

GLENCOE CORRELATION
MATHEMATICS: APPLICATIONS AND CONCEPTS COURSE 3
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, 30 #2, 95 #34, 226-227, 537-538, 544-547, 554 #39-#44, 555 #1 TWE: A 227, 538 DI 226 <i>Practice: Skills 2, 650</i> <i>Practice: Word Problems 3, 651</i>
2. Appropriately use examples and counterexamples to make and test conjectures, justify solutions and explain results.	SE: 13 ex 5, 14 #12-#13, 15 #51-#54, 21 #59-#61, 27 #45, 31 #46-#47, 38 #62-#64, 57 #1, 128 #1, 182 #18-#19, 276-277 TWE: ICE #5 13
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: 176-177, 378-379, 418-419, 479 ex 5, 481 #19, 520 #26 <i>Hands-On Mini Lab 347, 469</i> TWE: A 419 DI 353 <i>Practice: Word Problems 3, 8, 43, 207, 212</i>
4. Support mathematical results by explaining why the steps in a solution are valid and why a particular solution method is appropriate.	SE: 189 #2, 218 #3, 239 #4, 317 #3, 328 #2, 337 #2 TWE: A 214, 223, 329, 355
5. Determine whether or not relevant information is missing from a problem.	SE: 6-10, 191 #16-#18
6. Use accurately common logical words and phrases such as “and,” “or,” “if ... then ...,” “unique,” “only if.”	SE: Logical reasoning is found on pages 276-277
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: 67-70, 109 #21-#25, 111 #25, 121 #1, 125-129, 130 #1, 136 #38-#41, 140 #25, 150 #6 <i>Extra Practice Lesson 3-3 622</i> <i>Hands-On Lab 141</i> TWE: B 67 DI 68 <i>Practice: Skills 144</i> <i>Study Guide and Intervention 143</i>

CONTENT STANDARDS	PAGE REFERENCES
2. Use rational and irrational numbers to solve real-world and mathematical problems.	SE: 127 ex 7, 130 #24, 133 #1, 136 #32, 137-140, 148 #37-#41, 149 #16, 151 #13, 650 <i>Extra Practice Lesson 3-5 623</i> <i>Practice: Word Problems 99, 145, 150, 155, 160</i>
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: 104-107, 110 #58-#65, 111 #23-#24, 112 #9-#10, 119 #51, 122 #40 TWE: A 107 DI 105 NS 106 <i>Practice: Skills 108</i> <i>Practice: Word Problems 109</i> <i>Study Guide and Intervention 107</i>
4. Classify numbers as rational or irrational.	SE: 125-129, 130 #18-#23, 147 #25-#30, 149 #9-#11 <i>Extra Practice Lesson 3-3 622</i> TWE: A 129 DI 126 <i>Practice: Skills 144</i> <i>Study Guide and Intervention 143</i>
B. Computation and Operation <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. The student will:	
1. Use calculator approximations of irrational and rational numbers in multi-step real-world and mathematical problems.	SE: 64 ex 3, 126 ex 4, 127 ex 7, 129 #49-#50 <i>Practice: Word Problems 145</i>
2. Find integer approximations of square roots of positive integers without a calculator.	SE: 120-124, 129 #54, 130 #12-#17, 136 #42, 147 #16-#24, 149 #6-#8, 150 #5, 151 #11 <i>Extra Practice Lesson 3-2 622</i> TWE: A 122 DI 120 <i>Practice: Skills 139</i> <i>Practice: Word Problems 140</i> <i>Study Guide and Intervention 138</i>
3. Multiply and divide expressions involving exponents with a common base.	SE: 584-587, 592 #30-#33, 594 #22-#25, 595 #18-#21, 659 #12-#13 <i>Extra Practice Lesson 12-6 647</i> TWE: A 587 DI 585 NS 586 TNT 585 <i>Practice: Skills 705</i> <i>Practice: Word Problems 706</i> <i>Study Guide and Intervention 704</i>

