



Math Connects

Concepts, Skills, and Problem Solving

Course 3

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| STANDARDS | PAGE REFERENCES |
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| Standard 1: Number and Operation | |
| Standard 1: Students understand and use basic and advanced concepts of number and number systems. | |
| Benchmark Expectations | |
| NUMBERS, NUMBER RELATIONSHIPS, AND NUMBER SYSTEMS | |
| 8.1.1. Identify subsets of the real number system; i.e., natural and whole numbers, integers, rational and irrational numbers | <p>Student Edition: 35 #39-#47, 93, 95 #38-#40, 148-149, 155-159 <i>Algebra Lab</i> 40 <i>Reading to Solve Problems</i> 90</p> <p>Teacher Edition: 155a; A158; AE 156, 157; FM 36, 92, 156; PA 39; T 155</p> |
| 8.1.2. Solve real-world problems involving ratio, proportion, and percent | <p>Student Edition: 98 Example 3, 190-193, 194-197, 198-203, 232-235, 252-255, 487 Example 1 <i>Reading to Solve Problems</i> 262 <i>Real-World Link</i> 414</p> <p>Teacher Edition: 190a, 194a, 198a; 252a, A 193; AE 120, 191, 195, 199, 233</p> |

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| 8.1.3. Identify perfect squares 1 to 144 and approximate square roots | <p>Student Edition: 144-147, 148-151, 157, 158 #10, #29-#30, 159 #43-#44, 163-166, 167-171</p> <p><i>Key Concept</i> 559 <i>Mini Lab</i> 162</p> <p>Teacher Edition: 144a, 148a; A 147; AE 145, 149, 157; FM 145, 149; T144; TT 150</p> |
| 8.1.4. Represent large and small numbers using scientific notation | <p>Student Edition: 130-133</p> <p><i>Mini Lab</i> 130 <i>Practice Test</i> 139 #18-#20 <i>Study Guide and Review</i> 138 2-10 <i>Test Practice</i> 140 #2, #7</p> <p>Teacher Edition: 130a; AE 131; DI 132; FM 131; PA 133; T 130; TT 133</p> |
| OPERATIONS AND THEIR PROPERTIES | |
| 8.1.5. Apply operation properties to simplify computations and solve problems; i.e., commutative, associative, and distributive | <p>Student Edition: 31, 32 #8-#9, #25-#32, 43, 53, 65-69, 70-73, 102-107</p> <p><i>Key Concept</i> 156 <i>Get Ready</i> 119</p> <p>Teacher Edition: AE 31, 43, 104; FM 66, 71, 103; PA 32; T 119</p> |
| 8.1.6. Apply the order of operations to simplify numeric expressions and solve problems | <p>Student Edition: 29, 39 #51-#53, 422-426, 428, 434-437</p> <p><i>Algebra Lab</i> 432-433 <i>Get Ready</i> 119 <i>Study Tip</i> 30</p> <p>Teacher Edition: 422a; AE 423, 435; FM 30; PA 69, 71, 122</p> |
| COMPUTATIONAL FLUENCY AND ESTIMATION | |
| 8.1.7. Add, subtract, multiply, and divide integers | <p>Student Edition: 29-34, 39 #51-#53, 65-69, 70-73, 422-426, 428, 434-437</p> <p><i>Algebra Lab</i> 432-433 <i>Study Guide and Review</i> 76-77</p> <p>Teacher Edition: 70a; AE 30, 31, 66, 67, 71; PA 69</p> |

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| 8.1.8. Select and use a computational technique (e.g., mental calculation, paper-and-pencil, technology) to solve problems | <p>Student Edition: 97 Example 3, 107 #46-#47, 268-271, 275-278, 378 #34 <i>Problem-Solving Investigation</i> 272 <i>Spreadsheet Lab</i> 294, 397-398, 589-590 <i>Study Tip</i> 115 <i>Test-Taking Tip</i> 115</p> <p>Teacher Edition: 268a, 272a, 275a; A 271; AE 276; FM 97, 269; T 268, 275; TNT 107; TT 107</p> |
| 8.1.9. Determine when an estimate is sufficient and an exact answer is needed in problem situations | <p>Student Edition: 148-151, 275-278, 448 #31, 511 Example 3, 512 Example 5, #5, 513 #12, 643-647 <i>Study Tip</i> 115, 511 <i>Test-Taking Tip</i> 115</p> <p>Teacher Edition: 275a; AE 149, 276, 644; T 275;</p> |
| <p>Standard 2: Geometry and Spatial Sense</p> <p>Standard 2: Student understands and applies geometric concepts and spatial relationships to represent and solve problems in mathematical and nonmathematical situations.</p> | |
| <p>TWO- AND THREE-DIMENSIONAL SHAPES, GEOMETRIC PROPERTIES AND RELATIONSHIPS</p> | |
| 8.2.1. Use nets to represent the relationships between two- and three-dimensional figures | <p>Student Edition: 388, 393 <i>Measurement Lab</i> 385, 392 <i>Mini Lab</i> 380, 386 <i>Test Practice</i> 372, 396</p> <p>Teacher Edition: 368b, 373b, 393b</p> |
| 8.2.2. Classify quadrilaterals based on side lengths, angle measures, and sets of parallel sides | <p>Student Edition: 317, 322 #8-#12 <i>Concepts and Skills Bank</i> 738 <i>Mini Lab</i> 316, 373</p> <p>Teacher Edition: 316a</p> |

