

GLENCOE CORRELATION
ALGEBRA: CONCEPTS AND APPLICATIONS
NEBRASKA

Mathematics Standards for Grade 12

CONTENT STANDARDS	PAGE REFERENCES
12.1 Numeration/Number Sense	
12.1.1 By the end of twelfth grade, students will describe and compare the relationships between subsets of real numbers. Example indicators: <ul style="list-style-type: none"> • Draw Venn diagrams including, but not limited to, natural, whole, integers, rational, irrational, and real numbers. • Find intersection and union of two sets of numbers. • Given a number, identify which subsets it belongs. • Justify why a number does not belong to a specific set. 	SE: 52-57, 203, 600-605, 611, 619, 673 TWE: A 605 EC 57, 605 FA 601 IE 601-603
12.1.2 By the end of twelfth grade, students will express the equivalent forms of numbers using exponents, radicals, scientific notation, absolute values, fractions, decimals, and percents.	SE: 55-56, 198-203, 204, 338, 352-356, 357-361 <i>Study Guide and Assessment 87</i> TWE: IE 199, 353-354
12.2 Computation/Estimation	
12.2.1 By the end of twelfth grade, students will solve theoretical and applied problems using numbers in equivalent forms, radicals, exponents, scientific notation, absolute values, fractions, decimals, and percents, ratios and proportions, order of operations, and properties of real numbers.	SE: 64-69, 70-74, 75-79, 82-85, 100-103, 117-121, 122-127, 128-131, 140-145, 154-159
12.2.2 By the end of twelfth grade, students will justify solutions to mathematical problems. Example indicator: <ul style="list-style-type: none"> • Write an explanation based on the context of the problem stating why the solution is reasonable. 	SE: 24-29, 67, 119, 161, 191, 206 TWE: EC 121, 164, 170 TT 25
12.2.3 By the end of twelfth grade, students will perform estimations and computations of real numbers mentally, with paper and pencil, and with technology.	SE: 97, 197, 207, 215 <i>Graphing Calculator Exploration 105, 167</i> <i>Preparing for Standardized Tests 48-49, 90-91, 136-137, 184-185</i>
12.3 Measurement	
12.3.1 By the end of twelfth grade, students will select and use measuring units, tools, and/or technology and explain the degree of accuracy and precision of measurements. Example indicators: <ul style="list-style-type: none"> • Explain the accuracy of the measurement. • Explain the precision of the measurement tool. 	SE: 201, 267, 532 <i>Hands-On Algebra 194</i> TWE: EC 203 IE 532 ML 199 RA 196

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<p>12.3.2 By the end of twelfth grade, students will convert between metric and standard units of measurement, given conversion factors.</p> <p>Example indicators:</p> <ul style="list-style-type: none"> • Change yards to meters. • Change miles/hours to meters/second. 	<p>SE: 190-192, 203 <i>Preparing for Standardized Tests 235</i> <i>Study Guide and Assessment 231</i> <i>Test 233</i></p> <p>TWE: 5MC 194 IE 190</p>
12.4 Geometry/Spatial Concept	
<p>12.4.1 By the end of twelfth grade, students will calculate perimeter and area of two-dimensional shapes and surface area and volume of three-dimensional shapes.</p>	<p>SE: 12, 15, 21, 85, 163-164, 248, 402-403, 654 <i>Preparing for Standardized Tests 596-597</i> <i>Study Guide and Assessment 46</i></p>
<p>12.4.2 By the end of twelfth grade, students will create geometric models to describe the physical world.</p> <p>Example indicators:</p> <ul style="list-style-type: none"> • Create perspective drawing. • Create scale models. 	<p>SE: 194-196, 261, 571 <i>Hands-On Algebra 194</i> <i>Investigation 372-373</i> <i>Problem-Solving Workshop 419</i> <i>Study Guide and Assessment 231</i></p> <p>TWE: RA 196</p>
<p>12.4.3 By the end of twelfth grade, students will evaluate characteristics and properties of two- and three-dimensional geometric shapes.</p> <p>Example indicators:</p> <ul style="list-style-type: none"> • Classify and compare attributes of two- and three-dimensional shapes. • Classify shapes in terms of congruence and similarity and apply these relationships. • Determine the effects of changing dimensions on perimeter, area, and volume. • Investigate and deduce geometric properties using transformations such as translations, rotations, and reflections. 	<p>SE: 69, 387, 554-556 <i>Preparing for Standardized Tests 546-547</i> <i>Quiz 611</i></p> <p>TWE: IE 555</p>
<p>12.4.4 By the end of twelfth grade, students will apply coordinate geometry to locate and describe objects algebraically.</p> <p>Example indicators:</p> <ul style="list-style-type: none"> • Graph a geometric shape and determine the slope of the sides. • Identify the missing vertices of a polygon. 	<p>SE: 58-63, 606-611 <i>Investigation 612-613</i></p> <p>TWE: EC 63, 611 FA 59 FC 608 IE 607 RA 61, 609</p>
<p>12.4.5 By the end of twelfth grade, students will apply right triangle trigonometry to find length and angle measures.</p>	<p>SE: 366-371 <i>Investigation 372-373</i> <i>Preparing for Standardized Tests 378</i> <i>Study Guide and Assessment 376, 414</i></p> <p>TWE: A 371 EC 371 IE 367</p>
<p>12.4.6 By the end of twelfth grade, students will apply geometric properties to solve problems.</p> <p>Example indicator:</p> <ul style="list-style-type: none"> • Find missing angles and lengths of geometric shapes using geometric properties. (Properties may include, but are not limited to, similarity, parallel and line-transversal). 	<p>SE: 109, 164, 169, 247, 391, 449, 477, 480, 659 <i>Graphing Calculator Exploration 338</i></p>

