



Math Connects

Concepts, Skills, and Problem Solving

Course 2

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STANDARDS	PAGE REFERENCES
<p>Mathematics Performance Standard A</p>	
<p>Mathematics, Standard A: Mathematical Processes Performance Standards - Grade 8 By the end of grade eight, students will:</p>	
<p>A.8.1 Use reasoning abilities to:</p> <ul style="list-style-type: none"> • evaluate information • perceive patterns • identify relationships • formulate questions for further exploration • evaluate strategies • justify statements • test reasonableness of results • defend work 	<p>Student Edition: 25-29, 112-113, 248-249, 325 #31, 366-367, 434-437, 438-443, 530-531, 594-595, 646-647 <i>Graphing Calculator Lab</i> 68-69, 409, 624-625 <i>Spreadsheet Lab</i> 422 Teacher Wraparound Edition: A 625; AE 112, 439; F 530; P 595</p>
<p>A.8.2 Communicate logical arguments clearly to show why a result makes sense</p>	<p>Student Edition: 25-29, 92 #49, 155 #34, 246 #38, 400 #30-#34, 407, 438-443, 444-449, 489 #17, 522 #23, 530, 594 <i>Graphing Calculator Lab</i> 409 <i>Spreadsheet Lab</i> 383, 422 Teacher Wraparound Edition: AA 400, 407; AE 530; TNT 421</p>

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<p>A.8.3 Analyze non-routine* problems by modeling*, illustrating, guessing, simplifying, generalizing, shifting to another point of view, etc.</p>	<p>Student Edition: 42-43, 112-113, 148-149, 150, 190-191, 248-249, 318-319, 366-367, 424-425, 484-485, 530-531, 594-595, 646-647 <i>Geometry Lab</i> 607 <i>Measurement Lab</i> 600-601 Teacher Wraparound Edition: AE 42, 112, 190, 318, 594; P 149, 425; TNT 248</p>
<p>A.8.4 Develop effective oral and written presentations that include</p> <ul style="list-style-type: none"> • appropriate use of technology • the conventions of mathematical discourse (e.g., symbols, definitions, labeled drawings) • mathematical language • clear organization of ideas and procedures • understanding of purpose and audience 	<p>Student Edition: 161 #42, 325 #33, 382 #24, 424 #2, 523 #27, 658 #18 <i>Graphing Calculator Lab</i> 68-69, 409, 622 #34 <i>Real-World Unit Project</i> 167, 270 <i>Spreadsheet Lab</i> 327, 383, 422, 432-433 Teacher Wraparound Edition: A 409; EC 69; RWUP 21, 507</p>
<p>A.8.5 Explain mathematical concepts, procedures, and ideas to others who may not be familiar with them</p>	<p>Student Edition: 42, 112, 190, 246 #39, 248, 366, 484 Teacher Wraparound Edition: A 382; DI 191, 366, 522, 531, 541, 615, 620, 659; IL 136a; R 646a; RWUP 21</p>
<p>A.8.6 Read and understand mathematical texts and other instructional materials and recognize mathematical ideas as they appear in other contexts</p>	<p>Student Edition: 14-15, 148-149, 375-378, 379-382, 438-443, 444-449 <i>Reading to Solve Problems</i> 24, 150, 185, 264 <i>Real World Example</i> 267, 356, 580 Teacher Wraparound Edition: AE 376, 380, 439, 445; T 24, 185</p>
<p>Mathematics Performance Standard B</p>	
<p>Mathematics, Standard B: Number Operations and Relationships Performance Standards - Grade 8 By the end of grade eight, students will:</p>	
<p>B.8.1 Read, represent, and interpret various rational numbers* (whole numbers*, integers*, decimals, fractions, and percents) with verbal descriptions, geometric models*, and mathematical notation (e.g., expanded*, scientific*, exponential*)</p>	<p>Student Edition: 30-33, 53-56, 80-83, 95-99, 103-106, 107-111, 192-195, 196-200, 202-205, 206-210, LA2-LA5, 737 <i>Algebra Lab</i> 101-102 Teacher Wraparound Edition: AE 31, 81, 96, 193, 203; FMC 207</p>

