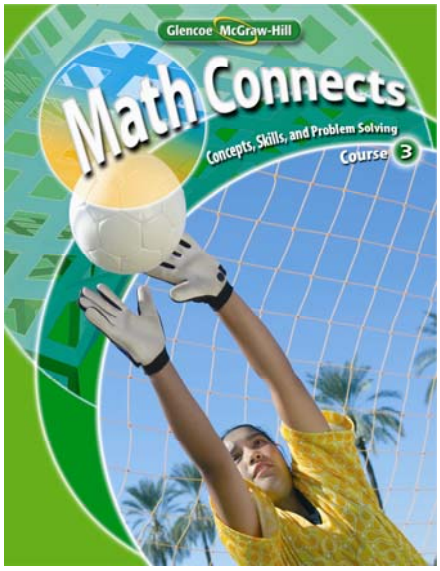
Glencoe

Mathematics Standards
Grade 8

Nebraska



Math Connects

Concepts, Skills, and Problem Solving

Course 3

STANDARDS	PAGE REFERENCES
MA 8.1 Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 8.1.1 Number System: Students will represent and show relationships among real numbers.	
MA 8.1.1.a Compare and order real numbers	**Student Edition:** *Check Your Understanding* 93, 258 #10-#12 *Example* 91-93, 258 *Get Ready* 91, 147 #50-#53 *Mid-Chapter Quiz* 113 #4-#8 *Practice and Problem Solving* 94-95, 259 #41-#45, 260-261 *Reading to Solve Problems* 262 *Spiral Review* 101 #55-#57, 107 #55, 267 #33, 261 #74-#76 *Study Guide and Review* 135 2-2, 296 5-2 **Teacher's Wraparound Edition:** AE 92, 93, 258; DI 93; FM 92

Codes used for Teacher Edition pages are the initial caps of headings on that page.

STANDARDS	PAGE REFERENCES
MA 8.1.1.b Demonstrate relative position of real numbers on the number line (e.g., square root of 2 is left of 1.5)	**Student Edition:** 35, 36, 148 *Example* 36, 41-42, 91-93, 148, 149, 156, 157 *Mini Lab* 148 *Practice and Problem Solving* 38 #35-#36, 94 #30-#31, 159 #42 *Test Practice* 95 #42, 151 #35 **Teacher's Wraparound Edition:** AE 156; DI 93; VKL 41a
MA 8.1.1.c Represent small numbers using scientific notation	The following examples represent both small and large numbers with scientific notation. **Student Edition:** 130 *Check Your Understanding* 128 #8, 132 *Example* 130-131 *Mini Lab* 130 *Practice and Problem Solving* 128 #28-#31, 132-133 *Spiral Review* 151 #37, 426 #54 *Test Practice* 133 **Teacher Edition:** AE 131; AM 130a; FM 131; PA 133; T 130; TT 133
MA 8.1.1.d Classify numbers as natural, whole, integer, rational, irrational, or real	**Student Edition:** 155-156 *Check Your Understanding* 150, 158 *Example* 148-149, 156-157 *Get Ready* 155 *Geometry Lab* 172 *Mid-Chapter Quiz* 160 #21-#26 *Practice and Problem Solving* 150-151, 158-159 *Test Practice* 151 **Teacher Edition:** AE 149, 156, 157; FM 149, 156 T 155

