



Mathematics

Applications and Concepts
Course 3
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STANDARDS	PAGE REFERENCES
I. MATHEMATICAL REASONING	
Standard: Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands.	
Note about assessment of this standard: The Mathematical Reasoning standards will primarily be assessed within the context of the standards in the remaining four content strands. The depth of mathematical reasoning will increase as the skill level in the four other strands increases.	
<p>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.</p>	<p>Student Edition: 6-10, 30 #2, 95 #34, 226-227, 537-538, 544-547, 554 #39-#44, 555 #1</p> <p>Teacher Wraparound Edition: A 227, 538; DI 226</p> <p>Teacher Resources: <i>Practice: Skills 2, 650</i> <i>Practice: Word Problems 3, 651</i></p>
<p>2. Appropriately use examples and counterexamples to make and test conjectures, justify solutions and explain results.</p>	<p>Student Edition: 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, 277-278</p> <p>Teacher Wraparound Edition: ICE 13</p>

STANDARDS	PAGE REFERENCES
<p>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.</p>	<p>Student Edition: 176-177, 378-379, 418-419, 479 ex 5, 481 #19, 520 #26 <i>Hands-On Mini Lab</i> 347, 469 Teacher Wraparound Edition: A 419; DI 353 Teacher Resources: <i>Practice: Word Problems</i> 3, 8, 43, 207, 212</p>
<p>4. Support mathematical results by explaining why the steps in a solution are valid and why a particular solution method is appropriate.</p>	<p>Student Edition: 189 #2, 218 #3, 239 #4, 317 #3, 328 #2, 337 #2 Teacher Wraparound Edition: A 214, 223, 329, 355</p>
<p>5. Determine whether or not relevant information is missing from a problem.</p>	<p>Student Edition: 6-10, 191 #16-#18</p>
<p>6. Use accurately common logical words and phrases such as “and,” “or,” “if ... then ...,” “unique,” “only if.”</p>	<p>Student Edition: 276-277 (logical reasoning) <i>Teaching Tip</i> 134 Teacher Wraparound Edition: P 135</p>
<p>II. NUMBER SENSE, COMPUTATION AND OPERATIONS</p>	
<p>A. Number Sense</p>	
<p>Standard: Use rational and irrational numbers, represented in a variety of ways, to quantify information and to solve real-world and mathematical problems.</p>	
<p>1. Represent and compare rational and irrational numbers symbolically and on a number line.</p>	<p>Student Edition: 67-70, 109 #21-#25, 111 #25, 121 #1, 125-129, 130 #1, 136 #38-#41, 140 #25, 150 #6 <i>Extra Practice Lesson</i> 3-3 622 <i>Hands-On Lab</i> 141 Teacher Wraparound Edition: B 67; DI 68 Teacher Resources: <i>Practice: Skills</i> 144 <i>Study Guide and Intervention</i> 143</p>
<p>2. Use rational and irrational numbers to solve real-world and mathematical problems.</p>	<p>Student Edition: 127 ex 7, 130 #24, 133 #1, 136 #32, 137-140, 148 #37-#41, 149 #16, 151 #13, 650 <i>Extra Practice Lesson</i> 3-5 623 Teacher Resources: <i>Practice: Word Problems</i> 99, 145, 150, 155, 160</p>