STANDARDS	PAGE REFERENCES
<p>B.8.2 Perform and explain operations on rational* numbers (add, subtract, multiply, divide, raise to a power, extract a root, take opposites and reciprocals, determine absolute value)</p>	<p>Student Edition: 34-37, 80-83, 95-99, 103-106, 107-111, 114-118, 236-241, 242-246, 252-257, 258-263, 265-270, 298-303, 304-309 <i>Algebra Lab</i> 93-94, 101-102 Teacher Wraparound Edition: AE 97, 104, 108, 115, 238; FMC 259; PA 257</p>
<p>B.8.3 Generate and explain equivalencies among fractions, decimals, and percents</p>	<p>Student Edition: 196-200, 202-205, 206-210, 223, 224, 328-332, 677, 678, 684, 707 <i>Mid-Chapter Quiz</i> 201 <i>Practice Test</i> 225 Teacher Wraparound Edition: AE 197, 203, 207; FMC 197, 203, 207; PA 200; T 328; TNT 199</p>
<p>B.8.4 Express order relationships among rational numbers using appropriate symbols ($>$, $<$, \geq, \leq, \neq)</p>	<p>Student Edition: 84-87, 120, 200 #43, 204 #34-#39, 209 #38-#43, 215-220, 224, 671, 679, 707 #18, 740-741 <i>Mid-Chapter Quiz</i> 100 Teacher Wraparound Edition: AA 200; AE 84, 85, 216, 217; TNT 84, 216</p>
<p>B.8.5 Apply proportional thinking in a variety of problem situations that include, but are not limited to</p> <ul style="list-style-type: none"> • ratios and proportions (e.g., rates, scale drawings*, similarity*) • percents, including those greater than 100 and less than one (e.g., discounts, rate of increase or decrease, sales tax) 	<p>Student Edition: 282-286, 287-292, 293-297, 310-315, 320-326, 328-332, 350-354, 375-378, 379-382, 540-545 <i>Mid-Chapter Quiz</i> 317 <i>Spreadsheet Lab</i> 327, 383 Teacher Wraparound Edition: AE 288, 294, 312, 376, 542; FMC 288, 311, 351</p>
<p>B.8.6 Model* and solve problems involving number-theory concepts such as</p> <ul style="list-style-type: none"> • prime* and composite numbers • divisibility and remainders • greatest common factors • least common multiples 	<p>Student Edition: 181-184, 186-189, 211-214, 676, 678, 738 <i>Math Lab</i> 180 <i>Practice Test</i> 225 <i>Reading to Solve Problems</i> 185 Teacher Wraparound Edition: A 180; AE 181, 187, 212; FMC 182, 187, 212; PA 184; TNT 188</p>

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<p>B.8.7 In problem-solving situations, select and use appropriate computational procedures with rational numbers such as</p> <ul style="list-style-type: none"> calculating mentally estimating creating, using, and explaining algorithms* using technology (e.g., scientific calculators, spreadsheets) 	<p>Student Edition: 4-5, 6-7, 53-56, 230-235, 343, 355-360, 366-367, 385, 386, 390 #4, 636-639, 679, 685, 686, 701, 735, 737 <i>Graphing Calculator Lab</i> 68-69, 409 <i>Math Lab</i> 250-251 <i>Spreadsheet Lab</i> 327, 383 Teacher Wraparound Edition: A 409; AA 68, 383; AE 54; FMC 356, 637; T 6, 327</p>
Mathematics Performance Standard C	
<p style="text-align: center;">Mathematics, Standard C: Geometry Performance Standards - Grade 8 By the end of grade eight, students will:</p>	
<p>C.8.1 Describe special and complex two- and three-dimensional figures (e.g., rhombus, polyhedron, cylinder) and their component parts (e.g., base, altitude, and slant height) by:</p> <ul style="list-style-type: none"> naming, defining, and giving examples comparing, sorting, and classifying them identifying and contrasting their properties (e.g., symmetrical*, isosceles, regular) drawing and constructing physical models to specifications explaining how these figures are related to objects in the environment 	<p>Student Edition: 524-529, 530, 533-538, 558-562, 603-606, 608-612, 641-645, 646-647, LA18-LA20, 699, 700, 713, 714, 745-746 <i>Geometry Lab</i> 532, 607 Teacher Wraparound Edition: AA 611; AE 534, 559, 604, 609; T 524; TNT 533</p>
<p>C.8.2 Identify and use relationships among the component parts of special and complex two- and three-dimensional figures (e.g., parallel sides, congruent* faces).</p>	<p>Student Edition: 533-538, 540-545, 565, 578-582, 596-599, 603-606, 608-612, 627, 629 <i>Geometry Lab</i> 532, 607 <i>Measurement Lab</i> 577, 600-601 <i>Mid-Chapter Quiz</i> 539 #11-#15 Teacher Wraparound Edition: AA 537; AE 534, 597; EC 577; FMC 597; TNT 533</p>
<p>C.8.3 Identify three-dimensional shapes from two-dimensional perspectives and draw two-dimensional sketches of three-dimensional objects preserving their significant features</p>	<p>Student Edition: 603-606, 608-612, 629, 699, 700, 714 #8-#9, 745-746 <i>Geometry Lab</i> 607 <i>Measurement Lab</i> 600-601 Teacher Wraparound Edition: AA 601, 611, 629; AE 604, 609; FMC 604; PA 609, 611</p>