STANDARDS	PAGE REFERENCES
MA 8.1.2 Operations: Students will demonstrate the meaning of arithmetic operations with integers.	
MA 8.1.2.a Use drawings, words, and symbols to explain the meaning of addition, subtraction, multiplication, and division of integers.	**Student Edition:** 51, 52, 53 *Algebra Lab* 40, 432-433 *Example* 41, 42, 57, 58, 67, 422 *Get Ready* 56 *Mini Lab* 46, 65, 416 *Practice and Problem Solving* 45 #42 *Spiral Review* 73 #38 *Test Practice* 49 #50 **Teacher Edition:** BV 57a; DI 42; MC 56a; PA 45, 47; T 51; UM 41a, 422a; VKL 41a; VR 434a; WDE 70a
MA 8.1.2.b Use words and symbols to explain the zero property of multiplication (e.g., if ab = 0 then a or b or both must be zero)	**Student Edition:** 52
MA 8.1.2.c Use words and symbols to explain why division by zero is undefined	This objective can be met through classroom discussion and activities.
MA 8.1.3 Computation: Students will compute fluently and accurately using appropriate strategies and tools.	
MA 8.1.3.a Compute accurately with rational numbers	**Student Edition:** 46, 51-53, 96, 102-103 *Check Your Understanding* 44, 48, 54, 99, 105, 110, 116, 121 *Example* 41-43, 47, 51-54, 97-98, 102-104, 108-109, 114-115, 119-120 *Get Ready* 41, 51, 102, 108, 114 *Mini Lab* 46, 96 *Practice and Problem Solving* 44-45, 48-49, 55-56, 99-101, 105-107, 110-111, 116-117, 121-122 *Test Practice* 45, 101, 107, 112, 117 **Teacher Edition:** A 123; AE 42, 43, 47, 52, 53, 97, 98, 103, 104, 115, 116, 120; PA 47; UM 114a

STANDARDS	PAGE REFERENCES
MA 8.1.3.b Evaluate expressions involving absolute value of integers	**Student Edition:** 36 *Check Your Understanding* 37 #5-#12 *Example* 36-37 *Practice and Problem Solving* 38 #25-#38, 39 #44-#45 *Spiral Review* 49 #52-#55 *Study Guide and Review* 76 1-3 **Teacher Edition:** AE 36, 36; T 35; TT 37
MA 8.1.3.c Calculate squares of integers, the square roots of perfect squares, and the square roots of whole numbers using technology	**Student Edition:** 144-145 *Check Your Understanding* 146, 150 *Example* 144-145, 148-149 *Mini Lab* 144, 148 *Practice and Problem Solving* 146-147, 150-151 *Spiral Review* 151 #36 *Study Guide and Review* 180 3-1, 3-2 *Test Practice* 147, 151 **Teacher Edition:** A 147; AE 145, 149; AM 148a; FM 149; RM 144a; T 144; TT 145, 147; VL 148a
MA 8.1.3.d Select, apply, and explain the method of computation when problem solving using rational numbers (e.g., models, mental computation, paper-pencil, technology, divisibility rules)	**Student Edition:** 268-269 *Check Your Understanding* 270 *Example* 163, 268-269 *Get Ready* 268 *Practice and Problem Solving* 177 #41, 270-271, 431 #28 *Study Tip* 156 **Teacher Edition:** AE 269; FM 269; SL 62a; T 268; TT 269

STANDARDS	PAGE REFERENCES
MA 8.1.3.e Solve problems involving ratios and proportions (e.g., x/5 = 10/17)	**Student Edition:** 190, 194, 198, 204, 210, 232, 252 *Check Your Understanding* 176 #13, 192, 195, 201, 207, 212 *Example* 190-191, 194-195, 198-200, 204-206, 211-212 *Get Ready* 190, 194, 198, 204, 210, 232, 252 *Mid-Chapter Quiz* 215 *and Problem Solving* 192-193, 196-197, 201-203, 207-209, 213-214, 234-235 *Real-World Example* 149, 175, 191 *Test Practice* 193, 235 **Teacher Edition:** A 193; AE 175, 191, 195, 199, 205, 206, 212 DI 191; PA 212; UM 210a
MA 8.1.4 Estimation: Students will estimate and check reasonableness of answers using appropriate strategies and tools.	
MA 8.1.4.a Use estimation methods to check the reasonableness of solutions for problems involving rational numbers	**Student Edition:** *Analyze The Strategy* 272 *Example* 26 *Mid-Chapter Quiz* 274 #22 *Mini Lab* 24 *Practice and Problem Solving* 33 #39-#40 *P.S.I. Team* 272 *Spiral Review* 278 #37, 283 #32 *Study Guide and Review* 297 5-5 **Teacher Edition:** AE 272; T 272