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<p>3. Use scientific notation with positive and negative powers of 10, with appropriate treatment of significant digits, to solve real-world and mathematical problems.</p>	<p>Student Edition: 104-107, 110 #58-#65, 111 #23-#24, 112 #9-#10, 119 #51, 122 #40</p> <p>Teacher Wraparound Edition: A 107; DI 105; ICE 105; NS 106</p> <p>Teacher Resources: <i>Practice: Skills 108</i> <i>Practice: Word Problems 109</i> <i>Study Guide and Intervention 107</i></p>
<p>4. Classify numbers as rational or irrational.</p>	<p>Student Edition: 125-129, 130 #18-#23, 147 #25-#30, 149 #9-#11 <i>Extra Practice Lesson 3-3 622</i></p> <p>Teacher Wraparound Edition: A 129; DI 126; ICE 126</p> <p>Teacher Resources: <i>Practice: Skills 144</i> <i>Study Guide and Intervention 143</i></p>
<p>B. Computation and Operation</p>	
<p>Standard: 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>1. Use calculator approximations of irrational and rational numbers in multi-step real-world and mathematical problems.</p>	<p>Student Edition: 64 ex 3, 126 ex 4, 127 ex 7, 129 #49-#50</p> <p>Teacher Wraparound Edition: ICE 64, 126, 127</p> <p>Teacher Resources: <i>Practice: Word Problems 145</i></p>
<p>2. Find integer approximations of square roots of positive integers without a calculator.</p>	<p>Student Edition: 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></p> <p>Teacher Wraparound Edition: A 122; DI 120; ICE 121</p> <p>Teacher Resources: <i>Practice: Skills 139</i> <i>Practice: Word Problems 140</i> <i>Reading to Learn Mathematics 141</i> <i>Study Guide and Intervention 138</i></p>

STANDARDS	PAGE REFERENCES
3. Multiply and divide expressions involving exponents with a common base.	Student Edition: 584-587, 592 #30-#33, 594 #22-#25, 595 #18-#21, 659 #12-#13 <i>Extra Practice Lesson 12-6 647</i> Teacher Wraparound Edition: A 587; DI 585; ICE 585; NS 586; TNT 585 Teacher Resources: <i>Practice: Skills 705</i> <i>Practice: Word Problems 706</i> <i>Reading to Learn Mathematics 702</i> <i>Study Guide and Intervention 704</i>
4. Use the inverse relationship between n^{th} roots and n^{th} powers of rational numbers to solve real-world and mathematical problems.	Student Edition: 117 ex 4 Teacher Wraparound Edition: ICE 117 Teacher Resources: <i>Practice: Skills 134</i> <i>Study Guide and Intervention 133</i>
5. Apply the correct order of operations and grouping symbols when using calculators and other technologies.	Student Edition: 99 ex 2 <i>Study Tip 12, 105, 121</i> <i>Test-Taking Tip 385</i>
6. Know, use and translate calculator notational conventions to mathematical notation.	Student Edition: 63 ex 1, 64 ex 3, 67 ex 1, 99 ex 2, 117 ex 4, 320 ex 1 <i>Study Tip 105, 121</i> <i>Test-Taking Tip 385</i>
7. Understand that use of a calculator requires appropriate mathematical reasoning and does not replace the need for mental computation.	Student Edition: <i>Study Tip 12</i>

STANDARDS	PAGE REFERENCES
III. PATTERNS, FUNCTIONS AND ALGEBRA	
A. Patterns and Functions	
Standard: Understand and describe progressions. Use graphs and tables to solve real-world and mathematical problems.	
<p>1. Recognize when a list of numbers forms an arithmetic or geometric progression and be able to determine subsequent terms in the progression.</p>	<p>Student Edition: 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 Teacher Wraparound Edition: A 515; B 512; ICE 513 Teacher Resources: <i>Practice: Skills</i> 620 <i>Practice: Word Problems</i> 621 <i>Study Guide and Intervention</i> 619</p>
<p>2. Represent quantitative relationships graphically and use the graphs to solve real-world and mathematical problems.</p>	<p>Student Edition: 522-525, 537-538, 545 ex 3, 555 #15-#17, 658 #8-#10 Teacher Wraparound Edition: B 537; DI 523, 537; ICE 523, 537 Teacher Resources: <i>Practice: Skills</i> 630 <i>Practice: Word Problems</i> 631 <i>Study Guide and Intervention</i> 629</p>
<p>3. Generate a table of values from a formula and graph the resulting ordered pairs on a grid.</p>	<p>Student Edition: 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 Teacher Wraparound Edition: DI 523 Teacher Resources: <i>Practice: Skills</i> 625, 630 <i>Practice: Word Problems</i> 626 <i>Study Guide and Intervention</i> 624, 629</p>

