

GLENCOE CORRELATION
PRE-ALGEBRA
MINNESOTA
Mathematics Academic Standards
Grade Eight

CONTENT STANDARDS	PAGE REFERENCES
I. MATHEMATICAL REASONING	
<u>Standard:</u> Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands. The student will:	
1. Assess the reasonableness of a solution by comparing the solution to appropriate graphical or numerical estimates or by recognizing the feasibility of a solution in a given context.	SE: 6-10, 71 ex 3, 127 ex 3, 187 ex 3, 217 ex 6, 234 ex 6, 293-297, 334 ex 1, 347 ex 4, 369-373 (using the graphical representation and the vertical line test to determine if a relation is a function), 394 ex 2, 473 ex 3, 534 ex 2, 540 ex 1 <i>Study Guide and Intervention Workbook 1</i>
2. Appropriately use examples and counterexamples to make and test conjectures, justify solutions and explain results.	SE: 6-10, 23, 25 ex 3, 68 #48, 73 #55, 78 #57, 84 #38, 102 #53, 168 #57, 204 #48, 219 #52, 348 #47 <i>Algebra Activity 62-63</i> <i>Graphing Calculator Investigation 402-403</i> TWE: DI 25 <i>Enrichment Workbook 66</i>
3. Translate a problem described verbally or by tables, diagrams or graphs, into suitable mathematical language, solve the problem mathematically and interpret the result in the original context.	SE: 12-16, 17-21, 30 ex 5, 71 ex 3, 113 #43-#44, 115-119, 120-124, 126-130, 235-236 #31-36, 247 #42-#47, 276-280, 288-292, 304-308 <i>Reading Mathematics 11, 125</i>
4. Support mathematical results by explaining why the steps in a solution are valid and why a particular solution method is appropriate.	SE: 14 #3, 23-27, 72 ex 4, 72 #2, 77 ex 5, 104 ex 2, 107 #57, 116 ex 2, 121-122 ex 1-4, 161 #3, 179 #50 <i>Enrichment Workbook 20, 116, 199, 218, 518</i>
5. Determine whether or not relevant information is missing from a problem.	SE: 6
6. Use accurately common logical words and phrases such as “and,” “or,” “if ... then ...,” “unique,” “only if.”	SE: Logical reasoning is found on the following pages: SE: 7, 25, 71
II. NUMBER SENSE, COMPUTATION AND OPERATIONS	
A. Number Sense	
<u>Standard:</u> Use rational and irrational numbers, represented in a variety of ways, to quantify information and to solve real-world and mathematical problems. The student will:	
1. Represent and compare rational and irrational numbers symbolically and on a number line.	SE: 200-204, 205-209, 281-285, 346 ex 3, 352 ex 3, 355-359, 436-440, 441-445 <i>Algebra Activity 286-287, 465</i>

CONTENT STANDARDS	PAGE REFERENCES
2. Use rational and irrational numbers to solve real-world and mathematical problems.	SE: 210-214, 215-219, 220-224, 232-236, 264-268, 270-274, 276-280, 281-285, 288-292, 355-359, 436-440, 460-464, 466-470, 475 #23-#25, 477-481
3. Use scientific notation with positive and negative powers of 10, with appropriate treatment of significant digits, to solve real-world and mathematical problems.	SE: 186-190, 204 #52-#55, 209 #58-#61, 268 #61-#63 TWE: DI 187 OEA 190 <i>Enrichment Workbook 204</i>
4. Classify numbers as rational or irrational.	SE: 205-209, 441-445, 451#39-#42 TWE: DI 442 OEA 445 <i>Enrichment Workbook 234</i> <i>Reading to Learn Mathematics Workbook 497</i>
<p>B. Computation and Operation</p> <p><u>Standard:</u> Compute fluently and make reasonable estimates with rational and irrational numbers in real-world and mathematical problems. Understand the meanings of the basic operations, including the use of integer exponents and n^{th} roots, and how the operations relate to one another. Appropriately use calculators and other technologies to solve problems.</p> <p>The student will:</p>	
1. Use calculator approximations of irrational and rational numbers in multi-step real-world and mathematical problems.	SE: 281-285, 288-292, 304-308, 436-440, 441-445, 457 #45-#47, 460-464, 466-470, 477-481, 533-538, 568-572, 573-577, 578-582
2. Find integer approximations of square roots of positive integers without a calculator.	SE: 437-440, 445 #69-#71, 451 #43-#44 TWE: OEA 440
3. Multiply and divide expressions involving exponents with a common base.	SE: 169-173, 175-179, 185 #61-#63, 252 #44-#46, 280 #32-#35, 344 #44-#47, 683-686 <i>Algebra Activity 180</i> TWE: OEA 179 <i>Enrichment Workbook 194</i>
4. Use the inverse relationship between n^{th} roots and n^{th} powers of rational numbers to solve real-world and mathematical problems.	SE: 436-440, 441-445, 457 #45-#47, 460-464, 536 #22-#23 <i>Enrichment Workbook 493</i>
5. Apply the correct order of operations and grouping symbols when using calculators and other technologies.	SE: 12-16, 437-440, 478-481
6. Know, use and translate calculator notational conventions to mathematical notation.	SE: 437-440, 478-481
7. Understand that use of a calculator requires appropriate mathematical reasoning and does not replace the need for mental computation.	SE: 12 TWE: TT 12 <i>See the Calculator Spreadsheet Masters workbook.</i>

