

GLENCOE CORRELATION
ALGEBRA: CONCEPTS AND APPLICATIONS
NEVADA
Mathematics Content Standards
Grade Twelve

CONTENT STANDARDS	PAGE REFERENCES
Numbers, Number Sense, and Computation	
Content Standard 1.0: To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will accurately calculate, use estimation techniques, number relationships, operation rules, and algorithms; they will determine the reasonableness of answers and the accuracy of solutions.	
By the end of Grade 12 , students know and are able to do everything required in the previous grades and:	
1.12.1 I/S Calculate and estimate sums, differences, products, quotients, powers , and roots using mental math, formulas , and algorithms . S 23.12.3; C 4.12.1	SE: 27-29, 37, 179, 336-340, 341-345, 365, 386, 477, 654 <i>Investigation</i> 111
1.12.2 W/L Apply the laws of exponents to perform operations on expressions with integral exponents and expressions in scientific notation. S 1.12.2	SE: 336-337, 349, 352-356, 425, 539 <i>Graphing Calculator Exploration</i> 338-339 TWE: 5MC 357 IE 337 IS 337 GCE 338
1.12.3 I/S Apply the properties and theories of the real number system to everyday situations. S 1.12.2; H 3.12.4	SE: 52, 57, 61, 203, 600, 604, 619, 673 TWE: IE 72 MTL 64
1.12.5 W/L Perform simple operations on matrices .	SE: <i>Extending the Investigation</i> 81 <i>Investigation</i> 80, 578-579 TWE: MTL 80, 578 TT 81, 579
Patterns, Functions, and Algebra	
Content Standard 2.0: To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will use various algebraic methods to analyze, illustrate, extend, and create numerous representations (words, numbers, tables, and graphs) of patterns, functions, and algebraic relations as modeled in practical situations.	
2.12.2 E/L Represent and solve problems using discrete structures including graphs and matrices, with and without technology. Ec 3.12.2; H 4.12.1; H 5.12.1	SE: 54, 112, 146, 306, 341, 425, 563, 606-607 <i>Investigation</i> 80-81, 578-579

CONTENT STANDARDS		PAGE REFERENCES
2.12.3 Create and use different forms of a variety of equations, proportions, and/or formulas (e.g., $I=PRT$ or $R=I/PT$), solving for the needed variable as necessary in given situations. H 3.12.4; H 4.12.1; S 1.12.2; S 1.12.4; S 20.12.1; S 23.12.2	E/S	SE: 6-7, 13, 165-170, 171-175, 176-179, 188-193, 395, 476 <i>Graphing Calculator Exploration</i> 167 <i>Study Guide and Assessment</i> 133
2.12.4 Add, subtract, multiply, and factor (1^{st} and 2^{nd} degree) polynomials , describing each step in the process and the connection between the algebraic process and the arithmetic process; use simple quadratic equations with integer roots to solve practical and mathematical problems. H 3.12.4; H 4.12.1; S 23.12.2	I/S	SE: 388-393, 394-398, 399-404, 447, 667 <i>Hands-On Algebra</i> 650 TWE: EC 393, 398 HA 400 IE 389
2.12.5 Model practical problems from everyday situations with a variety of models that includes matrices, translating among tabular, symbolic and graphical representations of functions, with and without technology. Ec 3.12.2; Ec3.12.3; Ec 3.12.4; Ec 6.12.6; G 1.12.3; H 3.12.4; H 4.12.1; S 1.12.2	E/S	SE: 208, 324-325, 341, 365, 475, 512, 580-583 <i>Hands-On Algebra</i> 428 <i>Investigation</i> 80-81, 578-579
2.12.6 Determine the domain and range of linear relations given a graph or a set of ordered pairs ; explain their importance in problem solving situations. H 5.12.1	W/L	SE: 238, 245, 251, 289, 295, 301-302, 310 <i>Investigation</i> 308 TWE: EC 249 IE 240
2.12.7 Solve systems of two linear equations, both algebraically and graphically; use graphing calculators as a primary tool in solving these problems and to verify solutions found by other methods.	W/L	SE: 550, 554, 560, 566, 572-577, 655 <i>Graphing Calculator Exploration</i> 551 TWE: IE 556, 573 MTL 567
Measurement		
Content Standard 3.0: To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will use appropriate tools and techniques of measurement to determine, estimate, record, and verify direct and indirect measurements.		
3.12.1 Convert between customary and metric systems; convert among monetary systems.	I/L	SE: 171, 174, 190-192, 195-196, 267-268 TWE: 5MC 198 EC 197 IE 195