STANDARDS	PAGE REFERENCES
MA 8.2 Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 8.2.1 Characteristics: Students will describe, compare, and contrast characteristics, properties, and relationships of geometric shapes and objects.	
MA 8.2.1.a Identify and describe similarity of three-dimensional objects	**Student Edition:** 399-400 *Check Your Understanding* 402 *Example* 399-401 *Get Ready* 399 *Practice and Problem Solving* 402-403 *Spreadsheet Lab* 397-398 *Study Guide and Review* 408 7-9 *Test Practice* 404 **Teacher Edition:** AE 400, 401; RPC 399a; T 399; TT 401
MA 8.2.1.b Compare and contrast relationships between similar and congruent objects	**Student Edition:** 218-219 *Check Your Understanding* 222 *Example* 219-221 *Geometry Lab* 224, 312-313 *Mini Lab* 218 *Practice and Problem Solving* 222-223 **Teacher Edition:** AE 219; SQ 218; V 218a
MA 8.2.1.c Identify geometric properties of parallel lines cut by a transversal and related angles (e.g., perpendicular and parallel lines with transversals) and angles (e.g., corresponding, alternate interior, alternate exterior)	**Student Edition:** 307 *Check Your Understanding* 309 #9 *Geometry Lab* 312-313 *Mid-Chapter Quiz* 326 #5-#8 *Mini Lab* 306 *Practice and Problem Solving* 310 *Real-World Example* 308 *Test Practice* 311 *Transversals and Angles* 308 **Teacher Edition:** FM 307; T 306

STANDARDS	PAGE REFERENCES
MA 8.2.1.d Identify pairs of angles (e.g., adjacent, complementary, supplementary, vertical)	**Student Edition:** *Check Your Understanding* 309 #1-#8 *Example* 67 *Geometry Lab* 312-313 *Mid-Chapter Quiz* 326 #5-#9 *Practice and Problem Solving* 68 #20, 309 #10-#23 *Special Pairs of Angles* 306 **Teacher Edition:** AE 307, 308
MA 8.2.1.e Examine the relationships of the interior angles of a triangle (e.g., the sum of the angles is 180 degrees)	**Student Edition:** *Check Your Understanding* 322 #3, #6 *Example* 321 *Option* 305 #10-#13 *Spiral Review* 331 #20 **Teacher Edition:** AE 321; LR 316a
MA 8.2.2 Coordinate Geometry: Students will specify locations and describe relationships using coordinate geometry.	
MA 8.2.2.a Use coordinate geometry to represent and examine the properties of rectangles and squares using horizontal and vertical segments	**Student Edition:** *Check Your Understanding* 339 *Example* 175, 332-334, 337 *Get Ready* 173, 331 *Practice and Problem Solving* 177 #36-#37, 335 #4-#5, 336 #15-#16, 340 #6-#11 *Study Guide and Review* 182 3-7 *Test Practice* 178, 336 **Teacher Edition:** AE 175, 333, 338, 339; EC 337a; SQ 327, 337
MA 8.2.3 Transformations: Students will perform transformations and use them to analyze the orientation and size of geometric shapes.	
MA 8.2.3.a Identify the similarity of dilated shapes	**Student Edition:** *Check Your Understanding* 228 *Example* 227 *Get Ready* 331 #26 *Mini Lab* 225 *Practice and Problem Solving* 28-230 *Spreadsheet Lab* 231 *Test Practice* 230 **Teacher Edition:** AE 226, 227; FM 226; PA 227; SQ 225

STANDARDS	PAGE REFERENCES
MA 8.2.3.b Perform and describe positions and sizes of shapes under dilations (e.g., scale factor, ratios)	**Student Edition:** *Check Your Understanding* 228 *Example* 225-227 *Mini Lab* 225 *Practice and Problem Solving* 28-230 *Spreadsheet Lab* 231 *Test Practice* 230 **Teacher Edition:** AE 226, 227; FM 226; PA 227; SQ 225
MA 8.2.4 Spatial Modeling: Students will use visualization, spatial reasoning, and geometric modeling to solve problems.	
MA 8.2.4.a Draw geometric objects with specified properties (e.g., parallel sides, number of sides, angle measures, number of faces)	**Student Edition:** *Check Your Understanding* 334 #1-#2 *Example* 225, 332-333, 337-338 *Geometry Lab* 312-313, 324-325, 358-359 *Practice and Problem Solving* 335 #4-#9, 340 #5-#11 *Spiral Review* 431 #40 **Teacher Edition:** AE 333, 338; EC 337a; TT 312, 325
MA 8.2.5 Measurement: Students will select and apply appropriate procedures, tools, and formulas to determine measurements.	
MA 8.2.5.a Use strategies to find the perimeter and area of complex shapes	**Student Edition:** 363 *Check Your Understanding* 365 *Example* 364-365 *Get Ready* 363 *Practice and Problem Solving* 366-367 *Spiral Review* 372 #29 *Study Guide and Review* 406 7-3 *Test Practice* 367 **Teacher Edition:** AE 364, 365; T 363

