



Algebra 2

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STANDARDS	PAGE REFERENCES
<p>Mathematical Processes Performance Standards A Grade 12</p>	
<p>By the end of grade twelve, students will:</p>	
<p>A.12.1 Use reason and logic to</p> <ul style="list-style-type: none"> • evaluate information • perceive patterns • identify relationships • formulate questions, pose problems, and make and test conjectures • pursue ideas that lead to further understanding and deeper insight 	<p>Student Edition: 151 #29, 166 #29-#30, 191 #44, 250 #46, 266 #77, 330 #42, 367 #41, 405 #52, 448 #66, 462 #49, 526 #52, 533 #59, 541 #46, 608 #49, 688 #27, 739 #37 <i>Algebra Lab</i> 740, 775 <i>Graphing Calculator Lab</i> 824, 829</p>
<p>A.12.2 Communicate logical arguments and clearly show</p> <ul style="list-style-type: none"> • why a result does or does not make sense • why the reasoning is or is not valid • an understanding of the difference between examples that support a conjecture and a proof of the conjecture 	<p>Student Edition: 183 #41, 191 #44-#45, 206 #32, 274 #62, 292 #56, 317 #42, 323 #55, 337 #51, 373 #40, 413 #59, 455 #58, 462 #49, 526 #49-#50, 533 #57, 634 #61-#62, 694 #38, 845 #38-#39 <i>Algebra Lab</i> 740</p>

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<p>A.12.3 Analyze non-routine* problems and arrive at solutions by various means, including models* and simulations, often starting with provisional conjectures and progressing, directly or indirectly, to a solution, justification, or counter-example</p>	<p>Student Edition: 151 #28, 191 #44, 199 #37, #39, 221 #33, 243 #64, 265 #73, #75-#76, 292 #57, 300 #47, 330 #44, 370 #41, 426 #43, 448 #65, 477 #34, 505 #61, 526 #49-#50, 533 #59, 601 #46, 810 #41, 852 #44, 858 #41</p>
<p>A.12.4 Develop effective oral and written presentations employing correct mathematical terminology, notation, symbols, and conventions for mathematical arguments and display of data</p>	<p>Student Edition: 39 #59, 76 #54, 166 #27, 191 #45-#46, 214 #45, 250 #47, 258 #53, 266 #77, 317 #42, 323 #56, 406 #55, 463 #54, 486 #41, 506 #64, 526 #52, 608 #50, 627 #68, 709 #52, 798 #35, 836 #47</p>
<p>A.12.5 Organize work and present mathematical procedures and results clearly, systematically, succinctly, and correctly</p>	<p>Student Edition: 10 #38, 70 #54, 282 #50, 420 #58, 549 #21, 648 #63 <i>Foldables</i> 4, 56, 114, 160, 234, 310, 382, 440, 496, 560, 620, 682, 756, 820</p>
<p>A.12.6 Read and understand</p> <ul style="list-style-type: none"> • mathematical texts and other instructional materials • writing about mathematics (e.g., articles in journals)mathematical ideas as they are used in other contexts 	<p>Student Edition: 90 #16, 274 #59, 317 #41, 421 #60, 470 #41, 525 #44, 565 #32, 640 #45, 688 #26 <i>Cross-Curricular Project</i> 3, 233, 439, 619, 755 <i>Reading Math</i> 40, 65, 245, 319, 543, 696</p>
<p>Mathematics, Standard B: Number Operations And Relationships Performance Standards - Grade 12</p>	
<p>By the end of grade twelve, students will:</p>	
<p>B.12.1 Use complex counting procedures such as union and intersection of sets and arrangements (permutations* and combinations*) to solve problems</p>	<p>Student Edition: 41-47, 690-695, 702 #41-#43, 709 #57 <i>Mid-Chapter Quiz</i> 716 #5-#8 <i>Practice Test</i> 53 #25-#26, 751 #1-#4 <i>Reading Math</i> 696 <i>Study Guide and Review</i> 52 1-6, 746 12-2 <i>Quick Review Math Handbook 3</i> 232-239, 266-267, 269 #5-#12, #15-#16, #20-#25 <i>What have you learned?</i> 253 #13, 271 #19-#25</p>

