

GLENCOE CORRELATION
GEOMETRY: 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 Calculate and estimate sums, differences, products, quotients, powers , and roots using mental math, formulas , and algorithms . S 23.12.3; C 4.12.1	I/S SE: 77-78, 176, 369, 428-429 #4-#13, 483-485, 505-507, 511-512, 549-550, 552 #39 TWE: IE 549
1.12.2 Apply the laws of exponents to perform operations on expressions with integral exponents and expressions in scientific notation. S 1.12.2	W/L SE: 214 #28, 263-265 #4-#6, 483-485, 519, 524-525 #6, #9-#10 <i>Extending the Investigation</i> 11 <i>Preparing for Standardized Tests</i> 46, 47 #5, 347 #3 <i>Study Guide and Assessment</i> 270
1.12.3 Apply the properties and theories of the real number system to everyday situations. S 1.12.2; H 3.12.4	I/S SE: 37-38, 53, 121 #30, 207 #27, 258, 358, 484 <i>Math in the Workplace</i> 41, 301, 339
1.12.5 Perform simple operations on matrices .	W/L See Glencoe's <i>Algebra: Concepts and Applications</i> . SE: <i>Investigation</i> 80-81, 578-579
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 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	E/L SE: 54 #4, 81 #34, 101 #29, 315 #36, 331 #39-#44, 358, 487 #26 <i>Math in the Workplace</i> 41, 95 <i>Problem-Solving Workshop</i> 227
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: 35-40, 77, 174, 351-354, 356-358, 426, 478-482, 501 #33, 534-535, 618-621

CONTENT STANDARDS	PAGE REFERENCES
<p>2.12.4 I/S Add, subtract, multiply, and factor (1st and 2nd 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</p>	<p>SE: 507 <i>Preparing for Standardized Tests</i> 547 #10, 714-715</p>
<p>2.12.5 E/S 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</p>	<p>SE: 172 #9, 177 #12, 178 #35, 501 #33 <i>Graphing Calculator Exploration</i> 170 <i>Preparing for Standardized Tests</i> 493</p>
<p>2.12.6 W/L 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</p>	<p>SE: 81 #35, 101 #34, 174, 515 #30, 563 #23 <i>Preparing for Standardized Tests</i> 493</p>
<p>2.12.7 W/L 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.</p>	<p>SE: 176 TWE: EC 179</p>
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.	
<p>3.12.1 I/L Convert between customary and metric systems; convert among monetary systems.</p>	<p>SE: 57-58, 60 #23-#28, 353 #23-#26, 367, 396, 611 <i>Quiz</i> 65 #5 <i>Study Guide and Assessment</i> 83 #16 TWE: 5MC 62 #4 IE 58</p>
<p>3.12.2 I/S Select and use measurement tools, techniques, and formulas to calculate and compare rates, cost, distances, interest, temperatures, and weight/mass. S 2.12.1</p>	<p>SE: 53, 54 #10, 55 #30, 61 #35, 353 #16, 361 #26-#27 TWE: EC 61, 361 IE 53</p>

CONTENT STANDARDS	PAGE REFERENCES
3.12.3 I/S 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	SE: 58, 59 #3, 60 #30, 428, 429 #15, 430 #16 TWE: A 61 EC 430
3.12.4 I/L 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	SE: 178 #35, 219 #29, 225 #5, 239 #28, 267 #34 <i>Preparing for Standardized Tests</i> 86, 87 #10, 139 #3, 185 #1, 273 #2
3.12.5 I/S 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	SE: 167 #25-#26, 120 #19, 152-153 #25-#36, 167 #25-#26, 418 #29, 510-515, 522-527, 529-533 <i>Investigation</i> 288-289
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 I/S 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	SE: 25, 26 #3, 36, 327-332, 333, 402-407, 454-458, 603 #3, 607 <i>Study Guide and Assessment</i> 42 #1-#10 TWE: 5MC 327, 333 A 407
4.12.5 I/S 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	SE: 162-167, 168-173, 174-176, 177 #2, 178 #31-#34, 382-384 <i>Study Guide and Assessment</i> 181-182 TWE: 5MC 382 IE 164, 171

