapter 11.1: Pg. 798+ #9 – 32, 34 – 37, 39 – 42, 44 – 50; Worksheet 11.1; Pg. 801 # 1 - 5		
S4.2.2 Apply probability concepts to practical situations, in such settings as finance, health, ecology, or epidemiology, to make informed decisions.	Chapter 11.2: Pg. 807+ #14 – 23, 25 – 33, 35 – 42, 44 - 48 Chapter 11.3: Pg. 815+ #10 – 28, 30 – 34, 37 - 46 Chapter 11.4: Pg. 823+ # 12 – 26, 28 – 34, 36, 37		