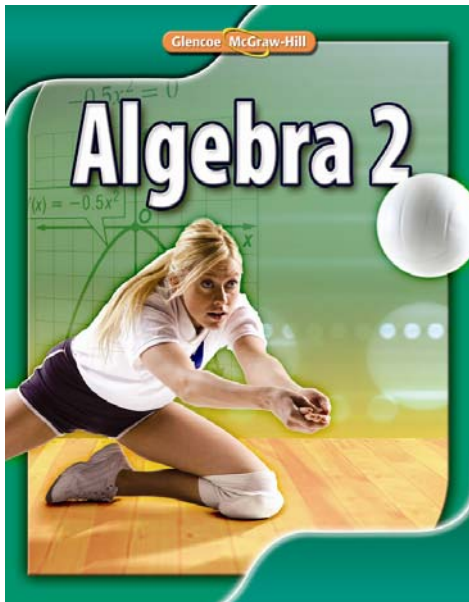




Glencoe

Content Expectations for Algebra 2 High School



Algebra 2

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Lessons in which the standard is the primary focus are indicated in **bold**.

Number	Content Expectation Standard	Student Edition Lesson(s)	Page Numbers
Standard L1: Reasoning About Numbers, Systems, and Quantitative Situations			
L1.2 Representations and Relationships			
L1.2.1	Use mathematical symbols to represent quantitative relationships and situations.	1-1, 1-5, Explore 1-6, 1-6	5-10, 33-39, 40, 41-48
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.	0-4, 0-5, Extend 11-6	P9-P11, P12-P14, 726
L1.3.2	Define and interpret commonly used expressions of probability.	12-3, 12-4	759-763, 764-771
L1.3.3	Recognize and explain common probability misconceptions such as “hot streaks” and “being due.”	Explore 12-7	785
Standard 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.	8-3	492-499
L2.1.5	Add, subtract, and multiply complex numbers; use conjugates to simplify quotients of complex numbers.	5-4	276-282
L2.2 Sequences and Iteration			
L2.2.1	Find the n th term in arithmetic, geometric, or other simple sequences.	11-1, 11-2, 11-3	681-687, 688-695, 696-702

Number	Content Expectation Standard	Student Edition Lesson(s)	Page Numbers
L2.2.2	Compute sums of finite arithmetic and geometric sequences.	11-1, 11-2, 11-3	681-687, 688-695, 696-702
L2.2.3	Use iterative processes in such examples as computing compound interest or applying approximation procedures.	Extend 11-3, 11-5, Extend 11-5	703-704, 714-719, 720
L2.2.4	Compute sums of infinite geometric sequences.	11-4	705-711
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.	8-3, 8-4, 8-5, 8-6, 8-7, Explore 8-8, 8-8	492-499, 502-507, 509-515, 516-522, 525-531, 532, 533-539
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.	<i>Glencoe Algebra 1</i> 5-4 <i>Glencoe Geometry</i> Extend 1-2	304-309 22-24
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.	12-2, 12-6	752-758, 780-784
Standard A1: Expressions, Equations and Inequalities			
A1.1 Construction, Interpolation, 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.	1-3	18-25
A1.1.4	Add, subtract, multiply, and simplify polynomials and rational expressions.	6-1, Extend 6-1, 6-2, 9-1, 9-2	333-339, 340, 341-347, 553-561, 562-568
A1.1.5	Divide a polynomial by a monomial.	6-2	341-347
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.	8-3	492-499
A1.1.7	Transform trigonometric expressions into equivalent forms using basic identities such as $\sin^2 \theta + \cos^2 \theta = 1$ or $\tan^2 \theta + 1 = \sec^2 \theta$.	14-1, 14-2, 14-3, 14-4, Explore 14-5, 14-5	891-897, 898-903, 904-909, 911-917, 918, 919-925
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.	Extend 2-2	75
A1.2.5	Solve polynomial equations and equations involving rational expressions and justify steps in the solution.	6-5, 9-6, Extend 9-6	368-375, 594-602, 603-604
A1.2.7	Solve exponential and logarithmic equations and justify steps in the solution.	Explore 8-2, 8-2, 8-4, 8-8	483-484, 485-491, 502-507, 533-539
A1.2.8	Solve an equation involving several variables (with numerical or letter coefficients) for a designated variable, and justify steps in the solution.	2-4	83-89
A1.2.9	Know common formulas and apply appropriately in contextual situations.	2-3, 5-6, 10-1	76-82, 292-300, 617-622
A1.2.10	Use special values of the inverse trigonometric functions to solve trigonometric equations over specific intervals.	13-9	871-876

