Nebraska Mathematics Standards Grades 9 – 11 to AMSCO Algebra 2	Text and Lesson
MA 11.1 NUMBER: Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA.11.1.1 Numeric Relationships: Students will demonstrate, represent, and show relationships among the subsets of real numbers and the complex number system.	R.1, 2.5, 4.1
MA 11.1.1.a Compare and contrast subsets of the complex number system, including imaginary, rational, irrational, integers, whole, and natural numbers.	R.1, 2.5, 4.1
MA 11.1.1.b Recognize that closure properties apply to the subsets of the complex number system, under the standard operations.	2.5, 4.1
MA 11.1.1.c Use drawings, words, and symbols to explain the effects of operations such as multiplication and division on the magnitude of quantities in the real number system, including powers and roots (e.g., if you take the square root of a number, will the result always be smaller than the original number?).	2.3, 5.2, 5.3
MA 11.1.2 Operations: Students will compute with real and complex numbers.	2.5, 4.1
MA 11.1.2.a Compute with subsets of the complex number system, including imaginary, rational, irrational, integers, whole, and natural numbers.	2.5, 4.1, 5.1
MA 11.1.2.b Simplify expressions with rational exponents.	R.1, R.3
MA 11.1.2.c Select, apply, and explain the method of computation when problem solving using real numbers (e.g., models, mental computation, paper-pencil, or technology).	R.1, R.3, 1.1, 1.2, 1.3
MA 11.1.2.d Use estimation methods to check the reasonableness of real number computations and decide if the problem calls for an approximation (including appropriate rounding) or an exact number.	R.5, 1.1, 5.1
MA 11.2 ALGEBRA: Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 11.2.1 Algebraic Relationships: Students will demonstrate, represent, and show relationships with functions.	R.2, R.3, 1.1, 2.7, 3.5, 6.1
MA 11.2.1.a Define a function and use function notation.	R.2, 1.1, 2.7, 3.5, 6.1
MA 11.2.1.b Analyze a relation to determine if it is a function given graphs, tables, or algebraic notation.	R.3, 1.1, 2.7, 3.5, 6.1
MA 11.2.1.c Classify a function given graphs, tables, or algebraic notation, as linear, quadratic, or neither.	1.1, 1.2, 2.7, 3.5, 6.1
MA 11.2.1.d Identify domain and range of functions represented in either algebraic or graphical form.	1.1, 1.2, 2.7, 3.5, 6.1
MA 11.2.1.e Analyze and graph linear functions and inequalities (point-slope form, slope-intercept form, standard form, intercepts, rate of change, parallel and perpendicular lines, vertical and horizontal lines, and inequalities).	R.4, 1.1, 1.2, 1.3, 3.5
MA 11.2.1.f Analyze and graph absolute value functions (finding the vertex, symmetry, transformations, determine intercepts, and minimums or maximums using the piecewise definition).	1.1, 3.7
MA 11.2.1.g Analyze and graph quadratic functions (standard form, vertex form, finding zeros, symmetry, transformations, determine intercepts, and minimums or maximums).	3.7, 7.2
MA 11.2.1.h Represent, interpret, and analyze inverses of functions algebraically and graphically.	3.7, 6.4, 7.2
MA 11.2.2 Algebraic Processes: Students will apply the operational properties when evaluating rational expressions, and solving linear and quadratic equations, and inequalities.	1.1, 2.6, 2.7
MA 11.2.2.a Convert equivalent rates (e.g., miles per hour to feet per second).	9.3, 10.1
MA 11.2.2.b Identify and explain the properties used in solving equations and inequalities.	R.1, 1.1, 2.3, 2.4
MA 11.2.2.c Simplify algebraic expressions involving integer and fractional exponents.	R.1, 1.4, 5.1
MA 11.2.2.d Perform operations on rational expressions (add, subtract, multiply, divide, and simplify).	R.1, 4.1, 4.2