CONTENT STANDARDS	PAGE REFERENCES
4. Use the inverse relationship between n^{th} roots and n^{th} powers of rational numbers to solve real-world and mathematical problems.	SE: 117 ex 3 and 4, 118 #9-#13, 119 #28-#39, 122 #38, 129 #55-#57, 130 #11, 133 ex 1 and 2, 135 #12-#17, 137 ex 1, 147 #24, 149 #12-#13 TWE: ICE 117 #3-#4 <i>Practice: Skills</i> 134 <i>Practice: Word Problems</i> 135 <i>Study Guide and Intervention</i> 133
5. Apply the correct order of operations and grouping symbols when using calculators and other technologies.	SE: 99 ex 2 <i>Study Tip</i> 12, 105, 121 <i>Test-Taking Tip</i> 385
6. Know, use and translate calculator notational conventions to mathematical notation.	<i>Calculator Spreadsheet Masters</i> 7, 13, 14, 15, 16, 17, 25, 31, 34, 38, 42, 43, 44
7. Understand that use of a calculator requires appropriate mathematical reasoning and does not replace the need for mental computation.	SE: <i>Study Tip</i> 12 See the <i>Calculator Spreadsheet Masters</i> workbook.
III. PATTERNS, FUNCTIONS AND ALGEBRA	
A. Patterns and Functions <u>Standard:</u> Understand and describe progressions. Use graphs and tables to solve real-world and mathematical problems. The student will:	
1. Recognize when a list of numbers forms an arithmetic or geometric progression and be able to determine subsequent terms in the progression.	SE: 512-515, 520 #29-#31, 530 #4-#6, 552 #9-#13, 555 #3-#5, 658 #1-#3 <i>Extra Practice Lesson 11-1</i> 642 TWE: B 512 <i>Practice: Skills</i> 620 <i>Practice: Word Problems</i> 621 <i>Study Guide and Intervention</i> 619
2. Represent quantitative relationships graphically and use the graphs to solve real-world and mathematical problems.	SE: 522-525, 537-538, 545 ex 3, 555 #15-#17, 658 #8-#10 TWE: B 537 DI 523, 537 <i>Practice: Skills</i> 630 <i>Practice: Word Problems</i> 631 <i>Study Guide and Intervention</i> 629
3. Generate a table of values from a formula and graph the resulting ordered pairs on a grid.	SE: 517-520, 522-525, 529 #32-#35, 530 #8-#10, 553 #20-#24, 556 #4, 557 #13 <i>Extra Practice Lesson 11-3</i> 643 <i>Graphing Calculator Investigation</i> 532 TWE: DI 523 <i>Practice: Skills</i> 625, 630 <i>Practice: Word Problems</i> 626 <i>Study Guide and Intervention</i> 624, 629

CONTENT STANDARDS	PAGE REFERENCES
<p>B. Algebra (Algebraic Thinking) Standard: 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. The student will:</p>	
<p>1. Multiply and divide expressions of the form ax^n.</p>	<p>SE: 584-587, 592 #30-#33, 594 #22-#25, 595 #18-#21, 659 #12-#13 <i>Extra Practice Lesson 12-6 647</i> TWE: A 587 DI 585 NS 586 TNT 585 <i>Practice: Skills 705</i> <i>Practice: Word Problems 706</i> <i>Study Guide and Intervention 704</i></p>
<p>2. Use simple formulas with more than one variable to solve real-world and mathematical problems.</p>	<p>SE: 14 #40, 15 #41-#42, 51 ex 3, 73 ex 5, 241 ex 1, 242 ex 3, 243 #15-#16, 244 #26, #39-#42, 648 #2-#3, 652 #16 TWE: A 42 <i>Practice: Skills 281</i> <i>Practice: Word Problems 282</i> <i>Study Guide and Intervention 280</i></p>
<p>3. Use proportions and percents with one unknown quantity to solve real-world and mathematical problems.</p>	<p>SE: 170-173, 174 #12-#14, 181 #10-#13, 187 #26-#28, 199 #16-#20, 200 #28-#29, 201 #9-#10, 216-219 TWE: A 173, 219 <i>Practice: Skills 201</i> <i>Practice: Word Problems 202, 257</i> <i>Study Guide and Intervention 200, 255</i></p>
<p>4. Apply the correct order of operations including addition, subtraction, multiplication, division, grouping symbols and powers, to simplify and evaluate algebraic expressions.</p>	<p>SE: 11-15, 19 ex 6- ex 8, 20 #12-#14, 21 #52-#57, 27 #55-#58, 29 ex 5-ex 6, 30 #34-#41, 32 #5 TWE: DI 12 TNT 12 <i>Practice: Skills 7, 12</i> <i>Practice: Word Problems 8</i> <i>Study Guide and Intervention 6, 11</i></p>
<p>IV. DATA ANALYSIS, STATISTICS AND PROBABILITY</p>	
<p>A. Data and Statistics Standard: Represent data and use various measures associated with data to draw conclusions and identify trends. The student will:</p>	
<p>1. Construct and analyze histograms, circle graphs, stem-and-leaf plots and box-and whisker plots.</p>	<p>SE: 420-424, 426-429, 433 #17, 440 #3-#4, 446-449 <i>Graphing Calculator Investigation 425</i> TWE: A 424, 429 DI 447 <i>Practice: Skills 502, 507</i> <i>Practice: Word Problems 503, 508</i> <i>Study Guide and Intervention 501, 506</i></p>