Number	Content Expectation Standard	Student Edition Lesson(s)	Page Numbers
Standard 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.	0-1, 2-1	P4-P5, 61-67
A2.1.2	Read, interpret, and use function notation, and evaluate a function at a value in its domain.	2-1	61-67
A2.1.3	Represent functions in symbols, graphs, tables, diagrams, or words, and translate among representations.	0-1, 2-1	P4-P5, 61-67
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.	Extend 2-2, 5-2, 6-3, 6-4, 6-7, 6-8, 7-3, 9-4, Extend 9-4	75, 259-266, 348–355, 357-364, 383-390, 391-396, 424-430, 577-584, 585
A2.1.7	Identify and interpret the key features of a function from its graph or its formula(s).	2-2, 5-1, 5-2, Extend 5-2, 6-3, 6-4, 6-7, 6-8, 7-3	69-74, 249-257, 259-266, 267, 348-355, 357-364, 383-390, 391-396, 424-430
A2.2 Operations and Transformations with Functions			
A2.2.1	Combine functions by addition, subtraction, multiplication, and division.	7-1	409-416
A2.2.2	Apply given transformations to parent functions, and represent symbolically.	2-7, 5-7, 7-3, 8-1, 8-3, 9-3, 13-8	109-116, 305-310, 424-430, 475-482, 492-499, 569-575, 863-870
A2.2.3	Recognize whether a function (given in tabular or graphical form) has an inverse, and recognize simple inverse pairs.	7-2	417-422
A2.2.4	If a function has an inverse, find the expression(s) for the inverse.	7-2	417-422
A2.2.5	Write an expression for the composition of one function with another; recognize component functions when a function is a composition of other functions.	7-1	409-416
A2.2.6	Know and interpret the function notation for inverses and verify that two functions are inverses using composition.	7-2	417-422
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.	2-6, Explore 2-7, 2-7, 5-1, Explore 5-7, 6-3, 6-4, 7-3, Extend 7-4, 8-1, 8-3, 13-7, 13-8	101-107, 108, 109-116, 249-257, 303-304, 348-355, 357-364, 424-430, 437, 475-482, 492-499, 855-861, 863-870

Number	Content Expectation Standard	Student Edition Lesson(s)	Page Numbers
A2.3.3	Write the general symbolic forms that characterize each family of functions.	2-7, Explore 5-7, 5-7, 6-3, 7-3, 8-1, 8-3, 9-3, 9-4, 13-7	109-116, 303-304, 305-310, 348-355, 424-430, 475-482, 492-499, 569-575, 577-584, 855-861
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.	Extend 8-3	500-501
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.	Extend 8-3	500-501
A2.4.3	Using the adapted general symbolic form, draw reasonable conclusions about the situation being modeled.	Extend 8-3	500-501
A2.4.4	Use methods of linear programming to represent and solve simple real-life problems.	3-4	160-166
Standard 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.	8-1, Explore 8-2, 8-2, 8-3	475-482, 483-484, 485-491, 492-499
A3.2.3	Apply properties of exponential and logarithmic functions.	8-2, 8-4, 8-5, 8-6, Extend 8-6, 8-7, Explore 8-8, 8-8	485-491, 502-507, 509-515, 516-522, 523-524, 525-531, 532, 533-539
A3.6 Rational Functions			
A3.6.1	Write the symbolic form and sketch the graph of simple rational functions.	9-3, 9-4	569-575, 577-584
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.	9-3, 9-4, Extend 9-4	569-575, 577-584, 585
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.	13-1, 13-6, 13-9	808-816, 848-854, 871-876
A3.7.2	Use the relationship between degree and radian measures to solve problems.	13-2	817-823
A3.7.3	Use the unit circle to determine the exact values of sine and cosine, for integer multiples of $\pi/6$ and $\pi/4$.	13-6	848-854
A3.7.4	Graph the sine and cosine functions; analyze graphs by noting domain, range, period, amplitude, and location of maxima and minima.	13-7	855-861
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.	Explore 13-8, 13-8	862, 863-870