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C.8.4 Perform transformations* on two-dimensional figures and describe and analyze the effects of the transformations on the figures	<p>Student Edition: 553-557, 558-562, 566, 696, 713 #12-#13, 721 #9, 724 #11, 729 #13, 743-744 <i>Geometry Lab</i> 552 <i>Practice Test</i> 567 #15-#16</p> <p>Teacher Wraparound Edition: AA 561; AE 554, 555, 559; FMC 554; PA 556; T 552; TNT 554</p>
C.8.5 Locate objects using the rectangular coordinate system*	<p>Student Edition: 88-92, 121, 125 #13, 553-557, 558-562, 566, 696, 713 #12-#13, 721 #9, 724 #11, 729 #13 <i>Practice Test</i> 123 #9-#11, 567 #15</p> <p>Teacher Wraparound Edition: AA 559, 561, 562; AE 89, 555; FMC 89; T 553</p>
Mathematics Performance Standard D	
<p style="text-align: center;">Mathematics, Standard D: Measurement Performance Standards - Grade 8</p> <p style="text-align: center;">By the end of grade eight, students will:</p>	
D.8.1 Identify and describe attributes* in situations where they are not directly* or easily measurable (e.g., distance, area of an irregular figure, likelihood of occurrence)	<p>Student Edition: 320-326, 594-595, 596-599, 640-645, 646-647, 653 #20, 662, LA18-LA20, 748-749 <i>Measurement Lab</i> 600-601, 654-655 <i>Spreadsheet Lab</i> 327</p> <p>Teacher Wraparound Edition: A 599, 601; AA 595, 597; AE 321, 594, 646; PA 618; T 596; TNT 601</p>
<p>D.8.2 Demonstrate understanding of basic measurement facts, principles, and techniques including the following</p> <ul style="list-style-type: none"> • approximate comparisons between metric and US Customary units (e.g., a liter and a quart are about the same; a kilometer is about six-tenths of a mile) • knowledge that direct measurement* produces approximate, not exact, measures • the use of smaller units to produce more precise measures 	<p>Student Edition: 298-303, 304-309, 320-326, 335, 683, 709 #10, 725 #14, 733 #6-#7, 747 <i>Practice Test</i> 337 <i>Spreadsheet Lab</i> 327</p> <p>Teacher Wraparound Edition: AA 302; AE 299, 300, 306, 307; PA 302</p>