STANDARDS	PAGE REFERENCES
<p>B.12.2 Compare real numbers using</p> <ul style="list-style-type: none"> order relations ($>$, $<$) and transitivity* ordinal scales including logarithmic (e.g., Richter, pH rating) arithmetic differences ratios, proportions, percents, rates of change 	<p>Student Edition: 71, 544, 546</p> <p>Properties of real numbers are covered on the following pages:</p> <p>Student Edition: 11-17, 19, 172, 180</p> <p><i>Quick Review Math Handbook 3</i> 75-76, 77 #7-#9, #14, 140-143, 144-153, 308-311 <i>What have you learned?</i> 162 #1-#3, 336 #14-#15</p>
<p>B.12.3 Perform and explain operations on real numbers (add, subtract, multiply, divide, raise to a power, extract a root, take opposites and reciprocals, determine absolute value)</p>	<p>Student Edition: 13 Example 3, 15 #7-#9, 16 #46-#49, 73 #27, 82 Example 4, 259 Example 1, 260 Example 2, 264 #1-#5, 444</p> <p><i>Quick Review Math Handbook 3</i> 92-95, 168-175, 176-181</p> <p><i>What have you learned?</i> 97 #28-#45, 190-191 #1-#25</p>
<p>B.12.4 In problem-solving situations involving the application of different number systems (natural, integers, rational*, real*) select and use appropriate</p> <ul style="list-style-type: none"> computational procedures properties (e.g., commutativity*, associativity*, inverses*) modes of representation (e.g., rationals as repeating decimals, indicated roots as fractional exponents) 	<p>Student Edition: 8 #2, 9 #21-#24, #32-#33, 14 Example 4, 16 #35, 22 Example 8, 25 #64-#67, 173 #5-#7, 211 Example 3, 263 Example 7, 336 #34-#35, 413 #54-#57, 417 Example 3, 420 #51-#52, 514 #13-#15</p> <p><i>Quick Review Math Handbook 3</i> 77 #14-#15, 95 #35, 121 #16-#20, 125 #29-#30, 139 #29-#30, 153 #18-#25, 161 #29-#30</p> <p><i>What do you already know?</i> 73 #27, 100 #1-#4</p>
<p>B.12.5 Create and critically evaluate numerical arguments presented in a variety of classroom and real-world situations (e.g., political, economic, scientific, social)</p>	<p>Students must evaluate mathematical procedures in the following examples:</p> <p>Student Edition: 25 #68, 47 #51, 64 #56, 76 #52, 128 #47, 151 #30, 199 #38, 221 #34, 257 #50, 274 #62, 292 #56, 317 #43, 390 #53, 414 #60, 485 #39, 573 #43, 654 #52, 714 #42, #44</p>
<p>B.12.6 Routinely assess the acceptable limits of error when</p> <ul style="list-style-type: none"> evaluating strategies testing the reasonableness of results using technology to carry out computations 	<p>Evaluating strategies and checking the reasonableness of results can be found on the following pages:</p> <p>Student Edition: 88 Real-World Example d, 90 #18, 214 #35b, #36b, 272 #7, 298 #10, 343 #10, 372 #33, 481 Example 3, 482 Example 4, 485 #32-#33, 503 #11</p> <p><i>Graphing Calculator Lab</i> 351 #2 <i>Reading Math</i> 319 #8</p>