STANDARDS	PAGE REFERENCES
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.	
1. Multiply and divide expressions of the form ax_n .	<p>Student Edition: 584-587, 592 #30-#33, 594 #22-#25, 595 #18-#21, 659 #12-#13 <i>Extra Practice Lesson 12-6</i> 647</p> <p>Teacher Wraparound Edition: A 587; DI 585; ICE 585; NS 586; TNT 585</p> <p>Teacher Resources: <i>Practice: Skills</i> 705 <i>Practice: Word Problems</i> 706 <i>Reading to Learn Mathematics</i> 702 <i>Study Guide and Intervention</i> 704</p>
2. Use simple formulas with more than one variable to solve real-world and mathematical problems.	<p>Student Edition: 14 #40, 15 #41-#42, 39-42, 51 ex 3, 73 ex 5, 241 ex 1, 242 ex 3, 243 #15-#16, 244 #26, 648 #2-#3, 652 #16</p> <p>Teacher Wraparound Edition: A 42</p> <p>Teacher Resources: <i>Practice: Skills</i> 281 <i>Practice: Word Problems</i> 282 <i>Study Guide and Intervention</i> 280</p>
3. Use proportions and percents with one unknown quantity to solve real-world and mathematical problems.	<p>Student Edition: 170-173, 174 #12-#14, 181 #10-#13, 187 #26-#28, 199 #16-#20, 200 #28-#29, 201 #9-#10, 216-219</p> <p>Teacher Wraparound Edition: A 173, 219</p> <p>Teacher Resources: <i>Practice: Skills</i> 201 <i>Practice: Word Problems</i> 202, 257 <i>Study Guide and Intervention</i> 200, 255</p>

STANDARDS	PAGE REFERENCES
<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>Student Edition: 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</p> <p>Teacher Wraparound Edition: DI 12; TNT 12</p> <p>Teacher Resources: <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</p>	
<p>Standard: Represent data and use various measures associated with data to draw conclusions and identify trends.</p>	
<p>1. Construct and analyze histograms, circle graphs, stem-and-leaf plots and box-and-whisker plots.</p>	<p>Student Edition: 420-424, 426-429, 433 #17, 440 #3-#4, 446-449 <i>Graphing Calculator Investigation 425</i></p> <p>Teacher Wraparound Edition: A 424, 429; DI 447; ICE 421, 422, 427</p> <p>Teacher Resources: <i>Practice: Skills 502, 507</i> <i>Practice: Word Problems 503, 508</i> <i>Study Guide and Intervention 501, 506</i></p>
<p>2. Compute the quartiles of a data set.</p>	<p>Student Edition: 442-445, 446-449, 453 #18, 459 #18-#21, 461 #10-#11, 462 #9, 463 #15</p> <p>Teacher Wraparound Edition: DI 443, 447; ICE 443, 447</p> <p>Teacher Resources: <i>Practice: Skills 522, 527</i> <i>Practice: Word Problems 523, 528</i> <i>Study Guide and Intervention 521, 526</i></p>
<p>B. Probability</p>	
<p>Standard: Calculate and express probabilities numerically and apply probability concepts to solve real-world and mathematical problems.</p>	
<p>1. Understand that if p is the probability of an event occurring, then $1 - p$ is the probability of the event not occurring.</p>	<p>Student Edition: 375 ex 4, 376 #21, 377 #32, 394 #5, 410 #11</p>
<p>2. Convert between odds and probabilities.</p>	<p>Student Edition: 377 #28-#30</p>