CONTENT STANDARDS	PAGE REFERENCES
III. PATTERNS, FUNCTIONS AND ALGEBRA	
A. Patterns and Functions	
<p><u>Standard:</u> Understand and describe progressions. Use graphs and tables to solve real-world and mathematical problems.</p> <p>The student will:</p>	
1. Recognize when a list of numbers forms an arithmetic or geometric progression and be able to determine subsequent terms in the progression.	SE: 249-252, 268 #54-#55, 344 #54-#56 <i>Algebra Activity 253</i> TWE: DI 250 <i>Enrichment Workbook 274</i>
2. Represent quantitative relationships graphically and use the graphs to solve real-world and mathematical problems.	SE: 40-44, 340-344, 345-349, 350-354, 355-359, 375-379, 381-385, 398-401, 409-413, 414-418 TWE: DI 412 <i>Enrichment Workbook 35, 456</i>
3. Generate a table of values from a formula and graph the resulting ordered pairs on a grid.	SE: 375-379 <i>Practice Workbook 423</i> <i>Study Guide and Intervention Workbook 422</i>
B. Algebra (Algebraic Thinking)	
<p><u>Standard:</u> Use algebraic operations to generate equivalent expressions, and use proportional reasoning to solve real-world and mathematical problems. Demonstrate the ability to manipulate an equation by applying arithmetic operations to both sides to maintain equivalence.</p> <p>The student will:</p>	
1. Multiply and divide expressions of the form ax^n .	SE: 169-173, 175-179, 185 #61-#63, 252 #44-#46, 280 #32-#35, 344 #44-#47, 683-686 <i>Algebra Activity 180</i> TWE: OEA 179 <i>Enrichment Workbook 194</i>
2. Use simple formulas with more than one variable to solve real-world and mathematical problems.	SE: 131-136, 298-302, 466-470, 520-525, 531 #44-#45, 533-538, 539-543, 563-567, 568-572, 573-577, 578-582 <i>Enrichment Workbook 573, 583, 588</i>
3. Use proportions and percents with one unknown quantity to solve real-world and mathematical problems.	SE: 270-274, 276-280, 281-285, 288-292, 293-297, 298-302, 304-308 <i>Algebra Activity 275, 286-287</i> <i>Spreadsheet Investigation 303</i> TWE: DI 278 OEA 280 <i>Enrichment Workbook 308, 313, 323</i>
4. Apply the correct order of operations including addition, subtraction, multiplication, division, grouping symbols and powers, to simplify and evaluate algebraic expressions.	SE: 12-16, 21 #55-#57, 27 #56-#58, 62 #65-#66, 74 #69-#70, 107 #65-#67 TWE: OEA 16 <i>Enrichment Workbook 10</i> <i>Study Guide and Intervention Workbook 6</i> <i>Practice Workbook 7</i>