STANDARDS	PAGE REFERENCES
Mathematics, Standard C: Geometry Performance Standards - Grade 12	
By the end of grade twelve , students will:	
<p>C.12.1 Identify, describe, and analyze properties of figures, relationships among figures, and relationships among their parts by</p> <ul style="list-style-type: none"> • constructing physical models • drawing precisely with paper-and-pencil, hand calculators, and computer software • using appropriate transformations* (e.g., translations, rotations, reflections, enlargements) • using reason and logic 	<p>Student Edition: 185-191, 567-573, 574-579, 581-588, 590-597, 598-602 <i>Algebra Lab</i> 580 <i>Mid-Chapter Quiz</i> 193 #15-#16 <i>Study Guide and Review</i> 610-613 Quick Review Math Handbook 3 350-359, 360-365 <i>What have you learned?</i> 402 #4-#6</p>
<p>C.12.2 Use geometric models* to solve mathematical and real-world problems</p>	<p>Student Edition: 8 Example 2, 9 #32, 21 Example 6, 26 #79, 367 #42-#45, 372 #30-#31, 763 Example 6, 765 #12, 773 #55-#56, 785 Example 1, 791 #35, <i>Mid-Chapter Quiz</i> 784 #5 <i>Prerequisite Skills</i> 879-880 Quick Review Math Handbook 3 349, 350, 358-359, 361 #1, 368, 370-371, 377, 381, 387, 393, 397, 401 <i>What have you learned?</i> 402-403</p>
<p>C.12.3 Present convincing arguments by means of demonstration, informal proof, counter-examples, or any other logical means to show the truth of</p> <ul style="list-style-type: none"> • statements (e.g., these two triangles are not congruent) • generalizations (e.g., the Pythagorean* theorem holds for all right triangles) 	<p>Student Edition: 17 #59-#62, 199 #39, 265 #76, 368 #49, 477 #34, 506 #63, 525 #45, 526 #49-#50, 596 #38, 641 #56-#57, 670-673, 689 #33, 695 #46-#47, 767 #46, 783 #52, 792 #38 <i>Practice Test</i> 679 #21-#23 <i>Study Guide and Review</i> 678 11-8 Quick Review Math Handbook 3 264-265 <i>What have you learned?</i> 270-271 #3-#4, #6, #17-#18</p>

STANDARDS	PAGE REFERENCES
<p>C.12.4 Use the two-dimensional rectangular coordinate system* and algebraic procedures to describe and characterize geometric properties and relationships such as slope*, intercepts*, parallelism, and perpendicularity</p>	<p>Student Edition: 71-77, 82 Example 4, 91 #27-#29, 119 Example 6, 253 <i>Mid-Chapter Quiz</i> 85 #9-#14 <i>Practice Test</i> 111 #16-#19 <i>Study Guide and Review</i> 108 2-3 Quick Review Math Handbook 3 324-335 <i>What have you learned?</i> 337 #22-#26</p>
<p>C.12.5 Identify and demonstrate an understanding of the three ratios used in right-triangle trigonometry (sine, cosine, tangent)</p>	<p>Student Edition: 759-767, 774 #64-#67 <i>Get Ready for the Next Lesson</i> 783, 792, 805 <i>Mid-Chapter Quiz</i> 784 #1-#2, #4-#5 <i>Practice Test</i> 817 #1-#4 <i>Standardized Test Practice</i> 818-819 #7, #9 <i>Study Guide and Review</i> 813 13-1</p>
<p>Mathematics Performance Standards D Grade 12</p>	
<p>By the end of grade twelve, students will:</p>	
<p>D.12.1 Identify, describe, and use derived attributes* (e.g., density, speed, acceleration, pressure) to represent and solve problem situations</p>	<p>Student Edition: 10 #35, 45 #22-#23, 69 #18-#19, 75 #27-#29, 250 #44, 281 #33, 336 #34-#35, 360 #30-#31, 388 #20-#21, 394 #6-#7, 400 #21, 412 #7-#8, 413 #54-#57, 448 #56-#58, 468 #4-#7, 470 #39, 482 Example 4 <i>Standardized Test Practice</i> 55 #11, 494 #4</p>
<p>D.12.2 Select and use tools with appropriate degree of precision to determine measurements directly* within specified degrees of accuracy and error (tolerance)</p>	<p>Quick Review Math Handbook 3 410, 412, 444-451</p>