CONTENT STANDARDS	PAGE REFERENCES
2. Compute the quartiles of a data set.	SE: 442-445, 446-449, 453 #18, 459 #18-#21, 461 #10-#11, 462 #9, 463 #15 TWE: DI 443, 447 <i>Practice: Skills</i> 522, 527 <i>Practice: Word Problems</i> 523, 528 <i>Study Guide and Intervention</i> 521, 526
B. Probability <u>Standard:</u> Calculate and express probabilities numerically and apply probability concepts to solve real-world and mathematical problems. <u>The student will:</u>	
1. Understand that if p is the probability of an event occurring, then $1 - p$ is the probability of the event not occurring.	SE: 375 ex 4, 376 #21, 377 #32, 394 #5, 410 #11
2. Convert between odds and probabilities.	SE: 377 #28-#30
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: 400-403, 406-409, 412 #42-#45, 413 #17-#19 <i>Graphing Calculator Investigation</i> 404-405 <i>WebQuest</i> 371 TWE: A 403 B 396 DI 400 <i>Practice: Skills</i> 471, 476 <i>Practice: Word Problems</i> 472, 477 <i>Study Guide and Intervention</i> 470, 475
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. <u>The student will:</u>	
1. Use models and visualization to understand and create various two-dimensional diagrams of three-dimensional shapes.	SE: 331-334, 352, 368 #8 <i>The Game Zone</i> 341 <i>Hands-On Lab</i> 346 <i>Hands-On Mini Lab</i> 342 TWE: A 334 DI 331 TNT 347 <i>Practice: Skills</i> 393 <i>Practice: Word Problems</i> 394 <i>Study Guide and Intervention</i> 392
2. Predict the position and orientation of simple three-dimensional geometric shapes under transformations such as reflections, rotations and translations.	Transformations on 2-dimensional shapes are found on pages SE: 290-294, 296-299, 300-303, 308 #29-#34 TWE: A 294, 299 <i>Practice: Skills</i> 338, 343, 348 <i>Practice: Word Problems</i> 339, 344, 349 <i>Study Guide and Intervention</i> 337, 342, 347

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: 318 #27-#28, 322 #21 3-dimensional shapes are found on pages SE: 339 #33-#36, 344 #1, 345 #24, 351 #23 TWE: DI 348</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: 178-182, 187 #25, 191 #25, 199 #21-#23, 201 #11-#12, 203 #13, 651 #9 <i>Extra Practice Lesson 4-5</i> 625 <i>Spreadsheet Investigation</i> 356-357 TWE: A 182 B 178 <i>Practice: Skills</i> 206 <i>Practice: Word Problems</i> 207 <i>Study Guide and Intervention</i> 205</p>
<p>3. Know how to find the volumes of cubes, prisms, spheres and cylinders.</p>	<p>SE: 335-339, 340 #8-#10, 345 #32, 351 #35, 355 #28, 365 #24-#26, 367 #9-#10, 369 #17, 654 #6-#8 <i>Extra Practice Lesson 7-5</i> 633 <i>Spreadsheet Investigation</i> 356-357 <i>Practice: Skills</i> 398 <i>Practice: Word Problems</i> 399 <i>Study Guide and Intervention</i> 397</p>
<p>4. Know how to find the surface areas of cubes, prisms and cylinders.</p>	<p>SE: 347-351, 355 #27, 365 #30-#32, 367 #9-#10, 369 #15, #17, 654 #10-#11 <i>Extra Practice Lesson 7-7</i> 634 <i>Spreadsheet Investigation</i> 356-357 TWE: A 350 DI 348 <i>Practice: Skills</i> 408 <i>Practice: Word Problems</i> 409 <i>Study Guide and Intervention</i> 407</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: 326-329, 334 #25-#27, 339 #39, 340 #5-#6, 364 #18-#21, 367 #8, 369 #14, 654 #4 <i>Extra Practice Lesson 7-3</i> 633 TWE: A 329 DI 326 <i>Practice: Skills</i> 388 <i>Practice: Word Problems</i> 389 <i>Study Guide and Intervention</i> 387</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: 52 #36-#39, 604-605, 606-607, 648 #2-#3</p>

CONTENT STANDARDS	PAGE REFERENCES
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.	SE: 605 ex 11, #22-#27

Codes Used for TWE Pages

A	Assess
B	Bellringer
DI	Daily Intervention
ICE	In-Class Example
NS	Number Sense
TNT	Tips for New Teachers