



# Mathematics

Applications and Concepts  
Course 2  
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STANDARDS	PAGE REFERENCES
<p><b>I. MATHEMATICAL REASONING</b></p>	
<p><b>Standard:</b> Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands.</p>	
<p><i>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.</i></p>	
<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><b>Student Edition:</b> 57 #15, 60-63, 68 #27, 88 #11-#13, 92-95, 101 #15, 131 #46-#48, 240-243, 319, 334 <i>Problem Solving Strategy</i> 58-59, 338-339, 444-445 <b>Teacher Wraparound Edition:</b> DI 59, 92, 241, 335, 338; IE 61, 335 <b>Teacher Resources:</b> <i>Practice: Skills</i> 103 <i>Practice: Word Problems</i> 243 <i>Study Guide and Intervention</i> 63, 95</p>
<p>2. Appropriately use examples and counterexamples to make and test conjectures, justify solutions and explain results.</p>	<p><b>Student Edition:</b> 182, 248, 336 #4, 422, 534 #20 <i>Hands-on Lab</i> 37, 118-119, 126-127, 154-155, 322, 432-433 <i>Problem-Solving Strategy</i> 338-339, 444-445 <b>Teacher Wraparound Edition:</b> A 213; B 160, 444; IE 338</p>

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<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><b>Student Edition:</b> 87 #4, 150-152 <i>Hands-on Lab</i> 37 <i>Study Skill</i> 153</p> <p><b>Teacher Wraparound Edition:</b> A 36; B 150; DI 445</p> <p><b>Teacher Resources:</b> <i>Practice: Word Problem</i> 18, 187</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><b>Student Edition:</b> 6-9, 46 <i>Problem-Solving Strategy</i> 164-165 <i>Study Skill</i> 125</p> <p><b>Teacher Wraparound Edition:</b> A 9, 251, 273, 308; B 6; DI 7, 164</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 2 <i>Practice: Word Problems</i> 3 <i>Study Guide and Intervention</i> 1</p>
<p>5. Determine whether or not relevant information is missing from a problem.</p>	<p><b>Student Edition:</b> 6-9, 231 #56</p> <p><b>Teacher Resources:</b> <i>Reading to Learn Mathematics</i> 4</p>
<p>6. Use accurately common logical words and phrases such as “and,” “or,” “if ... then ...,” “unique,” “only if.”</p>	<p><b>Student Edition:</b> <i>Problem Solving Strategy</i> 444-445</p>
<p><b>II. NUMBER SENSE, COMPUTATION AND OPERATIONS</b></p>	
<p><b>A. Number Sense</b></p>	
<p><b>Standard:</b> Use positive and negative rational numbers, represented in a variety of ways, to quantify information and to solve real-world and mathematical problems.</p>	
<p>1. Represent rational numbers as fractions, mixed numbers, decimals or percents and convert among various forms as appropriate.</p>	<p><b>Student Edition:</b> 210-213, 216-219, 220-223, 312-315</p> <p><b>Teacher Wraparound Edition:</b> A 213, 219; B 210, 220; DI 221; IE 211, 217, 221</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 264, 396 <i>Practice: Word Problems</i> 260, 265, 397 <i>Study Guide and Intervention</i> 258, 263, 395</p>