STANDARDS	PAGE REFERENCES
<p>D.12.3 Determine measurements indirectly*, using</p> <ul style="list-style-type: none"> estimation proportional reasoning, including those involving squaring and cubing (e.g., reasoning that areas of circles are proportional to the squares of their radii) techniques of algebra, geometry, and right triangle trigonometry formulas in applications (e.g., for compound interest, distance formula) geometric formulas to derive lengths, areas, or volumes of shapes and objects (e.g., cones, parallelograms, cylinders, pyramids) geometric relationships and properties of circles and polygons (e.g., size of central angles, area of a sector of a circle) conversion constants to relate measures in one system to another (e.g., meters to feet, dollars to Deutschmarks) 	<p>Student Edition: 8 Example 2, #7-#8, 9 #23-#24, #32, 316 #27, 372 #35-#37, 467-468 Example 4, 759-767, 770 Example 2, 772-773 #5-#10, #20-#27, #34-#35, #40-#47, #54, #56, 776 #43, 785-791, 794-797, 808 Example 2, 809-810 #25 <i>Prerequisite Skills</i> 880 Example 3, #7-#12, 881-882 Quick Review Math Handbook 3 414, 415 #11-#25, 416-419, 426 #5, 427 #3-#10</p>
<p>Mathematics, Standard E: Statistics and Probability Performance Standards - Grade 12</p>	
<p>By the end of grade twelve, students will:</p>	
<p>E.12.1 Work with data in the context of real-world situations by</p> <ul style="list-style-type: none"> formulating hypotheses that lead to collection and analysis of one- and two-variable data designing a data collection plan that considers random sampling, control groups, the role of assumptions, etc. conducting an investigation based on that plan using technology to generate displays, summary statistics*, and presentations 	<p>Student Edition: 90 #16 <i>Algebra Lab</i> 88, 740 <i>Graphing Calculator Lab</i> 94 #17-#20 Quick Review Math Handbook 3 196-201 <i>What have you learned?</i> 252 #1-#2</p>

STANDARDS	PAGE REFERENCES
<p>E.12.2 Organize and display data from statistical investigations using</p> <ul style="list-style-type: none"> • frequency distributions • percentiles*, quartiles, deciles • line of best fit* (estimated regression line) • matrices 	<p>Student Edition: 87-91, 101 #54-#56, 105 #47-#49, 162-163, 165-166 #1-#2, #7-#8, #21-#26, 173 #5, 174 #22, 724-728 <i>Graphing Calculator Lab</i> 92-94 <i>Practice Test</i> 111 #27-#29 <i>Prerequisite Skills</i> 886-887, 889-890 <i>Spreadsheet Lab</i> 168 <i>Study Guide and Review</i> 109 Quick Review Math Handbook 3 206, 211, 218</p>
<p>E.12.3 Interpret and analyze information from organized and displayed data when given</p> <ul style="list-style-type: none"> • measures of dispersion*, including standard deviation and variance • measures of reliability • measures of correlation* 	<p>Interpreting and analyzing information from organized and displayed data can be found on the following pages: 87-91, 101 #54-#56, 105 #47-#49, 717-723, 728 #32-#33, 739 #45 <i>Graphing Calculator Lab</i> 92-94 <i>Practice Test</i> 111 #27-#29 <i>Study Guide and Review</i> 109, 748 12-6 Quick Review Math Handbook 3 202-213, 214-221, 222-231 <i>What have you learned?</i> 252-253 #3-#12</p>
<p>E.12.4 Analyze, evaluate, and critique the methods and conclusions of statistical experiments reported in journals, magazines, news media, advertising, etc.</p>	<p>This standard can be met by bringing in statistical experiments reported in journals, magazines, news media, advertising, etc. and having students analyze, evaluate, and critique the methods and conclusions while covering material on the following pages: Student Edition: 86-91, 684-689, 690-695, 697-702, 703-709, 710-715, 717-723, 724-728, 729-733, 735-739, 741-744 <i>Algebra Lab</i> 734, 740 <i>Graphing Calculator Lab</i> 92-94 <i>Reading Math</i> 696 Quick Review Math Handbook 3 196-201, 202-213, 214-221, 222-231, 232-239, 240-251</p>