CONTENT STANDARDS		PAGE REFERENCES
3.12.2 Select and use measurement tools, techniques, and formulas to calculate and compare rates, cost, distances, interest, temperatures, and weight/mass. S 2.12.1	I/S	SE: 158-159, 171, 193, 216, 261, 575, 671 <i>Investigation</i> 262-263 TWE: EC 175 FC 263
3.12.3 Distinguish and differentiate among the structures, language and uses of systems of measures (e.g., linear, square units, cubic units); justify and communicate the differences between accuracy, precision, error, and tolerance in measurement; describe how each of these can affect solutions found in problem situations. S 23.12.8	I/S	SE: 25, 62, 83-85, 107, 191, 532, 534 TWE: 5MC 535 EC 534 IE 532 RA 532
3.12.4 Use and interpret consumer data (e.g., amortization tables , tax tables, and compound interest charts) to make informed financial decisions related to practical applications such as budget. E 4.12.3; Ec 2.12.4; Ec 2.12.5; Ec 2.12.8; Ec 2.12.12	I/L	SE: 205, 209, 212-217, 491, 508, 538, 552 <i>Quiz</i> 217 TWE: EC 217 IE 205
3.12.5 Use relationships (e.g., proportions) and formulas (indirect measurement) to determine the measurement of unknown dimensions, angles, areas, and volumes to solve problems. S 2.12.1; S 23.12.4	I/S	SE: 196-197, 201, 266, 396-397, 402, 512 <i>Hands-On Algebra</i> 194 TWE: EC 203 IE 195, 266
Spatial Relationships and Geometry		
Content Standard 4.0: To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will identify, represent, explain, verify, and apply spatial relationships and geometric properties.		
4.12.1 Identify and use the properties of polygons (including interior and exterior angles) and elements of circles (e.g., angles, arcs, chords , secants and tangents) to solve practical problems. H 3.12.4	I/S	SE: 198, 200-201, 345, 387 <i>Preparing for Standardized Tests</i> 596 <i>Study Guide and Assessment</i> 414 TWE: EC 203 IE 199-200