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| 8.2.3. Identify the angles formed and the relationships between the angles when parallel lines are intersected by a transversal | <p>Student Edition: 67 Example 2, 68 #20, 206, 207, 306-311 <i>Check Your Understanding</i> 10-11 <i>Concepts and Skills Bank</i> 734-735 <i>Geometry Lab</i> 312-313 <i>Mini Lab</i> 316</p> <p>Teacher Edition: A 311; AE 307, 308; FM 307; P 11; PA 307; SS 304E</p> |
| 8.2.4. Apply the Pythagorean Theorem to problems involving right triangles | <p>Student Edition: 162-166, 167-171, 173-178 <i>Geometry Lab</i> 161 <i>Practice Test</i> 183 #22 <i>Study Guide and Review</i> 181 3-5, 182 3-6</p> <p>Teacher Edition: 162a; A 171; AE 163, 168, TT 164</p> |
| COORDINATE GEOMETRY | |
| 8.2.5. Represent shapes using coordinate geometry | <p>Student Edition: 175 Example 5, 176 #12, 177 #36-#37, 225-230, 332-336, 337-340 <i>Geometry Lab</i> 172 <i>Spreadsheet Lab</i> 231 <i>Test Practice</i> 178</p> <p>Teacher Edition: A 341; AE 175, 226, 333, 338; PA 333; T 225, 337</p> |
| TRANSFORMATION AND SYMMETRY | |
| 8.2.6. Draw the results of a combination of transformations in the coordinate plane; i.e., reflections, rotations, and translations | <p>Student Edition: 225-230, 332-336, 337-341, 499 #42 <i>Spreadsheet Lab</i> 231 <i>Study Guide and Review</i> 245 4-7, 345-346</p> <p>Teacher Edition: 332a, 337a; AE 226, 227, 333, 338, 339; PA 227; T225, 332</p> |
| 8.2.7. Use scale, proportion, and congruency to solve problems involving similar figures | <p>Student Edition: 218-223, 320-323, 399-401 <i>Geometry Lab</i> 224, 313 Activity 2, 324-325, 397</p> <p>Teacher Edition: AE 219, 220, 221, 321, 400, 401; TT 219;</p> |

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| VISUALIZATION, SPATIAL REASONING, AND GEOMETRIC MODELING | |
| <p>8.2.8. Use two-dimensional representations of three-dimensional objects to visualize and solve problems; e.g., those involving surface area and volume</p> | <p>Student Edition: 368-372, 388, 393 <i>Get Ready for the Lesson</i> 368 <i>Measurement Lab</i> 385, 392 <i>Mini Lab</i> 373, 380, 386 <i>Test Practice</i> 372, 396</p> <p>Teacher Edition: 368a, 368b, 373b, 393b</p> |
| Standard 3: Data Analysis, Statistics, and Probability | |
| <p>Standard 3: Students use data collection and analysis techniques, statistical methods, and probability to solve problems.</p> | |
| DATA COLLECTION, DISPLAY, AND INTERPRETATION | |
| <p>8.3.1. Formulate a question and select a random or representative sample</p> | <p>Student Edition: 579 #19, 587 #14, 620 #16, 657 #20, #24 <i>Graphing Calculator Lab</i> 500-501, 516-517, 581, 589-590, 611 <i>Spreadsheet Lab</i> 589-590, 597</p> <p>Teacher Edition: EA 579; TT 620</p> |
| <p>8.3.2. Collect, organize, and display data using scatter and stem-and-leaf plot</p> | <p>Student Edition: 510-515, 612-616, 618 <i>Check</i> 15 <i>Concepts and Skills Bank</i> 749 <i>Graphing Calculator Lab</i> 516-517 <i>Study Guide and Review</i> 626 11-7</p> <p>Teacher Edition: AE 511, 512, 613, 614</p> |
| PROBABILITY | |
| <p>8.3.3. Determine possible outcomes using organized lists, tree diagrams, Venn diagrams, factorials, and the basic counting principle</p> | <p>Student Edition: 632-636, 642 #37, 643-647, 653-658 <i>Probability Lab</i> 648-649 <i>Study Guide and Review</i> 660 12-1</p> <p>Teacher Edition: 632a; A 636; AE 633, 654; DI 635; PA 633; T 632</p> |