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<p>3. Use a variety of experiments to explore the relationship between experimental and theoretical probabilities and the effect of sample size on this relationship.</p>	<p>Student Edition: 400-403, 406-409, 412 #42-#45, 413 #17-#19 <i>Graphing Calculator Investigation</i> 404-405</p> <p>Teacher Wraparound Edition: A 403; B 396; DI 400; ICE 401, 407</p> <p>Teacher Resources: <i>Practice: Skills</i> 471, 476 <i>Practice: Word Problems</i> 472, 477 <i>Study Guide and Intervention</i> 470, 475</p>
<p>V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT</p>	
<p>A. Spatial Sense</p>	
<p>Standard: Recognize the relationship between different representations of two- and three-dimensional shapes. Understand the effect of various transformations.</p>	
<p>1. Use models and visualization to understand and create various two-dimensional diagrams of three-dimensional shapes.</p>	<p>Student Edition: 331-334, 352, 368 #8 <i>The Game Zone</i> 341 <i>Hands-On Lab</i> 346 <i>Hands-On Mini Lab</i> 342</p> <p>Teacher Wraparound Edition: A 334; DI 331; ICE 332; TNT 347</p> <p>Teacher Resources: <i>Practice: Skills</i> 393 <i>Practice: Word Problems</i> 394 <i>Study Guide and Intervention</i> 392</p>
<p>2. Predict the position and orientation of simple three-dimensional geometric shapes under transformations such as reflections, rotations and translations.</p>	<p>Transformations on two-dimensional shapes are found:</p> <p>Student Edition: 290-294, 296-299, 300-303, 308 #29-#34</p> <p>Teacher Wraparound Edition: A 294, 299</p> <p>Teacher Resources: <i>Practice: Skills</i> 338, 343, 348 <i>Practice: Word Problems</i> 339, 344, 349 <i>Study Guide and Intervention</i> 337, 342, 347</p>

STANDARDS	PAGE REFERENCES
B. Geometry	
Standard: Use basic geometric principles and proportional reasoning to solve real-world and mathematical problems.	
1. Apply the relationship between changes in one or more linear distances in a planar figure and the change in area.	Student Edition: 318 #27-#28, 322 #21 3-dimensional shapes are found on pages 339 #33-#36, 344 #1, 345 #24, 351 #23 Teacher Wraparound Edition: DI 348
2. Use the concept of similarity in simple two-dimensional figures to solve real-world and mathematical problems involving proportionality.	Student Edition: 178-182, 187 #25, 191 #25, 199 #21-#23, 201 #11-#12, 203 #13, 651 #9 <i>Extra Practice Lesson 4-5 625</i> <i>Spreadsheet Investigation 356-357</i> Teacher Wraparound Edition: A 182; B 178; ICE 179, 180 Teacher Resources: <i>Practice: Skills 206</i> <i>Practice: Word Problems 207</i> <i>Study Guide and Intervention 205</i>
3. Know how to find the volumes of cubes, prisms, spheres and cylinders.	Student Edition: 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 7-5 633</i> <i>Spreadsheet Investigation 356-357</i> Teacher Resources: <i>Practice: Skills 398</i> <i>Practice: Word Problems 399</i> <i>Study Guide and Intervention 397</i>
4. Know how to find the surface areas of cubes, prisms and cylinders.	Student Edition: 347-351, 355 #27, 365 #30-#32, 367 #9-#10, 369 #15, #17, 654 #10-#11 <i>Extra Practice Lesson 7-7 634</i> <i>Spreadsheet Investigation 356-357</i> Teacher Wraparound Edition: A 350; DI 348; ICE 348, 349 Teacher Resources: <i>Practice: Skills 408</i> <i>Practice: Word Problems 409</i> <i>Study Guide and Intervention 407</i>

STANDARDS	PAGE REFERENCES
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.	Student Edition: 326-329, 334 #25-#27, 339 #39, 340 #5-#6, 364 #18-#21, 367 #8, 369 #14, 654 #4 <i>Extra Practice Lesson 7-3 633</i> Teacher Wraparound Edition: A 329; DI 326; ICE 327 Teacher Resources: <i>Practice: Skills 388</i> <i>Practice: Word Problems 389</i> <i>Study Guide and Intervention 387</i>
C. Measurement	
Standard: Make calculations of time, length, area and volume within and between standard measuring systems using good judgment in choice of units.	
1. Find approximate equivalent measures of length, temperature and weight for common units in U.S. customary and metric measuring systems.	Student Edition: 52 #36-#39, 604-605, 606-607, 648 #2-#3
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.	Student Edition: 605 ex 11, #22-#27