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<p>2. Use scientific notation with positive powers of 10, with appropriate treatment of significant digits, to solve real-world and mathematical problems.</p>	<p><b>Student Edition:</b> 43-45, 49 #22-#24, 51 #16 <i>Web Quest</i> 103</p> <p><b>Teacher Wraparound Edition:</b> DI 43; IE 44</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 42 <i>Practice: Word Problems</i> 43 <i>Study Guide and Intervention</i> 41</p>
<p>3. Locate and compare positive and negative rational numbers on a number line.</p>	<p><b>Student Edition:</b> 106-108, 109-111</p> <p><b>Teacher Wraparound Edition:</b> A 108; B 106</p> <p><b>Teacher Resources:</b> <i>Study Guide and Intervention</i> 134</p>
<p><b>B. Computation and Operation</b></p>	
<p><b>Standard:</b> Compute fluently and make reasonable estimates with rational numbers in real-world and mathematical problems. Understand the meanings of the basic operations, including the use of integer exponents and square roots, and how the operations relate to one another. Appropriately use calculators and other technologies to solve problems.</p>	
<p>1. Add, subtract, multiply and divide fractions and mixed numbers.</p>	<p><b>Student Edition:</b> 244-247, 248-251, 254-257, 264-266 <i>The Game Zone</i> 263</p> <p><b>Teacher Wraparound Edition:</b> A 251; B 244; DI 249; IE 245, 255, 265</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 309, 314, 319, 329 <i>Practice: Word Problems</i> 310, 315, 320, 330 <i>Study Guide and Intervention</i> 308, 313, 318, 328</p>
<p>2. Use the inverse relationship between extracting square roots and squaring positive integers to solve real-world and mathematical problems.</p>	<p><b>Student Edition:</b> 470-473</p> <p><b>Teacher Wraparound Edition:</b> A 473; B 470; DI 471; IE 471</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 610 <i>Practice: Word Problems</i> 611 <i>Study Guide and Intervention</i> 609</p>

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<p>3. Calculate the percentage of increase and decrease of a quantity in real-world and mathematical problems.</p>	<p><b>Student Edition:</b> 350-353, 363 #27-#31, 365 #12, #14</p> <p><b>Teacher Wraparound Edition:</b> A 353; B 350; IE 351</p> <p><b>Teacher Resources:</b> <i>Practice: Skills 451</i> <i>Practice: Word Problems 452</i> <i>Study Guide and Intervention 450</i></p>
<p>4. Convert among fractions, decimals and percents and use these representations for estimations and computations in real-world and mathematical problems.</p>	<p><b>Student Edition:</b> 210-213, 216-219, 220-223, 312-315</p> <p><b>Teacher Wraparound Edition:</b> A 213, 223; B 216, 220</p> <p><b>Teacher Resources:</b> <i>Practice: Word Problems 260, 265, 270, 397</i></p>
<p>5. Understand and compute positive integer powers of nonnegative integers and express examples as repeated multiplication such as <math>3^4 = 3 \times 3 \times 3 \times 3 = 81</math>.</p>	<p><b>Student Edition:</b> 10-13, 17 #60-#65</p> <p><b>Teacher Wraparound Edition:</b> A 13; B 10; DI 11; IE 11</p> <p><b>Teacher Resources:</b> <i>Practice: Skills 7</i> <i>Practice: Word Problems 8</i> <i>Study Guide and Intervention 6</i></p>
<p>6. Apply the correct order of operations and grouping symbols when using calculators and other technologies.</p>	<p><b>Student Edition:</b> <i>Study Tip 15</i> <i>See Calculator Spreadsheet Masters 14</i></p>
<p>7. Know, use and translate calculator notational conventions to mathematical notation.</p>	<p><b>Student Edition:</b> 210-211 #1-#4 <i>Graphing Calculator Investigation 84</i> <i>Study Tip 15, 44, 120, 276, 382</i></p>
<p>8. Understand that use of a calculator requires appropriate mathematical reasoning and does not replace the need for mental computation.</p>	<p><b>Student Edition:</b> 471 #4 <i>Study Tip 44, 120, 276, 382</i> <i>Teaching Tip 493</i></p> <p><b>Teacher Wraparound Edition:</b> DI 313</p>