Number	Content Expectation Standard	Student Edition Lesson(s)	Page Numbers
Standard 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.	Explore 10-3, 10-3	630, 631-637
G1.7.2	Identify and distinguish among geometric representations of parabolas, circles, ellipses, and hyperbolas; describe their symmetries, and explain how they are related to cones.	10-2, 10-3, Explore 10-4, 10-4, 10-5, 10-6	623-629, 631-637, 638, 639-646, 648-655, 656-660
G1.7.3	Graph ellipses and hyperbolas with axes parallel to the x - and y -axes, given equations.	10-4, 10-5	639-646, 648-655
G1.7.4	Know and use the relationship between the vertices and foci in and ellipse, the vertices and foci in a hyperbola, and the directrix and focus in a parabola, interpret these relationships in applied contexts.	10-2, 10-4, 10-5	623-629, 639-646, 648-655
Standard 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.	2-5, Extend 12-1, 12-2, 12-4, CSB 5, CSB 6, CSB 7, CSB 8	92-98, 751, 752-758, 764-771, 1001, 1002-1003, 1004, 1005-1006
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.	12-4, 12-5, 12-7	764-771, 773-778, 786-793
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.	12-2	752-758
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.	12-4, 12-5, 12-7	764-771, 773-778, 786-793
S1.2.3	Compute and interpret measures of variation, including percentiles, quartiles, interquartile range, variance, and standard deviation.	12-2, Extend 12-5, CSB 8	752-758, 779, 1005-1006
S1.3 The Normal Distribution			
S1.3.1	Explain the concept of distribution and the relationship between summary statistics for a data set and parameters of a distribution.	12-2, 12-4, 12-5, 12-7	752-758, 764-771, 773-778, 786-793
S1.3.2	Describe characteristics of the normal distribution, including its shape and the relationships among its mean, median, and mode.	12-5	773-778
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.	12-5, Extend 12-5	773-778, 779
S1.3.4	Calculate z -scores, use z -scores to recognize outliers, and use z -scores to make informed decisions.	—	
Standard 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.	12-1, 12-2	745-750, 752-758

Number	Content Expectation Standard	Student Edition Lesson(s)	Page Numbers
S3.1.2	Identify possible sources of bias in data collection, 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.	12-1, Extend 12-1	745-750, 751
S3.1.3	Distinguish between an observational study and an experimental study, and identify, in context, the conclusions that can be drawn from each.	12-1	745-750
S3.1.4	Design simple experiments or investigations to collect data to answer questions of interest; interpret and present results.	12-1	745-750
S3.1.5	Understand methods of sampling, including random sampling, stratified sampling, and convenience samples, and be able to determine, in context, the advantages and disadvantages of each.	12-1	745-750
Standard S4: Probability Models and Calculations			
S4.1 Probability			
S4.1.1	Understand and construct sample spaces in simple situations	0-4, 12-4	P9-P11, 764-771
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.	0-4, 12-3	P9-P11, 759-763
S4.1.3	Design and carry out an appropriate simulation using random digits to estimate answers to questions about probability; estimate probabilities using results of a simulation; compare results of simulations to theoretical probabilities.	Explore 12-7	785
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.	0-4, 0-5	P9-P11, P12-P14
S4.2.2	Apply probability concepts to practical situations, in such settings as finance, health, ecology, or epidemiology to make informed decisions.	12-3, 12-4	759-763, 764-771