CONTENT STANDARDS		PAGE REFERENCES
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: 116, 121 #30, 127 #22, 133 #26, 153 #40-#41, 159 #11, 160 #29 <i>Study Guide and Assessment</i> 136 #38-#39 <i>Test</i> 137 #19 TWE: EC 126
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: 258, 260-261 #38-#39, 264, 265 #11, 266 #27-#30, 594 <i>Investigation</i> 432 <i>Problem-Solving Workshop</i> 227 TWE: EC 261 IE 258
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: 29-31, 33-34, 96-98, 100 #4-#28 <i>Graphing Calculator Exploration</i> 32 <i>Hands-On Geometry</i> 31, 65, 99 <i>Investigation</i> 74-75 TWE: 5MC 35 IE 30-31, 97
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: 632-637, 638-643, 644-648, 649-652, 654-659, 660-665 <i>Investigation</i> 666-667 TWE: IE 634, 639, 645
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: <i>Math in the Workplace</i> 339 <i>Preparing for Standardized Tests</i> 347 #10 <i>Problem-Solving Workshop</i> 89
5.12.2 Design, conduct, analyze, and communicate the results of multi-stage probability experiments. H 5.12.1	I/L	SE: 438 #29, 484, 486 #7, #24-#25 <i>Preparing for Standardized Tests</i> 138, 347 #2, 451 #6, 545 #5
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: <i>Preparing for Standardized Tests</i> 138-139 #1, #8

CONTENT STANDARDS	PAGE REFERENCES
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: 22 #39, 351 <i>Math in the Workplace</i> 339 <i>Preparing for Standardized Tests</i> 224-225, 307 #5, 399
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: 133 #32, 267 #34, 347
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: 133 #32, 267 #34 <i>Preparing for Standardized Tests</i> 184-185 #1, #7, #10
Problem Solving	
Process Standard 6.0: <i>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.</i>	
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: 37-38, 176, 190, 258, 297, 323, 369, 421-422 <i>Problem-Solving Workshop</i> 401, 453
6.2 Apply previous experience and knowledge to new problem-solving situations.	E/S SE: 98, 153 #40-41, 190, 214 #21-#22, 281 #32, 553 #43 TWE: EC 153, 161, 214, 219
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: 37-38, 64, 176, 190, 297, 421-422 <i>Hands-On Geometry</i> 283, 328, 388, 425

CONTENT STANDARDS	PAGE REFERENCES
<p>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</p>	<p>E/S SE: 512 <i>Hands-On Geometry</i> 425, 522, 593 <i>Investigation</i> 208-209, 460-461, 598-599, 666-667 <i>Preparing for Standardized Tests</i> 545 #10 <i>Problem-Solving Workshop</i> 675</p>
<p>6.9 Generalize solutions and strategies from earlier problems to new problem situations.</p>	<p>E/L SE: 61 #35, 133 #26, 153 #40, 323, 608-609, 614, 662 <i>Hands-On Geometry</i> 469 <i>Problem-Solving Workshop</i> 227, 401</p>
<p>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.</p>	<p>E/S SE: 37-38, 176, 258, 369, 421-422, 430, 480, 555, 594, 602-603</p>
<p>6.11 Apply combinations of proven strategies and previous knowledge to solve non-routine problems.</p>	<p>E/L SE: 61 #35, 173 #28, 192 #28, 250 #18, 473 #24, 539 #22, 655 <i>Investigation</i> 154-155 <i>Problem-Solving Workshop</i> 89 TWE: EC 659</p>
<p>6.13 Use technology, including calculators, to solve problems and verify solutions. S 24.5.5; S 24.8.5</p>	<p>E/L SE: 485 <i>Graphing Calculator Exploration</i> 32, 79, 112, 193, 246-247, 371, 426-427, 574, 608</p>
<p>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</p>	<p>E/L SE: 485 <i>Graphing Calculator Exploration</i> 32, 79, 112, 193, 246-247, 371, 426-427, 574, 608</p>
<p>Mathematical Communication</p>	
<p>Process Standard 7.0: <i>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.</i></p>	
<p>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</p>	<p>E/L SE: 59 #3, 71 #1, 171 #3, 196 #2, 352 #3 TWE: A 101, 239, 527, 563 ML 76</p>

CONTENT STANDARDS		PAGE REFERENCES
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: 239 #22, 258 <i>Investigation</i> 208-209, 244-245, 340-341 TWE: A 17 ML 10, 50, 76, 110
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> 75, 381 <i>Math in the Workplace</i> 23 <i>Problem-Solving Workshop</i> 3, 187, 227
7.6 Interpret and solve word problems without the necessity of key words or phrases.	E/S	SE: 37-38, 53, 355 #49, 358, 365, 369, 387 #24, 417 #23 <i>Preparing for Standardized Tests</i> 86 TWE: EC 40
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: 119 #1-#3, 131 #2 <i>Extending the Investigation</i> 11 <i>Hands-On Geometry</i> 69-70 <i>Problem-Solving Workshop</i> 49, 89, 227 TWE: EC 126 ML 90 RA 125
7.10 Evaluate the effectiveness of written and oral presentations of mathematics. S 21.5.3; S 23.5.2	I/L	SE: 15 #2, 32 #3, 79 #3, 108 #3, 158 #2, 200 #2, 352 #3, 411 #3, 498 #3 TWE: A 255
7.11 Make conjectures and present arguments in discussions of mathematical ideas. S 21.5.3; S 23.5.3	E/L	SE: 24-28, 66 #2-#19, 79 #3, 160 #29 <i>Extending the Investigation</i> 103 <i>Graphing Calculator Exploration</i> 112 <i>Hands-On Geometry</i> 76 TWE: EC 28 IE 25 ML 24
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: 151 #1-#2, 167 #22, 202 #27, 207 #28, 321 #29, 430 #18 <i>Hands-On Geometry</i> 415 TWE: A 34 ML 90, 96
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: 352 #2, 355 #54, 385 #3, 407 #34, 441 #2, 444 #20, 514 #25, 526 #23 <i>Problem-Solving Workshop</i> 349 TWE: ML 215
7.16 Express mathematical ideas and use them to define, compare, and solve problems orally and in writing.	E/S	SE: 373 #25, 378 #32, 393 #29, #35, 430 #17, 514 #24, 521 #17, 526 #22, 532-533 #17-#24, 577 #35, 594