STANDARDS	PAGE REFERENCES
<b>III. PATTERNS, FUNCTIONS AND ALGEBRA</b>	
<b>A. Patterns and Functions</b>	
<b>Standard:</b> Demonstrate an understanding of rate of change graphically and numerically.	
<p>1. Demonstrate, numerically and graphically, an understanding that rate is a measure of change of one quantity per unit change of another quantity in real-world and mathematical problems.</p>	<p><b>Student Edition:</b> 177-181, 292-295 <i>Hands-on Lab</i> 176, 296 <b>Teacher Wraparound Edition:</b> A 181; B 177, 292 <b>Teacher Resources:</b> <i>Practice: Skills</i> 211 <i>Practice: Word Problems</i> 212</p>
<p>2. Plot points on the graph of a linear function and identify the slope or rate of change.</p>	<p><b>Student Edition:</b> 177-181, 182-185 <i>Hands-on Lab</i> 176, 296 <b>Teacher Wraparound Edition:</b> A 181, 185; DI 183; IE 183 <b>Teacher Resources:</b> <i>Practice: Skills</i> 211, 216 <i>Practice: Word Problems</i> 212, 217 <i>Study Guide and Intervention</i> 210, 215</p>
<b>B. Algebra (Algebraic Thinking)</b>	
<b>Standard:</b> Apply arithmetic operations in the correct order to generate equivalent algebraic expressions and to solve simple formulas in real-world and mathematical problems.	
<p>1. Apply the correct order of operations including addition, subtraction, multiplication, division and grouping symbols to generate equivalent algebraic expressions.</p>	<p><b>Student Edition:</b> 14-17, 21 #50-#53, 27 #51-#53, 140 #30, #34 <i>The Game Zone</i> 29 <b>Teacher Wraparound Edition:</b> A 17; B 14; IE 15 <b>Teacher Resources:</b> <i>Practice: Skills</i> 12 <i>Practice: Word Problems</i> 13 <i>Study Guide and Intervention</i> 11</p>
<p>2. Use the facts that the sum of a number and its opposite is zero and the product of a number and its reciprocal is one to generate equivalent algebraic expressions.</p>	<p><b>Student Edition:</b> 121, 123 #37, 258-261 <b>Teacher Wraparound Edition:</b> B 120, 258; IE 259 <b>Teacher Resources:</b> <i>Study Guide and Intervention</i> 323</p>

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<p>3. Solve simple formulas with up to three variables, when the values of two of the variables are given.</p>	<p><b>Student Edition:</b>  28 #18, 139 #4, 162 #29, 169 #40-#41, 191 #20, 261 #37, 271 #3, 358 #1, 479-482, 510  <i>Hands-on Lab</i> 478</p> <p><b>Teacher Wraparound Edition:</b>  A 482; IE 480; TNT 471</p> <p><b>Teacher Resources:</b>  <i>Practice: Skills</i> 461, 620  <i>Practice: Word Problems</i> 462, 621  <i>Study Guide and Intervention</i> 460, 619</p>
<p><b>IV. DATA ANALYSIS, STATISTICS AND PROBABILITY</b></p>	
<p><b>A. Data and Statistics</b></p>	
<p><b>Standard: Represent data and use various measures associated with data to draw conclusions and identify trends.</b></p>	
<p>1. Construct and analyze simple scatter plots.</p>	<p><b>Student Edition:</b>  60-63, 68 #27  <i>Problem-Solving Strategy</i> 58-59</p> <p><b>Teacher Wraparound Edition:</b>  A 63; IE 61 #2</p> <p><b>Teacher Resources:</b>  <i>Practice: Skills</i> 73  <i>Practice: Word Problems</i> 74  <i>Study Guide and Intervention</i> 72</p>
<p>2. Understand the meaning of, and be able to compute minimum, maximum, range, median, mean and mode of a data set.</p>	<p><b>Student Edition:</b>  69-72, 94 #9-#11, 100 #6, 129 #6, 141 #36  <i>Hands-on Lab</i> 73  <i>The Game Zone</i> 75</p> <p><b>Teacher Wraparound Edition:</b>  A 72; DI 69; IE 70</p> <p><b>Teacher Resources:</b>  <i>Practice: Skills</i> 83  <i>Practice: Word Problems</i> 84  <i>Study Guide and Intervention</i> 82</p>