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<p>12.4.7 By the end of twelfth grade, students will apply deductive reasoning to arrive at a conclusion. Example indicators:</p> <ul style="list-style-type: none"> Justify steps when solving an algebraic equation using properties of real numbers. Use logic statements, paragraph proof, two-column proof, or algebraic proof to arrive at a conclusion. 	<p>SE: 67, 119, 161, 191, 206 <i>Investigation</i> 30-31</p> <p>TWE: A 31 ML 30</p>
12.5 Data Analysis, Probability, and Statistical Concepts	
<p>12.5.1 By the end of twelfth grade, students will select a sampling technique to gather data, analyze the resulting data, and make inferences. Example indicators:</p> <ul style="list-style-type: none"> Justify the chosen sampling techniques. Use technology to analyze the data. 	<p>SE: 302-307 <i>Investigation</i> 308-309</p> <p>TWE: A 307 EC 307 IE 303-304 ML 303</p>
<p>12.5.2 By the end of twelfth grade, students will write equations and make predictions from sets of data. Example indicators:</p> <ul style="list-style-type: none"> Display data in a scatter plot, describe its shape, and estimate how close the data comes to fitting an equation. Relate the slope of a regression line to the rate of change for the data set. Determine what the y-intercept or beginning value indicates about the data. Determine the validity of predictions made from regression equations. 	<p>SE: 38, 42, 302-303 <i>Investigation</i> 30-31, 110-111, 210-211, 494-495</p> <p>TWE: ML 30</p>
<p>12.5.3 By the end of twelfth grade, students will apply theoretical probability to represent problems and make decisions. Example indicator:</p> <ul style="list-style-type: none"> Explain the likelihood of the next event based on theoretical probabilities. 	<p>SE: 219-223, 224-229</p> <p>TWE: A 223 EC 223 IE 220-221, 225-227 ML 319</p>
<p>12.5.4 By the end of twelfth grade, students will evaluate how transformations on data affect the measures of central tendency and variability. Example indicators:</p> <ul style="list-style-type: none"> Describe how adding the same amount to each score changes the mean, median, mode, range, outliers, interquartile points, maximum, and minimum. Describe how dropping an outlier changes the other measures. 	<p>SE: 32-37, 38-43, 104-109, 198 <i>Investigation</i> 211</p> <p>TWE: 5MC 38 EC 43 IE 33-34, 39-41, 105-106</p>

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<p>12.5.5 By the end of twelfth grade, students will interpret data represented by the normal distribution and formulate conclusions. Example indicators:</p> <ul style="list-style-type: none"> • Sketch a normal or bell curve, label one and two standard deviations from the mean and fill in approximate percents associated with the deviations. • Determine factors that will produce a curve that is not normal. • Describe how sample size is related to a normal curve. • Determine position or rank relative to others in a normally distributed group given the standard deviation and mean. 	<p>SE: 32-37, 38-43, 104-109, 198 <i>Investigation 211</i></p> <p>TWE: 5MC 38 EC 43 IE 33-34, 39-41, 105-106</p>
<p>12.5.6 By the end of twelfth grade, students will calculate probabilities of independent events. Example indicator:</p> <ul style="list-style-type: none"> • Calculate probabilities using the fundamental counting principle and permutations. 	<p>SE: 224-225, 227-229 <i>Study Guide and Assessment 232</i></p> <p>TWE: IE 225, 227</p>
12.6 Algebraic Concepts	
<p>12.6.1 By the end of twelfth grade, students will graph and interpret algebraic relations and inequalities. Example indicators:</p> <ul style="list-style-type: none"> • Describe a graph by identifying intercepts, slopes, maximum, minimum, increasing, decreasing, parallel, and perpendicular. • Use families of curves to describe the effect of changing coefficients of an equation. 	<p>SE: 117-119, 122, 172-173, 188-193, 206-207, 484-485, 504-508, 509-513, 514-517, 519-523</p>
<p>12.6.2 By the end of twelfth grade, students will solve problems involving equations and inequalities. Example indicator:</p> <ul style="list-style-type: none"> • Use appropriate methods to solve linear and quadratic equations. 	<p>SE: 117-119, 122, 172-173, 188-193, 206-207, 484-485, 504-508, 509-513, 514-517, 519-523</p>
<p>12.6.3 By the end of twelfth grade, students will solve problems involving systems of two equations, and systems of two or more inequalities. Example indicator:</p> <ul style="list-style-type: none"> • Solve systems by graphing, substitution, elimination, or matrices. 	<p>SE: 550-553, 554-559, 590-595, 566-571</p> <p>TWE: 5MC 554, 560 IE 551, 555, 557</p>

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<p>12.6.4 By the end of twelfth grade, students will solve problems using patterns and functions.</p> <p>Example indicators:</p> <ul style="list-style-type: none"> • Apply direct and indirect variations. • Recognize the properties of families of functions. • Recognize patterns of exponential growth and decay and their significance to real-life situations. • Represent a problem in multiple formats (words, tables, graphs, and symbols). 	<p>SE: 310-315, 316-321 <i>Graphing Calculator Exploration</i> 317</p> <p>TWE: EC 321 IE 311-313, 317 IS 320 RA 318</p>

Codes Used for TWE Pages

5MC	5-Minute Check
A	Assess
EC	Extra Credit
FA	Family Activity
FC	From the Classroom of . . .
IE	In-Class Examples
IS	Inclusion Strategies
ML	Motivating the Lesson
RA	Reteaching Activity
TT	Teaching Tip