CONTENT STANDARDS	PAGE REFERENCES
IV. DATA ANALYSIS, STATISTICS AND PROBABILITY	
A. Data and Statistics	
<u>Standard:</u> Represent data and use various measures associated with data to draw conclusions and identify trends.	
The student will:	
1. Construct and analyze histograms, circle graphs, stem-and-leaf plots and box-and whisker plots.	SE: 606-611, 612-616, 617-621, 623-628, 630-633 <i>Graphing Calculator Investigation</i> 622, 629 <i>Spreadsheet Investigation</i> 452 TWE: DI 611, 619, 624 OEA 611, 621 <i>Enrichment Workbook</i> 671, 686
2. Compute the quartiles of a data set.	SE: 612-616, 617-621 <i>Graphing Calculator Investigation</i> 622 TWE: UM 616
B. Probability	
<u>Standard:</u> Calculate and express probabilities numerically and apply probability concepts to solve real-world and mathematical problems.	
The student will:	
1. Understand that if p is the probability of an event occurring, then $1 - p$ is the probability of the event not occurring.	TWE: DI 311
2. Convert between odds and probabilities.	SE: 646, 648 #26-#27, 649 #32 TWE: FTE 648 OEA 649
3. Use a variety of experiments to explore the relationship between experimental and theoretical probabilities and the effect of sample size on this relationship.	SE: 310-314 <i>Graphing Calculator Investigation</i> 315 <i>Enrichment Workbook</i> 343
V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT	
A. Spatial Sense	
<u>Standard:</u> Recognize the relationship between different representations of two- and three dimensional shapes. Understand the effect of various transformations.	
The student will:	
1. Use models and visualization to understand and create various two-dimensional diagrams of three-dimensional shapes.	SE: 520-525, 527-531, 533-538, 539-543, 556-561, 573-577, 578-582 <i>Algebra Activity</i> 505, 518-519, 532 <i>Geometry Activity</i> 554-555, 562 TWE: DI 528, 558 TT 522
2. Predict the position and orientation of simple three-dimensional geometric shapes under transformations such as reflections, rotations and translations.	SE: 506-511, 517 #33, 525 #36, 686 #42-#43 <i>Algebra Activity</i> 512, 532 <i>Graphing Calculator Investigation</i> 402-403 TWE: DI 508, 528 <i>Enrichment Workbook</i> 446, 563

CONTENT STANDARDS	PAGE REFERENCES
<p>B. Geometry <u>Standard:</u> Use basic geometric principles and proportional reasoning to solve real-world and mathematical problems. The student will:</p>	
<p>1. Apply the relationship between changes in one or more linear distances in a planar figure and the change in area.</p>	<p>SE: 157 #58, 525 #33</p>
<p>2. Use the concept of similarity in simple two-dimensional figures to solve real-world and mathematical problems involving proportionality.</p>	<p>SE: 471-475, 477-481, 497 #40-#43, 584-588 <i>Algebra Activity</i> 583 <i>Extra Practice</i> 747 (9-7) #1-#4 TWE: DI 472, 473, 586 OEA 475</p>
<p>3. Know how to find the volumes of cubes, prisms, spheres and cylinders.</p>	<p>SE: 563-567, 568-572, 616 #27-#28 <i>Extra Practice</i> 750 (11-2) #1-#8, 751 (11-3) #1-#7 <i>Geometry Activity</i> 562 TWE: DI 566, 570 OEA 567, 572 <i>Enrichment Workbook</i> 618, 623</p>
<p>4. Know how to find the surface areas of cubes, prisms and cylinders.</p>	<p>SE: 573-577, 578 <i>Extra Practice</i> 751 (11-4) #1-#8, 751 (11-5) #1-#7 TWE: DI 574, 580 UM 579 OEA 576, 582</p>
<p>5. Calculate perimeter and area of two-dimensional figures obtained by putting together triangles, parallelograms, and sectors of circles to solve real-world and mathematical problems.</p>	<p>SE: 539-543 TWE: DI 540 OEA 543 <i>Enrichment Workbook</i> 583 <i>Study Guide and Intervention Workbook</i> 584 <i>Practice Workbook</i> 585</p>
<p>C. Measurement <u>Standard:</u> Make calculations of time, length, area and volume within and between standard measuring systems using good judgment in choice of units. The student will:</p>	
<p>1. Find approximate equivalent measures of length, temperature and weight for common units in U.S. customary and metric measuring systems.</p>	<p>SE: 119 #50, 212-214, 381, 590-594 <i>Prerequisite Skills</i> 718-719, 720-721 TWE: DI 385 See the Measures section on the page prior to the inside of the back cover of the textbook.</p>
<p>2. Use arithmetic to solve simple real-world and mathematical problems involving mixed units such as minutes and hours in elapsed time, degrees and minutes in latitude and longitude and feet and inches in distance.</p>	<p>SE: 119 #50, 212-214, 217-219, 266-268</p>

Codes Used for TWE Pages

DI	Differentiated Instruction
FTE	Find the Error
OEA	Open-Ended Assessment
UM	Unlocking Misconceptions
TT	Teaching Tip