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| 8.3.4. Distinguish between experimental and theoretical probability; i.e., the results of an experiment may not match the theoretical probability | Student Edition: 643-647 <i>Probability Lab</i> 648-649 <i>Study Guide and Review</i> 661 Teacher Edition: 643a; A 647; AE 644; FM 645; PA 644; T 643 |
| STATISTICAL METHODS | |
| 8.3.5. Calculate and compare the measures of central tendency (i.e., mean, median, mode) and spread (i.e., range) | Student Edition: 591-596, 599-604, 605-610 <i>Get Ready for the Lesson</i> 605 <i>Graphing Calculator Lab</i> 517, 611 <i>Problem-Solving Investigation</i> 574-575 <i>Spreadsheet Lab</i> 597 Teacher Edition: 591a; A 596; AE 592, 593, 600, 601; T 591; PA 593 |
| 8.3.6. Identify an outlier within a set of data and discuss its effects on the measures of central tendency and spread | Student Edition: 600, 601 #4, 602 #8, #12, #16, #20, 603 #29, 605, 606, 608 <i>Concepts and Skills Bank</i> 751 Teacher Edition: TT 606 |
| PREDICTIONS, DATA ANALYSIS, AND INFERENCES | |
| 8.3.7. Make inferences based on analysis of data and interpretation of graphs | Student Edition: 510-515, 577 Example 3c, 579 #15-#18, 583-585, 617-621, 643-647, 657 #21-#22 <i>Graphing Calculator Lab</i> 517 <i>Probability Lab</i> 648-649 <i>Problem-Solving Investigation</i> 508, 650 <i>Spreadsheet Lab</i> 589 Teacher Wraparound Edition: 574a; A 647; AE 511, 512, 577, 583, 644; T 510 |
| Standard 4: Measurement Standard 4: Students use concepts and tools of measurement to describe and quantify the world.. | |
| MEASURABLE ATTRIBUTES, MEASUREMENT SYSTEMS AND UNITS | |
| 8.4.1. Select an appropriate degree of precision when using measurements for calculations | Student Edition: 448 #31, 479 #19 <i>Concepts and Skills Bank</i> 736 <i>Measurement Lab</i> 362 |

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| 8.4.2. Compare unit measurements between systems, e.g., a yard is almost a meter | Student Edition: 72 #22-#26, 377 #23-#25, 479 #19 <i>Concepts and Skills Bank</i> 742-745 |
| MEASUREMENT TOOLS, TECHNIQUES, AND FORMULAS | |
| 8.4.3. Use formulas to determine the surface area and volume of right cones and spheres | Student Edition: 373-378, 380-384, 386-391, 393-395 <i>Mid-Chapter Quiz</i> 379 #10-#11 <i>Measurement Lab</i> 385, 392 <i>Spreadsheet Lab</i> 397-398 <i>Test Practice</i> 129 Teacher Edition: 380a, AE 374, 375, 387, 394 |
| Standard 5: Algebra, Functions and Patterns Standard 5: Students use algebraic concepts, functions, patterns, and relationships to solve problems. | |
| PATTERNS, RELATIONS, AND FUNCTIONS | |
| 8.5.1. Extend numerical patterns; e.g., Pascal's triangle and the Fibonacci sequence | Student Edition: 27 #1, #4-#5, 28 #10-#11, #13, 33 #39-#40, 318 #17-#18, 464-468 <i>Mini-Lab</i> 24, 29, 316 <i>Problem Solving Investigation</i> 124-125 <i>Test Practice</i> 319 #23 Teacher Edition: 464a, 469a; AE 124, 465, 466; SQ 316 |
| NUMERIC AND ALGEBRAIC REPRESENTATIONS | |
| 8.5.2. Use variables, expressions and equations to represent problem situations | Student Edition: 29-34, 127-128, 162-167, 191-193, 206-208, 373-377, 380-384, 416-419, 427-431 <i>Algebra Lab</i> 432-433 Teacher Edition: AE 30, 163, 191, 417; FM 30 |
| 8.5.3. Apply the order of operations and the commutative, associative, and distributive properties to simplify algebraic expressions | Student Edition: 29, 39 #51-#53, 422-426, 428, 434-437 <i>Algebra Lab</i> 432-433 <i>Get Ready</i> 119 <i>Study Tip</i> 30 Teacher Edition: 422a; AE 423, 435; FM 30; PA 69, 71, 122 |

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| 8.5.4. Apply inverse operations and the properties of equality to solve multi-step equations and inequalities in one variable | <p>Student Edition: 31, 43-45, 66-68, 70-73, 102, 441-444, 445-448, 449-453 <i>Study Guide and Review</i> 78</p> <p>Teacher Edition: AE 42, 43, 67, 71, 442, 443, 446, 451</p> |
| MATHEMATICAL MODELING | |
| 8.5.5. Write multi-step equations and inequalities to represent problem situations | <p>Student Edition: 422-426, 428-431, 434-437, 451-152 <i>Algebra Lab</i> 432-433 <i>Get Ready for the Lesson</i> 427 <i>Problem-Solving Investigation</i> 438</p> <p>Teacher Edition: 422a, 427a; A 431; AE 423, 428, 435; T 422</p> |
| RATES OF CHANGE | |
| 8.5.6. Solve problems involving rates; i.e., speed equals distance divided by time (miles per hour) | <p>Student Edition: 73 #34, 190-193, 198-203, 204-209, 232-235, 252-253, 487 Example 1 <i>Get Ready for the Lesson</i> 487 <i>Real-World Link</i> 414</p> <p>Teacher Edition: 190a; A 193; AE 191, 195, 199, 205, 206, 233</p> |