CONTENT STANDARDS		PAGE REFERENCES
4.12.5 Use coordinate geometry to graph linear equations, determine slopes of lines, identify parallel and perpendicular lines and find possible solutions to sets of equations; use algebraic techniques to solve problems determined by geometric relationships. H 5.12.1	I/S	SE: 15, 247, 322-327, 508 <i>Study Guide and Assessment</i> 330 Test 331 TWE: 5MC 322 A327 IE 323
4.12.6 Use complementary and supplementary angles, congruent angles, vertical angles, angles formed when parallel lines are cut by a transversal, and angles in polygons to solve practical problems. H 3.12.4	W/S	SE: 77-79, 179, 201, 249, 255, 517 <i>Hands-On Algebra</i> 511 <i>Preparing for Standardized Tests</i> 546-547 TWE: EC 79
4.12.7 Apply the Pythagorean Theorem, its converse , properties of special right triangles, and right triangle trigonometry to solve practical problems. H 3.12.4	I/S	SE: 366-371, 607, 609, 619, 623 <i>Hands-On Algebra</i> 606 <i>Investigation</i> 372-373 <i>Preparing for Standardized Tests</i> 378-379 <i>Study Guide and Assessment</i> 376 TWE: IE 368
4.12.8 Use tools, technology, and models to sketch, draw, and construct geometric figures in order to solve problems and to demonstrate the properties of geometric figures.	W/L	SE: 38-43, 70, 308-309 <i>Graphing Calculator Exploration</i> 26, 61 <i>Hands-On Algebra</i> 141 <i>Investigation</i> 30 <i>Problem-Solving Workshop</i> 51, 381 TWE: RA 107
4.12.9 Construct, justify and defend mathematical conclusions using logical, sequential, deductive reasoning supported by established mathematical principles. E 10.12.4	E/S	SE: 32-37, 148, 207, 247, 466, 476 <i>Investigation</i> 30-31 TWE: 5MC 38 A 31 MTL 30
Data Analysis		
Content Standard 5.0: To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will collect, organize, display, interpret, and analyze data to determine statistical relationships and probability projections.		
5.12.1 Use calculators and computers to create and manipulate tables, graphs, and matrices to communicate statistical information; use the shape of graphs of normal distributions to compare and analyze information. G 3.12.4; G 4.12.1; G 7.12.3; H 2.12.2; H 2.12.3; S 22.12.2	I/L	SE: 40-43, 104-107 <i>Graphing Calculator Exploration</i> 61, 214, 421 <i>Investigation</i> 308-309 TWE: GCE 105 IE 39, 41

CONTENT STANDARDS		PAGE REFERENCES
5.12.2 Design, conduct, analyze, and communicate the results of multi-stage probability experiments. H 5.12.1	I/L	SE: 223, 228-229, 242-243, 407-409, 539, 649 <i>Hands-On Algebra</i> 220, 224 <i>Study Guide and Assessment</i> 232 <i>Test</i> 183
5.12.3 Distinguish between and apply permutations and combinations using a variety of methods, including The Fundamental Counting Principle. H 5.12.1	W/L	SE: 26, 146-151, 280 <i>Investigation</i> 152-153 <i>Test</i> 183 TWE: A 151 EC 151 IE 147 RA 27, 148
5.12.4 Select and use the measures of central tendency such as mean, median, mode and variability including range, distribution and possible outliers that are appropriate for given situations. G 7.12.4; S 20.12.4	E/S	SE: 104-109, 158, 295 <i>Investigation</i> 210-211 <i>Preparing for Standardized Tests</i> 184-185 <i>Study Guide and Assessment</i> 133-134 TWE: EC 109 FC 106 IE 106
5.12.5 Analyze the validity of statistical conclusions noting various sources of bias, misuse, and abuse of data caused by a wide variety of factors including choices of scale, probability versus odds, inappropriate uses of measures of central tendency, inaccurate curve fitting and inappropriate uses of controls or sample groups. S 19.12.1; S 21.12.2; S 21.12.3; S 23.12.6	E/S	SE: 32-37, 43, 304-307 <i>Investigation</i> 308-309 TWE: 5MC 38, 310 IE 33, 304 MTL 32
5.12.6 Design, construct, analyze, and select an appropriate type of graph to represent data to communicate the results of statistical experiments (e.g., write a survey question and analyze and communicate the findings). S 22.12.2	I/L	SE: 38-41, 200-201, 240, 250, 302-303, 310 <i>Investigation</i> 210-211 <i>Math In the Workplace</i> 218 TWE: IE 39, 200