CONTENT STANDARDS		PAGE REFERENCES
7.17 Use mathematical notation to communicate and explain mathematical situations. S 21.2.1	E/L	SE: 12-14, 50-52, 63, 69-70, 90, 104, 214 #28, 594, 618 <i>Preparing for Standardized Tests</i> 47 #5
Mathematical Reasoning		
Process Standard 8.0: 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.		
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: 24-28, 34 #15-#17, 40 #34, 637, 638-643 <i>Graphing Calculator Exploration</i> 290 <i>Investigation</i> 208-209 <i>Problem-Solving Workshop</i> 631 TWE: 5MC 29 EC 28 IE 25-26
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: 4-9, 17 #38, 51, 161 #38, 501 #33 <i>Graphing Calculator Exploration</i> 32 <i>Investigation</i> 10-11 <i>Problem-Solving Workshop</i> 3 TWE: EC 9 IE 5
8.5 Follow a logical argument and judge its validity. E 4.8.4; E 4.12.4	E/L	SE: 4-8 #14, 632-637, 638-643, 644-648, 649-653, 654-659 <i>Investigation</i> 208-209 TWE: IE 634, 639 ML 4
8.7 Recognize and apply deductive and inductive reasoning in both concrete and abstract contexts.	E/S	SE: 4-9 #14, #35, #37, 458 #37, 639, 640 #1, 642-643 #21-#25, 646 #2, 649, 653 #16 <i>Problem-Solving Workshop</i> 631 <i>Study Guide and Assessment</i> 42
8.8 Ask questions to reflect on, clarify, and extend thinking.	E/L	SE: <i>Investigation</i> 10-11, 74-75, 102-103, 208-209, 244-245, 288-289, 340-341, 502-503, 570-571, 708-709
8.9 Review and refine the assumptions and steps used to derive conclusions in mathematical arguments.	I/L	SE: <i>Investigation</i> 10-11, 74-75, 102-103, 208-209, 244-245, 288-289, 340-341, 502-503, 570-571, 708-709
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: 24-28, 66 #2-#19, 79 #3, 160 #29 <i>Extending the Investigation</i> 103 <i>Graphing Calculator Exploration</i> 112 <i>Hands-On Geometry</i> 76 TWE: EC 28 IE 25 ML 24

CONTENT STANDARDS		PAGE REFERENCES
8.11 Determine relevant, irrelevant, and/or sufficient information to solve mathematical problems.	E/S	SE: 37, 64, 98, 176, 190, 258, 297, 323, 369, 421-422, 480
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: 122, 142, 162, 203, 256, 262, 316-319, 327-329, 356, 408
9.2 Use mathematical ideas from one area of mathematics to explain an idea from another area of mathematics.	E/S	SE: 158, 159 #12, 256-261, 262-267, 331 #45, 371, 412 #18, 457 #12, 472 #23, 487 #28
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: 142-143, 179 #36, #38, 278, 413, 434, 486, 548, 676 <i>Investigation</i> 208-209, 244-245
9.4 Use the connections among mathematical topics to develop multiple approaches to problems. S 20.8.1	I/L	SE: 90, 322-324, 414 <i>Graphing Calculator Exploration</i> 170, 290 <i>Preparing for Standardized Tests</i> 86 TWE: A 197 EC 61, 147 RA 265
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: 67 #22, 93 #8, 113 #7, 133 #26, 177 #12, 287 #23-#24, 294 #23, 300 #27, 386-387 #23-#24, 477 #19
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: 72 #36, 109 #24, 167 #22, 178 #35, 202 #26, 232 #22, 277, 320 #27, 360 #25, 376 #9
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: 178 #35, 218 #10, 292, 354 #45, 524-525 <i>Math in the Workplace</i> 23, 41, 95, 459

Codes Used for TWE Pages

5MC	5-Minute Check
A	Assess
EC	Extra Credit
IE	In-Class Examples
ML	Motivating the Lesson
RA	Reteaching Activity