STANDARDS	PAGE REFERENCES
MA 8.2.5.b Determine surface area and volume of three-dimensional objects (e.g., rectangular prisms, cylinders)	**Student Edition:** 373, 380, 386, 388, 394 *Check Your Understanding* 375, 382, 389, 395 *Example* 373-375, 381, 386 *Get Ready* 393 *Measurement Lab* 385, 392 *Mini Lab* 373, 380, 386 *Practice and Problem Solving* 376-378, 383-384, 390-391, 395-396 *Spiral Review* 404 #26, 421 #68-#71, 426 #52 *Study Guide and Review* 407 7-5, 7-6, 408 7-7, 7-8 *Test Practice* 378, 391, 396 **Teacher Edition:** AE 374, 375, 381, 383, 386; CB 380a; EC 393a; KL 373a; MRS 380a; T 373; PA 381
MA 8.2.5.c Apply the Pythagorean theorem to find missing lengths in right triangles and to solve problems	**Student Edition:** 162, 164 *Check Your Understanding* 164, 169 *Example* 163-164, 167-168, 175 *Get Ready* 167 *Geometry Lab* 161 *Mini Lab* 162 *Practice and Problem Solving* 165-166, 169-171, 177 342 *Practice Test* 183 #12-#22 *Spiral Review* 171 *Study Guide and Review* 181 3-5, 182 3-6 *Test Practice* 166, 171, 178 #43 **Teacher Edition:** AE 163, 164, 168; EL 167a; PA 163, 168; T 167; TT 164; VL 162a
MA 8.2.5.d Use scale factors to find missing lengths in similar shapes	**Student Edition:** 219, 220, 399 *Check Your Understanding* 222 #3 *Example 220* *Practice and Problem Solving* 222 #9-#12, 223 #15, 230 #25 *Spiral Review* 230 #29 *Study Tip* 220 **Teacher Edition:** AE 220; FM 219; RC 399a

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MA 8.2.5.e Convert between metric and standard units of measurement, given conversion factors (e.g., meters to yards)	**Student Edition:** *Concepts and Skills Bank* 744-745
MA 8.3 Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 8.3.1 Relationships: Students will represent and analyze relationships using algebraic symbols.	
MA 8.3.1.a Represent and analyze a variety of patterns with tables, graphs, words, and algebraic equations	**Student Edition:** 464 *Analyze The Strategy* 124 *Check Your understanding* 466 *Example* 464-465, 470 *Get Ready* 271, 469 *Mini Lab* 464 *Practice and Problem Solving* 27 #5, 33 #39-#40, 129 #42, 467-468, 472 #24 *P.S.I. Team* 124 *Test Practice* 61 #30, 331, 473 **Teacher Edition:** AE 465, 466, 470; ODI 469a; OS 124a; PA 168
MA 8.3.1.b Describe relationships using algebraic expressions, equations, and inequalities (e.g., two-step, one variable)	**Student Edition:** 416, 422, 434, 441, 445, 449-450 *Algebra Lab* 432-433 *Check Your Understanding* 419, 424, 429, 436, 443, 447 *Example* 416-418, 422-424, 427-428, 434-435, 442, 449-450 *Get Ready* 422, 427, 434, 441, 445, 449 *Mini Lab* 416 *Practice and Problem Solving* 419-420, 425-426, 429-431, 436-437, 443-444, 447-448 *Test Practice* 421, 426, 437, 448 **Teacher Edition:** A 421; AE 417, 418, 423, 428, 435, 446, 450, 451; FM 451; PA 428