CONTENT STANDARDS		PAGE REFERENCES
Problem Solving		
Process Standard 6.0: Students will develop their ability to solve problems by engaging in developmentally appropriate problem solving opportunities in which there is a need to use various approaches to investigate and understand mathematical concepts in order to: formulate their own problems; find solutions to problems from everyday situations; develop and apply strategies to solve a wide variety of problems; and integrate mathematical reasoning, communication and connections.		
6.1 Select, modify, develop, and apply strategies to solve a variety of mathematical and practical problems and to investigate and understand mathematical concepts. S 1.2.3; S 1.5.1; S 1.8.1; S 1.8.4; S 1.12.2; S 1.12.4; S 2.12.1; S 3.2.3; S 10.5.2; S 14.8.6; S 19.12.2; S 21.3.1	E/S	SE: 24-29, 43, 57, 68, 118-119, 165-166, 244-245 <i>Investigation</i> 110-111, 262-263
6.2 Apply previous experience and knowledge to new problem-solving situations.	E/S	SE: 100, 165, 171, 405-409, 524-529, 530-534 <i>Preparing for Standardized Tests</i> 280, 332, 378 TWE: TT 25
6.5 Verify, interpret, and evaluate results with respect to the original problem situation, determining an efficient strategy for the given situation. S 21.5.3; S 21.12.3	E/S	SE: <i>Problem-Solving Workshop</i> 3, 51, 93, 139, 187, 237, 283, 381, 419, 457, 503
6.7 Apply multi-step, integrated, mathematical problem-solving strategies, persisting until a solution is found or until it is clear that no solution exists. S 19.12.2	E/S	SE: 165-170, 171-175, 176-179, 514-517, 586-590 TWE: FA 166 IE 166 MTL 165 RA 168
6.9 Generalize solutions and strategies from earlier problems to new problem situations.	E/L	SE: 179, 437, 490-491, 535-539, 608, 620 <i>Preparing for Standardized Tests</i> 280, 332, 378 TWE: TT 430
6.10 Interpret and solve a variety of mathematical problems by paraphrasing, identifying necessary and extraneous information, selecting and justifying efficient methods and/or strategies, and ensuring the answer is reasonable.	E/S	SE: 148, 247, 253, 271, 385, 476, 480, 575 <i>Preparing for Standardized Tests</i> 596 TWE: TT 25
6.11 Apply combinations of proven strategies and previous knowledge to solve non-routine problems.	E/L	SE: 74, 151, 197, 243, 301, 371, 393, 449, 629 <i>Investigation</i> 578-579

CONTENT STANDARDS		PAGE REFERENCES
6.13 Use technology, including calculators, to solve problems and verify solutions. S 24.5.5; S 24.8.5	E/L	SE: 603 <i>Graphing Calculator Exploration</i> 588, 625, 638-639 <i>Preparing for Standardized Tests</i> 184 <i>Problem-Solving Workshop</i> 3, 139, 237, 335
6.14 Use technology, including calculators, to investigate, define, and describe quantitative relationships such as patterns and functions. G 7.12.3; S 1.5.1; S 1.12.2; S 1.12.4; S 14.8.6; S 24.5.5; S 24.8.5	E/L	SE: 359, 464-465, 475 <i>Graphing Calculator Exploration</i> 271-272, 338-339, 551 <i>Investigation</i> 308-309 <i>Problem-Solving Workshop</i> 187
Mathematical Communication		
Process Standard 7.0: Students will develop their ability to communicate mathematically by solving problems in which there is a need to obtain information from the real world through reading, listening, and observing in order to: translate this information into a mathematical language and symbols; process this information mathematically; and present results in written, oral and visual formats.		
7.1 Discuss and exchange ideas about mathematics as a part of learning. E 10.2.3; E 10.3.3; E 10.5.3; E 10.3.1; E 10.5.1; E 10.12.1; S 23.5.2	E/L	SE: 17, 42, 84, 148, 207, 247, 287 TWE: A 175 MTL 165
7.2 Use inquiry techniques (e.g., discussion, questioning, research, data gathering) to solve mathematical problems. E 4.2.3; E 10.2.2; E 10.3.2; E 10.5.2; E 10.8.2; E 11.2.1; E 11.3.1; E 11.5.1; E 11.8.1; E 11.12.1; E 11.2.2; S 1.5.1; S 1.8.1; S 1.8.4; S 1.12.4; S 10.5.2; S 14.8.6; S 21.3.1	E/L	SE: <i>Problem-Solving Workshop</i> 3, 93, 139, 237, 283, 335, 381, 419, 457, 503
7.3 Read expository text to learn about mathematics. E 1.8.3; E 1.12.3; E 2.12.3; E 4.8.1; E 4.8.2; E 4.8.3	I/L	SE: <i>Extending the Investigation</i> 263 <i>Investigation</i> 613 <i>Math In the Workplace</i> 488 <i>Problem-Solving Workshop</i> 549 TWE: MTL 38 NN 488
7.6 Interpret and solve word problems without the necessity of key words or phrases.	E/S	SE: 85, 144, 221, 516 <i>Preparing for Standardized Tests</i> 635 TWE: 5MC 428 EC 217 MTL 165
7.9 Model and explain mathematical relationships using oral, written, graphical, and algebraic methods. E 5.8.1; E 5.8.2; E 6.8.2; E 11.8.5; E 11.12.5; S 1.12.2; S 1.12.4; S 14.8.6; S 20.12.1; S 22.8.2; S 22.12.2	E/S	SE: 17, 57, 130, 227, 257, 425 TWE: MTL 152, 270 RA 201, 286