STANDARDS	PAGE REFERENCES
<b>B. Probability</b>	
<b>Standard:</b> Calculate and express probabilities numerically and apply probability concepts to solve real-world and mathematical problems.	
<p>1. Express probabilities as percentages, fractions, proportions and decimals.</p>	<p><b>Student Edition:</b>  370-373, 375 #3, 379 #8, 380 #23-#25, 393-396,  398-401, 407 #18, 501-503  <i>Hands-on Lab</i> 397  <i>The Game Zone</i> 385  <b>Teacher Wraparound Edition:</b>  IE 394, 502  <b>Teacher Resources:</b>  <i>Practice: Skills</i> 645  <i>Practice: Word Problems</i> 487, 517, 646</p>
<p>2. Use a variety of experiments to explore the relationship between experimental and theoretical probabilities.</p>	<p><b>Student Edition:</b>  393-396, 398-401, 404  <i>Hands-on Lab</i> 397  <b>Teacher Wraparound Edition:</b>  A 395, 397; B 393, 398; DI 394; IE 394  <b>Teacher Resources:</b>  <i>Practice: Skills</i> 511  <i>Practice: Word Problems</i> 512  <i>Study Guide and Intervention</i> 510</p>
<b>V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT</b>	
<b>A. Spatial Sense</b>	
<b>Standard:</b> Recognize the relationship between different representations of two- and three-dimensional shapes. Understand the effect of various transformations.	
<p>1. Recognize a view of a three-dimensional shape, given a view from a different orientation.</p>	<p><b>Student Edition:</b>  514-517, 532 #1, 538  <i>Hands-on Lab</i> 512-513, 530-531  <i>Problem-Solving Strategy</i> 518-519  <i>Teaching Tip</i> 514  <b>Teacher Wraparound Edition:</b>  DI 515; IE 515  <b>Teacher Resources:</b>  <i>Practice: Skills</i> 570  <i>Practice: Word Problems</i> 571  <i>Study Guide and Intervention</i> 669</p>

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2. Use visual representations of transformations such as reflections, rotations, translations and change of scale in one and two dimensions to solve real-world and mathematical problems.	<b>Student Edition:</b> 446-450, 451-454, 456-459 <i>Hands-on Lab</i> 460-461 <i>Spreadsheet Investigation</i> 455 <b>Teacher Wraparound Edition:</b> DI 451, 456; TNT 452
<b>B. Geometry</b>	
<b>Standard:</b> Use basic geometric principles and proportional reasoning to solve real-world and mathematical problems.	
1. Calculate the radius, diameter, circumference and area of a circle given any one of these.	<b>Student Edition:</b> 275-277, 283 #16, 493-495 <i>Hands-on Lab</i> 274 <b>Teacher Wraparound Edition:</b> A 276, 495; DI 493 <b>Teacher Resources:</b> <i>Practice: Skills</i> 344, 635 <i>Practice: Word Problems</i> 345, 636 <i>Study Guide and Intervention</i> 343, 634
2. Calculate the area and perimeter of a sector of a circle given its angle and radius.	<b>Student Edition:</b> 418, 494 #23, 498-500 <b>Teacher Wraparound Edition:</b> A 495; DI 499
3. Use ratios and proportions to interpret map scales and scale drawings.	<b>Student Edition:</b> 304-308, 318 #49, 440-443 <i>Spreadsheet Investigation</i> 309 <b>Teacher Wraparound Edition:</b> A 308; DI 304; IE 305 <b>Teacher Resources:</b> <i>Practice: Skills</i> 391 <i>Practice: Word Problems</i> 570 <i>Study Guide and Intervention</i> 390
4. Classify quadrilaterals as squares, rectangles, rhombi, parallelograms, kites, trapezoids or none of these.	<b>Student Edition:</b> 428 #1, 434-437, 443 #20-#22 <i>The Game Zone</i> 439 <b>Teacher Wraparound Edition:</b> A 437; B 434; DI 434; IE 435 <b>Teacher Resources:</b> <i>Practice: Skills</i> 564 <i>Practice: Word Problems</i> 565 <i>Study Guide and Intervention</i> 563

STANDARDS	PAGE REFERENCES
<b>C. Measurement</b>	
<b>Standard:</b> Make calculations of time, length, area and volume within standard measuring systems using good judgment in choice of units.	
1. Choose appropriate units to calculate, measure, and record length, weight, area and volume in both U.S. customary and metric systems.	<b>Student Edition:</b> 38-41, 248, 267-269, 270-273, 330 #3, 520-522, 524-527  <b>Teacher Wraparound Edition:</b> A 273; B 520; DI 39; TNT 521  <b>Teacher Resources:</b> <i>Practice: Word Problems</i> 335, 340, 676, 681