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MA 8.3.1.c Identify constant slope from tables and graphs	**Student Edition:** 481, 483, 487 *Check Your Understanding* 484 *Example* 481-483, 487-488 *Geometry Lab* 493 *Get Ready* 481, 487 *Practice and Problem Solving* 484-486 *Test Practice* 486 **Teacher Edition:** AE 482, 483; PA 483; SQ 481; VR 481a
MA 8.3.2 Modeling in Context: Students will create, use, and interpret models of quantitative relationships.	
MA 8.3.2.a Model contextualized problems using various representations (e.g., two-step/one variable equations)	**Student Edition:** *Check Your Understanding* 424 #7, #11, 429 #4-#5, 435, 436 #7 *Example* 418, 428, 446, 451 *Get Ready* 422, 427, 434, 441, 449 *Mini Lab* *Practice and Problem Solving* 419 #40-#43, 420 #44-#45, #54-#57, #61, 425 #24-#25, #32-#33, #40-#41, 429 #10-#14, 430-431, 436 #22-#23, 437 #27, 443 #30-#33, 447 #28-#30 *Test Practice* 431 **Teacher Edition:** AE 418, 428, 435, 446, 451; PA 418
MA 8.3.2.b Represent a variety of quantitative relationships using algebraic expressions and two-step/one variable equations	**Student Edition:** *Check Your Understanding* 424 #7, #11, 429 #4-#5, 435, 436 #7 *Example* 418, 428, 446, 451 *Get Ready* 422, 427, 434, 441, 449 *Mini Lab* *Practice and Problem Solving* 419 #40-#43, 420 #44-#45, #54-#57, #61, 425 #24-#25, #32-#33, #40-#41, 429 #10-#14, 430-431, 436 #22-#23, 437 #27, 443 #30-#33, 447 #28-#30 *Test Practice* 431 **Teacher Edition:** AE 418, 428, 435, 446, 451; PA 418

STANDARDS	PAGE REFERENCES
MA 8.3.3 Procedures: Students will apply properties to solve equations and inequalities.	
MA 8.3.3.a Explain the multiplicative inverse (e.g., 4 * ¼= 1)	**Student Edition:** 102-103 *Check Your Understanding* 105 #1-#3 *Example* 102-104 *Get Ready* 119 *Key Concept* 102 *Practice and Problem Solving* 105 #13-#18, 106 #43 **Teacher Edition:** AE 103; FM 103; RC 126a
MA 8.3.3.b Evaluate numerical expressions containing whole number exponents (e.g., if x = 4, then (x + 3)2 + 5x = ?)	**Student Edition:** 126-127 *Check Your Understanding* 128 #4-#9 *Example* 127 *Get Ready* 126 *Practice and Problem Solving* 128 #24-#27, #32-#40 *Spiral Review* 133 #39 *Study Guide and Review* 138 2-9 **Teacher Edition:** AE 127; PA 129; RC 126a; T 126
MA 8.3.3.c Solve multi-step equations involving rational numbers	**Student Edition:** 422 *Algebra Lab* 432-433 *Check Your Understanding* 424, 436 *Example* 422-424, 428, 434-435 *Get Ready* 422, 427, 434 *Practice and Problem Solving* 425-426, 429 #10-#14, 430. 436-437 *Spiral Review* 431 #32-#35 *Test Practice* 426, 431 #31 **Teacher Edition:** A 426; AE 423, 428, 435; FE 427a; PA 428, 435; T 422; TT 423; UM 422a