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7.10 Evaluate the effectiveness of written and oral presentations of mathematics. S 21.5.3; S 23.5.2	I/L	SE: 102, 114, 130, 168, 287, 532 TWE: A 159 FC 153 RA 77, 201
7.11 Make conjectures and present arguments in discussions of mathematical ideas. S 21.5.3; S 23.5.3	E/L	SE: 32, 84, 168, 207 <i>Extending the Investigation</i> 153, 211, 263, 309
7.14 Explain and evaluate thinking about mathematical ideas and solutions based on the role of definitions, properties, common rules, and symbols in solving problems.	I	SE: 11, 166, 271, 385, 408, 480, 529, 614 TWE: A 209, 463
7.15 Use everyday language to explain thinking about strategies and solutions to mathematical problems. S 21.5.3; S 23.5.3	E/L	SE: 167, 305, 369 TWE: FC 153, 285, 337 RA 55, 617 TT 285
7.16 Express mathematical ideas and use them to define, compare, and solve problems orally and in writing.	E/S	SE: 54, 98, 130, 205 <i>Preparing for Standardized Tests</i> 379 TWE: A 145, 275 EA 201
7.17 Use mathematical notation to communicate and explain mathematical situations. S 21.2.1	E/L	SE: 112, 128-131, 201, 345, 513, 539, 603 <i>Extending the Investigation</i> 153 <i>Graphing Calculator Exploration</i> 26 TWE: TT 484
Mathematical Reasoning		
Process Standard 8.0: <i>Students will develop their ability to reason mathematically by solving problems in which there is a need to investigate significant mathematical ideas and construct their own learning in all content areas in order to justify their thinking; reinforce and extend their logical reasoning abilities; reflect on and clarify their own thinking; and ask questions to extend their thinking.</i>		
8.3 Construct, justify, and defend mathematical conclusions using logical arguments, in situations related to mathematics, science, and technology. E 10.12.4; G 7.12.4; S 1.8.1; S 1.8.4; S 1.12.4; S 14.8.6	I/L	SE: 35, 408, 619 <i>Extending the Investigation</i> 153, 211, 263, 309, 495 <i>Investigation</i> 30-31
8.4 Use patterns and relationships to analyze mathematical situations; draw logical conclusions about mathematical problems. Ec 3.8.2; Ec 3.8.3; Ec 9.8.4; Ec 3.12.1; Ec 3.12.2; Ec 3.12.3; Ec 3.12.4; Ec 6.12.6; G 7.12.4; S 17.3.2	E/S	SE: 151, 170, 303, 315, 405 <i>Investigation</i> 30-31, 110-111 TWE: TT 601

