

| Nebraska Mathematics Standards Grades 9 – 11 to AMSCO Geometry | Text and Lesson Number |
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| 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.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.3, 4.4 |
| MA 11.2.1.g Analyze and graph quadratic functions (standard form, vertex form, finding zeros, symmetry, transformations, determine intercepts, and minimums or maximums). | R.6 |
| MA 11.2.2 Algebraic Processes: Students will apply the operational properties when evaluating rational expressions, and solving linear and quadratic equations, and inequalities. | |
| MA 11.2.2.h Analyze and solve systems of two linear equations and inequalities in two variables algebraically and graphically. | R.4 |
| MA 11.2.2.i Perform operations (addition subtraction, multiplication, and division) on polynomials. | R.5 |
| MA 11.2.2.j Factor polynomials to include factoring out monomial terms and factoring quadratic expressions. | R.6 |
| MA 11.2.2 k. Recognize polynomial multiplication patterns and their related factoring patterns (e.g., $(a + b)^2 = a^2 + 2ab + b^2$, $a^2 - b^2 = (a + b)(a - b)$). | R.6 |
| MA 11.2.2.n Solve quadratic equations involving real coefficients and real or imaginary roots. | 8.1, 8.4, 9.6 |
| 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 Characteristics: Students will identify and describe geometric characteristics and create two- and three-dimensional shapes. | |
| MA 11.3.1.a Know and use precise definitions of ray, line segment, angle, perpendicular lines, parallel lines, and congruence based on the undefined terms of geometry: point, line and plane. | 1.1, 1.3, 4.1, 4.3 |
| MA 11.3.1.b Prove geometric theorems about angles, triangles, congruent triangles, similar triangles, parallel lines with transversals, and quadrilaterals using deductive reasoning. | 4.1, 4.2, 4.3, 4.5, 5.2, 5.4, 6.1, 6.2, 6.4, 7.3, 7.4, 7.8, 9.1, 9.3, 9.5 |
| MA 11.3.1.c Apply geometric properties to solve problems involving similar triangles, congruent triangles, quadrilaterals, and other polygons. | 5.2, 5.3, 5.4, 5.5, 6.1, 7.1, 7.2, 7.4, 9.1, 9.2, 9.3, 9.5, 9.6, 9.7 |
| 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. | 7.4, 7.5, 7.6, 9.8 |
| MA 11.3.1.e Create geometric models to visualize, describe, and solve problems using similar triangles, right triangles, and trigonometry. | 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8 |
| MA 11.3.1.f Know and use precise definitions and terminology of circles, including central angle, inscribed angle, arc, intercepted arc, chord, secant, and tangent. | 8.1, 8.2, 8.3, 8.4, 8.5 |

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| MA 11.3.1.g Apply the properties of central angles, inscribed angles, angles formed by intersecting chords, and angles formed by secants and/or tangents to find the measures of angles related to the circle. | 8.3, 8.4 |
| MA 11.3.1.h Sketch, draw, and construct appropriate representations of geometric objects using a variety of tools and methods which may include ruler/straight edge, protractor, compass, reflective devices, paper folding, or dynamic geometric software. | 4.2, 4.3, 5.1, 6.2, 8.1, 8.3, 9.6, 10.1 |
| MA 11.3.2 Coordinate Geometry: Students will determine location, orientation, and relationships on the coordinate plane. | |
| MA 11.3.2.a Derive and apply the midpoint formula. | 1.2 |
| MA 11.3.2.b Use coordinate geometry to analyze linear relationships to determine if lines are parallel or perpendicular | 4.4 |
| MA 11.3.2.c Given a line, write the equation of a line that is parallel or perpendicular to it. | 4.4 |
| MA 11.3.2.d Derive and apply the distance formula. | 1.2, 6.3, 9.6 |
| MA 11.3.2.e Use coordinate geometry to prove triangles are right, acute, obtuse, isosceles, equilateral, or scalene. | 4.4, 5.1 |
| MA 11.3.2.f Use coordinate geometry to prove quadrilaterals are trapezoids, isosceles trapezoids, parallelograms, rectangles, rhombi, kites, or squares. | 9.1 p. 416 #36 9.5 p. 442 #5, 25-27 9.6 p. 456 Multi-part problem |
| MA 11.3.2.g Perform and describe positions and orientation of shapes under a single translation using algebraic notation on a coordinate plane. | 1.3, 1.4, 5.4 |
| MA 11.3.2.h Perform and describe positions and orientation of shapes under a rotation about the origin in multiples of 90 degrees using algebraic notation on a coordinate plane. | 1.5, 4.4 |
| MA 11.3.2.i Perform and describe positions and orientation of shapes under a reflection across a line using algebraic notation on a coordinate plane. | 1.6 |
| MA 11.3.2.j Perform and describe positions and orientation of shapes under a single dilation on a coordinate plane. | 2.2 |
| MA 11.3.2.k Derive the equation of a circle given the radius and the center. | 11.1 |
| MA 11.3.3 Measurement: Students will perform and compare measurements and apply formulas. | |
| MA 11.3.3.c Apply the effect of a scale factor to determine the length, area, and volume of similar two- and three- dimensional shapes and solids. | 10.5 |
| MA 11.3.3.d Find arc length and area of sectors of a circle. | 8.5 |
| MA 11.3.3.e Determine surface area and volume of spheres, cones, pyramids, and prisms using formulas and appropriate units. | 10.2, 10.3 |
| 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 11.4.3 Probability: Students will interpret and apply concepts of probability. | |
| MA 11.4.3.a Construct sample spaces and probability distributions. | 12.1 |
| MA 11.4.3.b Use appropriate counting techniques to determine the probability of an event. | 12.2 |
| MA 11.4.3.c Determine if events are mutually exclusive and calculate their probabilities in either case. | 12.4 |