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<p>D.8.3 Determine measurement directly* using standard units (metric and US Customary) with these suggested degrees of accuracy</p> <ul style="list-style-type: none"> lengths to the nearest mm or 1/16 of an inch weight (mass) to the nearest 0.1 g or 0.5 ounce liquid capacity to the nearest ml angles to the nearest degree temperature to the nearest C or F elapsed time to the nearest second 	<p>Student Edition: 10-11, 12-13, 116 #9, 154 #30-#32, 245 #34, 298-303, 304-309, 335, 510-513, 682, 683, 709 #7-#10 <i>Measurement Lab</i> 583 <i>Practice Test</i> 337</p> <p>Teacher Wraparound Edition: AE 299, 300, 307; DI 116; FMC 299, 305; PA 302, 513; T 12; TNT 511</p>
<p>D.8.4 Determine measurements indirectly* using</p> <ul style="list-style-type: none"> estimation conversion of units within a system (e.g., quarts to cups, millimeters to centimeters) ratio and proportion (e.g., similarity*, scale drawings*) geometric formulas to derive lengths, areas, volumes of common figures (e.g., perimeter, circumference, surface area) the Pythagorean* relationship geometric relationships and properties for angle size (e.g., parallel lines and transversals; sum of angles of a triangle; vertical angles*) 	<p>Student Edition: 156-161, 298-303, 304-309, 310-315, 320-326, 524-529, 540-545, 584-588, 613-618, 619-623, 640-645, LA10-LA13, LA18-LA20 <i>Graphing Calculator Lab</i> 624-625 <i>Spreadsheet Lab</i> 327</p> <p>Teacher Wraparound Edition: AE 300, 305, 306, 321, 322, 542, 641; PA 325</p>
<p>Mathematics Performance Standard E</p>	
<p>Mathematics, Standard E: Statistics and Probability Performance Standards - Grade 8 By the end of grade eight, students will:</p>	
<p>E.8.1 Work with data in the context of real-world situations by:</p> <ul style="list-style-type: none"> formulating questions that lead to data collection and analysis designing and conducting a statistical investigation using technology to generate displays, summary statistics*, and presentations 	<p>Student Edition: 400 #30, 407 #24, 413 #22, 430 #17, 436 #14, 438-443, 469 #23 <i>Graphing Calculator Lab</i> 409 <i>Spreadsheet Lab</i> 422, 432-433</p> <p>Teacher Wraparound Edition: A 422, 433; EA 400; FMC 435; PA 425, 430, 437; T 426, 438; TNT 422, 440</p>

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<p>E.8.2 Organize and display data from statistical investigations using:</p> <ul style="list-style-type: none"> • appropriate tables, graphs, and/or charts (e.g., circle, bar or line for multiple sets of data) • appropriate plots (e.g., line*, stem-and-leaf*, box*, scatter*) 	<p>Student Edition: 408 #36, 410-414, 415-421, 423, 424-425, 426-431, 434-437, 444-449, 518-523, 688 <i>Practice Test</i> 455 <i>Spreadsheet Lab</i> 422, 432-433 Teacher Wraparound Edition: AA 421, 425; AE 411, 416, 428, 435; FMC 412, 416, 427; T 422; TNT 410</p>
<p>E.8.3 Extract, interpret, and analyze information from organized and displayed data by using:</p> <ul style="list-style-type: none"> • frequency and distribution, including mode* and range* • central tendencies* of data (mean* and median*) • indicators of dispersion (e.g., outliers*) 	<p>Student Edition: 396-401, 402-408, 410-414, 421 #33-#34, 451, LA21-LA25, 687, 711 #1-#5, 725 #19-#21 <i>Graphing Calculator Lab</i> 409 <i>Mid-Chapter Quiz</i> 423 <i>Practice Test</i> 455 Teacher Wraparound Edition: AE 398, 403, 405, 411, LA22; FMC 397, 404; PA 407</p>
<p>E.8.4 Use the results of data analysis to:</p> <ul style="list-style-type: none"> • make predictions • develop convincing arguments • draw conclusions 	<p>Student Edition: 424, 426-431, 434-437, 438-443, 453, 454, 689, 690, 711, 750 <i>Practice Test</i> 455 <i>Spreadsheet Lab</i> 422 Teacher Wraparound Edition: AA 422; AE 427, 428, 435, 439, 440; PA 425; T 422</p>
<p>E.8.5 Compare several sets of data to generate, test, and, as the data dictate, confirm or deny hypotheses</p>	<p>Student Edition: 401 #34, 419 #12, 420 #22-#27, 430 #18, 444-449, LA25 #28-#29, 690 <i>Graphing Calculator Lab</i> 409 <i>Spreadsheet Lab</i> 432-433 Teacher Wraparound Edition: A 433; AA 401, LA25; AE 445; PA 407, 430, 437; TNT 448</p>
<p>E.8.6 Evaluate presentations and statistical analyses from a variety of sources for:</p> <ul style="list-style-type: none"> • credibility of the source • techniques of collection, organization, and presentation of data • missing or incorrect data • inferences • possible sources of bias 	<p>Student Edition: 426-431, 434-437, 438-443, 444-449, 454, 690, 711 #12 <i>Spreadsheet Lab</i> 422, 432-433 Teacher Wraparound Edition: A 431; AA 447; AE 439, 445, 446; PA 437; T 432, 438; TNT 428, 440</p>