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MA 8.3.3.d Solve two-step inequalities involving rational numbers	**Student Edition:** 441 *Check Your Understanding* 443 #3-#5, 447 #1-#3, 452 #1-#8 *Example* 442, 446, 449, 451 *Get Ready* 441 *Practice and Problem Solving* 443 #16-#21, 447 #6-#23, 452 *Test Practice* 453 **Teacher Edition:** AE 443, 446; EC 441a
MA 8.3.3.e Identify and explain the properties used in solving two-step inequalities and multi-step equations	**Student Edition:** 31, 43, 66, 70, 71, 102-103 *Check Your Understanding* 32 #8-#9 *Example* 31, 43, 70, 102 *Key Concept* 43, 66, 70, 71, 102 *Practice and Problem Solving* 32 #25-#32 *Test Practice* 34 **Teacher Edition:** AE 31; DI 164; FM 71, 103
MA 8.4 Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 8.4.1 Display and Analysis: Students will formulate questions that can be addressed with data, and then organize, display, and analyze the relevant data to answer their questions.	
MA 8.4.1.a Represent data using circle graphs and box plots with and without the use of technology	**Student Edition:** 582, 605 *Check Your Understanding* 585, 607 *Concept Summary* 618 *Example* 582-585, 605-607 *Get Ready* 605, 617 *Graphing Calculator Lab* 611 *Test Practice* 214 #35 *Practice and Problem Solving* 586-587, 608-610 *Spreadsheet Lab* 589-590 *Study Guide and Review* 624 *Test Practice* 588, 621 **Teacher Edition:** A 588; AE 583, 584, 606, 607; CD 617a; GI 605a; T 582; TT 606

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MA 8.4.1.b Compare characteristics between sets of data or within a given set of data	**Student Edition:** 612 *Check Your Understanding* 619 *Example* 617-618 *Get Ready* 617 *Graphing Calculator Lab* 581 *Practice and Problem Solving* 619-620 *Spreadsheet Lab* 589-590, 597 *Study Guide and Review* 626 11-8 *Test Practice* 621 **Teacher Edition:** AE 618
MA 8.4.1.c Find, interpret, and compare measures of central tendency (mean, median, mode) and the quartiles for sets of data	**Student Edition:** 599 *Check Your Understanding* 594, 601 *Concept Summary* 591 *Example* 591-593, 600-601 *Get Ready* 591, 599 *Practice and Problem Solving* 594-596, 602-604 *Spreadsheet Lab* 597 *Test Practice* 596, 604 **Teacher Edition:** AE 592, 593, 600, 601; CB 591a; PA 593; PS 591a; SQ 591
MA 8.4.1.d Select the most appropriate unit of central tendency for sets of data	**Student Edition:** *Check Your Understanding* 594 *Concept Summary* 591, 593 *Example* 591-593 *Get Ready* 591 *Practice and Problem Solving* 594-596 *Spreadsheet Lab* 597 **Teacher Edition:** AE 592, 593; CB 591a; FM 592; PS 591a; SQ 591
MA 8.4.1.e Identify misrepresentation and misinterpretation of data represented in circle graphs and box plots	**Student Edition:** *Concepts and Skills Bank* 752-753 **Teacher Edition:** AE 609; TT 655

STANDARDS	PAGE REFERENCES
MA 8.4.2 Predictions and Inferences: Students will evaluate predictions and make inferences based on data.	
MA 8.4.2.a Evaluate predictions to formulate new questions and plan new studies	**Student Edition:** 653-654 *Check Your Understanding* 655 *Concept Summary* 653, 654 *Example* 654-655 *Get Ready* 653 *Practice and Problem Solving* 656-657 *Study Guide and Review* 662 12-5 *Test Practice* 658 **Teacher Edition:** AE 655; T 653
MA 8.4.2.b Compare and contrast two sets of data to make inferences	**Student Edition:** 653-654 *Check Your Understanding* 655 *Concept Summary* 653, 654 *Example* 654-655 *Get Ready* 653 *Practice and Problem Solving* 656-657 *Probability Lab* 648-649 #6-#7 *Study Guide and Review* 662 12-5 *Test Practice* 658 **Teacher Edition:** AE 655; T 653
MA 8.4.3 Probability: Students will apply and interpret basic concepts of probability.	
MA 8.4.3.a Identify complementary events and calculate their probabilities	**Student Edition:** *Example* 643 *Mini Lab* 643 *Practice and Problem Solving* 646 #19 *Test Practice* 647 #24 **Teacher Edition:** RC 637a

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MA 8.4.3.b Compute probabilities for independent compound events	**Student Edition:** 637 *Check Your Understanding* 639, 645-646 *Example* 637, 643-644 *Get Ready* 637 *Mini Lab* 643 *Practice and Problem Solving* 640-642, 646 *Probability Lab* 648-649 *Study Guide and Review* 660 12-2, 661 *Test Practice* 642, 646 **Teacher Edition:** AE 638, 639, 644; PA 639; T 637