CONTENT STANDARDS		PAGE REFERENCES
8.5 Follow a logical argument and judge its validity. E 4.8.4; E 4.12.4	E/L	SE: 32, 125, 251, 299, 532 <i>Investigation</i> 30-31 TWE: EC 43 TT 446
8.7 Recognize and apply deductive and inductive reasoning in both concrete and abstract contexts.	E/S	SE: 250-251, 536 <i>Extending the Investigation</i> 31 <i>Investigation</i> 30-31 TWE: A 31
8.8 Ask questions to reflect on, clarify, and extend thinking.	E/L	SE: 32-37, 43 <i>Math In the Workplace</i> 218 TWE: A 269 EC 164 TT 343, 370, 411, 446
8.9 Review and refine the assumptions and steps used to derive conclusions in mathematical arguments.	I/L	SE: 32-37, 43, 221, 298, 537 <i>Investigation</i> 30-31 TWE: IE 33 MTL 32
8.10 Construct valid arguments; make and test conjectures about algebraic and geometric properties based on mathematical principles. E 10.12.4	I/L	SE: 250-251, 323, 382 <i>Extending the Investigation</i> 31, 211, 263, 373, 427, 495, 541
8.11 Determine relevant, irrelevant, and/or sufficient information to solve mathematical problems.	E/S	SE: 24-27, 271, 302, 306, 670-671 TWE: MTL 303
Mathematical Connections		
Process Standard 9.0: <i>Students will develop the ability to make mathematical connections by solving problems in which there is a need to view mathematics as an integrated whole, identifying relationships between context strands, and integrating mathematics with other disciplines, allowing the flexibility to approach problems in a variety of ways within and beyond the field of mathematics.</i>		
9.1 Link new concepts to prior knowledge.	E/L	SE: 85, 103, 131, 170, 203, 217, 243 TWE: EC 175, 203, 243
9.2 Use mathematical ideas from one area of mathematics to explain an idea from another area of mathematics.	E/S	SE: 345, 361, 406-407, 409, 431, 439 <i>Investigation</i> 426-427 TWE: EC 439, 487
9.3 Use models to explain the relationship of concepts to procedures. S 1.5.1; S 1.8.1; S 1.12.2; S 1.8.4; S 1.12.4; S 10.5.2; S 14.8.6; S 20.5.1	E/S	SE: 64-65, 70, 82, 117-120, 123, 148 <i>Hands-On Algebra</i> 25, 66 <i>Investigation</i> 110-111 TWE: RA 97

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9.4 Use the connections among mathematical topics to develop multiple approaches to problems. S 20.8.1	I/L	SE: 124, 213, 291-292, 347, 524, 560-565, 566-571, 572-577 <i>Problem-Solving Workshop</i> 599, 637
9.6 Use and analyze the connections between Mathematics and other disciplines. Ec 2.8.2; Ec 2.12.4; Ec 2.12.8; H 2.8.3; H 2.12.3; S 2.12.1; S 14.12.5	I/L	SE: 62 <i>Math In the Workplace</i> 218, 265, 346, 387, 490-491, 591
9.7 Apply mathematical thinking and modeling to solve problems that arise in other disciplines (e.g., rhythm in music and motion in science). S 1.5.1; S 1.8.1; S 1.12.2; S 1.8.4; S 1.12.4; S 10.5.2; S 14.8.6; S 19.12.2	E/L	SE: 193, 195, 209, 217, 261, 265, 269, 275, 387, 398
9.8 Identify, explain, and use mathematics in everyday life. Ec 2.3.2; Ec 2.12.12; Ec 5.2.1; Ec 5.3.1; S 24.12.2	I/S	SE: 67, 74, 208, 217, 223, 425, 490-492, 564, 661 <i>Investigation</i> 262-263

Codes Used for TWE Pages

5MC	5-Minute Check
A	Assess
EA	Error Analysis
EC	Extra Credit
FA	Family Activity
FC	From the Classroom of ...
GCE	Graphing Calculator Exploration
IE	In-Class Example
IS	Inclusion Strategies
MTL	Motivating the Lesson
NN	Not on the Net
RA	Reteaching Activity
TT	Teaching Tip