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<p>E.8.7 Determine the likelihood of occurrence of simple events by:</p> <ul style="list-style-type: none"> • using a variety of strategies to identify possible outcomes (e.g., lists, tables, tree diagrams*) • conducting an experiment • designing and conducting simulations* • applying theoretical notions of probability (e.g., that four equally likely events have a 25% chance of happening) 	<p>Student Edition: 190-191, 460-464, 465-470, 471-474, 475-478, 480-483, 484-485, 486-490, 499-502, 691, 692, 712 <i>Probability Lab</i> 491</p> <p>Teacher Wraparound Edition: AE 461, 462, 466, 472; DI 464; FMC 461, 472, 481</p>
<p>Mathematics Performance Standard F</p>	
<p>Mathematics, Standard F: Algebraic Relationships Performance Standards - Grade 8 By the end of grade eight, students will:</p>	
<p>F.8.1 Work with algebraic expressions in a variety of ways, including</p> <ul style="list-style-type: none"> • using appropriate symbolism, including exponents* and variables* • evaluating expressions through numerical substitution • generating equivalent expressions • adding and subtracting expressions 	<p>Student Edition: 8-9, 44-47, 73, 76 #5, 128-133, 170, 174 #4, 669, 674 <i>Mid-Chapter Quiz</i> 48, 147 #1-#4, 173 #1-#4 <i>Practice Test</i> 75 #9-#12</p> <p>Teacher Wraparound Edition: A 133; AE 45, 128; FMC 45; TNT 129, 131</p>
<p>F.8.2 Work with linear and nonlinear patterns* and relationships in a variety of ways, including</p> <ul style="list-style-type: none"> • representing them with tables, with graphs, and with algebraic expressions, equations, and inequalities • describing and interpreting their graphical representations (e.g., slope*, rate of change, intercepts*) • using them as models of real-world phenomena • describing a real-world phenomenon that a given graph might represent 	<p>Student Edition: 57-61, 63-67, 74, 163-167, 172, 293-297, 676, 682, 706 #12-#16, 720 #7, 728 #8, 730-731 <i>Algebra Lab</i> 62 <i>Graphing Calculator Lab</i> 68-69, 168 <i>Measurement Lab</i> 162</p> <p>Teacher Wraparound Edition: A 162; AE 58, 59, 63, 64, 164; EC 62; PA 61</p>
<p>F.8.3 Recognize, describe, and analyze functional relationships* by generalizing a rule that characterizes the pattern of change among variables. These functional relationships include exponential growth and decay (e.g., cell division, depreciation)</p>	<p>Student Edition: 63-67, 74, 163-167, 172, 174 #1, 706 #12-#16 <i>Graphing Calculator Lab</i> 68-69, 168</p> <p>Teacher Wraparound Edition: A 168; AE 64, 165; FMC 64, 163; TNT 166</p>

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<p>F.8.4 Use linear equations and inequalities in a variety of ways, including</p> <ul style="list-style-type: none"> • writing them to represent problem situations and to express generalizations • solving them by different methods (e.g., informally, graphically, with formal properties, with technology) • writing and evaluating formulas (including solving for a specified variable) • using them to record and describe solution strategies 	<p>Student Edition: 49-52, 63-67, 73, 74, 128-133, 136-141, 142-146, 151-155, 156-161, 170, 171, 730-731 <i>Algebra Lab</i> 134-135 <i>Graphing Calculator Lab</i> 68-69 <i>Measurement Lab</i> 162</p> <p>Teacher Wraparound Edition: A 69; AA 65; AE 64, 129, 130</p>
<p>F.8.5 Recognize and use generalized properties and relations, including</p> <ul style="list-style-type: none"> • additive and multiplicative property of equations and inequalities • commutativity* and associativity* of addition and multiplication • distributive* property • inverses* and identities* for addition and multiplication • transitive* property 	<p>Student Edition: 53-56, 73, 95-99, 136-141, 142-146, 151-155, 170, 171, 258-263, 670, 672, 674, 675, 681, 740-741</p> <p>Teacher Wraparound Edition: AE 53, 54, 259; FMC 54, 96, 137; TNT 53, 136, 143</p>