MA 11.2.2.e Evaluate expressions at specified values of their variables (polynomial, rational, radical, and absolute value).	R.1, 4.2, 5.1

MA 11.2.2.f Solve an equation involving several variables for one variable in terms of the others.	1.4, 3.4
MA 11.2.2.g Solve linear and absolute value equations andinequalities.	2.6
MA 11.2.2.h Analyze and solve systems of two linear equations and inequalities in two variables algebraically and graphically.	1.2, 1.3, 1.4
MA 11.2.2.i Perform operations (addition subtraction, multiplication, and division) on polynomials.	2.1, 3.1, 3.2, 3.3
MA 11.2.2.j Factor polynomials to include factoring out monomial terms and factoring quadratic expressions.	2.1, 2.2, 2.3, 2.4, 3.3
MA 11.2.2 k. Recognize polynomial multiplication patterns and their related factoring patterns (e.g., $(a + b)^2 = a^2 + 2ab + b^2$, $a^2 – b^2 = (a + b) (a - b)$).	2.1, 2.2, 3.3
MA 11.2.2.l Make the connection between the factors of a polynomial and the zeros of a polynomial.	2.3, 3.5
MA 11.2.2.m Combine functions by composition and perform operations (addition, subtraction, multiplication, division) on functions.	1.1, 3.4
MA 11.2.2.n Solve quadratic equations involving real coefficients and real or imaginary roots.	2.6, 3.4
MA 11.3 GEOMETRY: Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 11.3.1.d Identify and apply right triangle relationships including sine, cosine, tangent, special right triangles, and the converse of the Pythagorean Theorem.	9.1
MA 11.3.1.e Create geometric models to visualize, describe, and solve problems using similar triangles, right triangles, and trigonometry.	9.1, 9.2, 9.3
MA 11.4 DATA: Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 11.4.1 Representations: Students will create displays that represent data. No additional indicator(s) at this level. Mastery is expected at previous grade levels.	10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7
MA 11.4.2 Analysis & Applications: Students will analyze data to address the situation.	10.1, 10.2, 10.3, 10.5
MA 11.4.2.a Identify and compute measures of central tendency (mean, median, mode) when provided data both with and without technology.	10.5
MA 11.4.2.b Explain how transformations of data, including outliers, affect measures of central tendency.	10.1, 10.5
MA 11.4.2.c Compare data sets and formulate conclusions.	9.7
MA 11.4.2.d Support conclusions with valid arguments.	10.5, 10.6
MA 11.4.2.e Develop linear equations for linear models to predict unobserved outcomes using the regression line and correlation coefficient with technology.	1.2, 10.5, 10.7
MA 11.4.2.f Describe the shape, identify any outliers, and determine the spread of a data set.	10.4, 10.5
MA 11.4.2.g Explain the impact of sampling methods, bias, and the phrasing of questions asked during data collection, and the conclusions that can rightfully be made.	10.1, 10.6
MA 11.4.2.h Explain the differences between a randomized experiment and observational studies.	10.1, 10.6, 10.7

MA 11.4.2.i Using scatter plots, analyze patterns and describe relationships in paired data.	1.2, 2.7, 10.5, 10.6, 10.7
MA 11.4.2.j Recognize when arguments based on data confuse correlation with causation.	10.4
MA 11.4.2.k Interpret data represented by the normal distribution, formulate conclusions, and recognize that some data sets are not normally distributed.	10.5
MA 11.4.3 Probability: Students will interpret and apply concepts of probability.	10.1, 10.2, 10.3, 10.4
MA 11.4.3.a Construct sample spaces and probability distributions.	10.5, 10.6, 10.7
MA 11.4.3.b Use appropriate counting techniques to determine the probability of an event.	10.1, 10.2
MA 11.4.3.c Determine if events are mutually exclusive and calculate their probabilities in either case.	10.2, 10.3, 10.4