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<p>E.12.5 Determine the likelihood of occurrence of complex events by</p> <ul style="list-style-type: none"> • using a variety of strategies (e.g., combinations*) to identify possible outcomes • conducting an experiment • designing and conducting simulations* • applying theoretical probability 	<p>Student Edition: 684-689, 690-694, 697-702, 703-709, 710-714, 728 #34-#36, 735-739 <i>Algebra Lab</i> 734 <i>Mid-Chapter Quiz</i> 716 <i>Practice Test</i> 751 <i>Study Guide and Review</i> 746, 747, 749 12-9 Quick Review Math Handbook 3 232-239, 240-251 <i>What have you learned?</i> 253 #13-#15</p>
<p>Mathematics, Standard F: Algebraic Relationships Performance Standards - Grade 12</p>	
<p>By the end of grade twelve, students will:</p>	
<p>F.12.1 Analyze and generalize patterns of change (e.g., direct and inverse variation) and numerical sequences, and then represent them with algebraic expressions and equations</p>	<p>Student Edition: 465-471, 478 #40, 486 #47, 622-628, 636-641, 658-662 <i>Algebra Lab</i> 663 <i>Mid-Chapter Quiz</i> 472 #20-#25 <i>Practice Test</i> 493 #17-#23, 679 #1-#3, #6-#8, #15-#16 <i>Spreadsheet Lab</i> 657 <i>Standardized Test Practice</i> 494 #1-#3, #12, 680 #2, #4-#5 <i>Study Guide and Review</i> 491 8-4, 675 11-1, 676 11-3, 677 11-6</p>
<p>F.12.2 Use mathematical functions* (e.g., linear*, exponential*, quadratic*, power) in a variety of ways, including</p> <ul style="list-style-type: none"> • recognizing that a variety of mathematical and real-world phenomena can be modeled* by the same type of function • translating different forms of representing them (e.g., tables, graphs, functional notation*, formulas) • describing the relationships among variable quantities in a problem • using appropriate technology to interpret properties of their graphical representations (e.g., intercepts, slopes, rates of change, changes in rates of change, maximum*, minimum*) 	<p>Student Edition: 58-64, 66-70, 71-77, 95-101, 236-243, 286-292, 331-338, 339-345, 397-401, 457-463, 473-478, 498-506 <i>Graphing Calculator Lab</i> 78, 92-94, 252, 293, 346-347, 518-519, 551 <i>Reading Math</i> 65</p>

STANDARDS	PAGE REFERENCES
<p>F.12.3 Solve linear and quadratic equations, linear inequalities, and systems of linear equations and inequalities</p> <ul style="list-style-type: none"> • numerically • graphically, including use of appropriate technology • symbolically, including use of the quadratic formula 	<p>Student Edition: 33-39, 41-48, 116-121, 123-129, 130-135, 145-151, 201-207, 216-222, 246-251, 253-258, 268-275, 276-283, 294-300</p> <p><i>Graphing Calculator Lab</i> 136, 223</p> <p><i>Quick Review Math Handbook 3</i> 296-307, 312-315</p>
<p>F.12.4 Model and solve a variety of mathematical and real-world problems by using algebraic expressions, equations, and inequalities</p>	<p>Student Edition: 21 Example 6, 29 #4-#6, 38 #45-#46, 67 Example 2, 72 Example 2, 99 #11-#13, 239 Example 4, 291 #50, 336 #34, 395 #39-#40, 400 #21, 460 Example 4, 480 Example 2, 500-501 Example 3, 626 #37-#40, 782 #46-#47, 864 Example 5</p> <p><i>Graphing Calculator Lab</i> 346-347, 487-488</p> <p><i>Spreadsheet Lab</i> 657</p> <p><i>Quick Review Math Handbook 3</i> 276-283, 284-291, 292-295, 296-307, 312-315</p>