



Algebra 1

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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: 19 #49, 37 #45, 52 #64, 53-58, 83 #50, 109 #35-#36, 114 #40, 165-170, 172-176, 227-233 <i>Algebra Lab</i> 72, 142, 186, 228 <i>Graphing Calculator Lab</i> 197, 210-211</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: 13 #43, 25 #36 & #38, 30 #45, 39-44, 45, 90 #55, 102 #46, 195 #62, 218 #38, 224 #50, 626-632 <i>Algebra Lab</i> 237 <i>Graphing Calculator Lab</i> 203 <i>Reading Math</i> 38, 171, 453 Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 258-263, 264-271</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: 25 #38, 39-44, 53-58, 83 #50, 102 #46, 175 #19-#20, 677-683 <i>Algebra Lab</i> 27, 45, 59, 77, 91, 228, 237, 678 <i>Graphing Calculator Lab</i> 210-211 <i>Reading Math</i> 171</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: 19 #49, 24 #35, 31 #47, 37 #46-#47, 39-44, 52 #65, 83 #51, 89 #49-#51, 102 #48, 110 #40, 115 #42, 122-128, 661 #57 <i>Algebra Lab</i> 45 <i>Reading Math</i> 38, 453</p>
<p>A.12.5 Organize work and present mathematical procedures and results clearly, systematically, succinctly, and correctly</p>	<p>Student Edition: 10-14, 35 Ex 3, 78-84, 85-90, 92-97, 98-103, 111-115, 122-128, 213-218, 220-226, 260-265, 266-270, 272-278 <i>Reading Math</i> 453 Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 82-83, 116-121, 296-307, 331-337</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) and mathematical ideas as they are used in other contexts 	<p>The following selected page references integrate reading mathematics or using it with science. Student Edition: 39-44, 53-58, 122-128, 227-233, 510-514 <i>Algebra Lab</i> 45 <i>Reading Math</i> 171 Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 258-263, 264-265</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: 650-654, 655-662, 663-670, 672-676 Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 232-239, 240-253, 266-271</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: 15-20, 24 #35, 49 Ex 6, 51 #48-#55, 105-110, 111-115, 122-128, 165-170, 187-195, 294-299, 560-565 <i>Algebra Lab</i> 186 <i>Reading Math</i> 116 <i>Spreadsheet Lab</i> 129</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 140-143, 144-153, 154-161, 312-315, 324-337</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: 6-9, 10-14, 15-20, 21-25, 26-31, 33-37, 46-52, 78-84, 85-90, 92-97, 98-103, 105-110, 111-115, 122-128, 187-195, 260-265, 266-270 <i>Reading Math</i> 171</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 92-97, 116-121, 122-125, 132-139, 168-175, 176-181</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: 6-9, 10-14, 15-20, 21-25, 33-37, 46-52, 78-84, 85-90, 92-97, 98-103, 111-115, 358-364, 366-373 <i>Algebra Lab</i> 45 <i>Prerequisite Skills</i> 698-699, 700-701 <i>Reading Math</i> 38</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 78-81</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>Student Edition: 39-44, 52 #64, 53-58, 83 #48, 89 #52, 102 #47, 105-110, 111-115, 122-128, 227-233, 642-648, 677-683 <i>Algebra Lab</i> 45, 59 <i>Reading Math</i> 38, 116, 171, 453, 649</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 196-201, 202-213, 214-221</p>

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<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>Student Edition: 215 Ex 3, 216 Ex 4, 480-485 <i>Graphing Calculator Lab</i> 162-163, 478-479</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 372, 377 #1-#2</p>
<p>Mathematics, Standard C: Geometry Performance Standards - Grade 12</p>	
<p>By the end of grade twelve, students will:</p>	
<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: 75 #47, 121 #34, 371 #13, 417 #11 <i>Algebra Lab</i> 72, 365</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 342-349, 350-359, 360-365, 366-371, 372-377, 378-381, 382-387, 388-393</p>
<p>C.12.2 Use geometric models* to solve mathematical and real-world problems</p>	<p>Student Edition: 406, 487 Ex 1, 549-554, 560-565, 584 Ex 2 <i>Algebra Lab</i> 77, 382-383, 396-397, 425, 432-433, 447</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 354, 361, 368, 371 #18-#20, 377 #10, 381 #10, 386, 391, 393 #19-#20</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: 39-44, 554 #49, 564 #28-#29 <i>Reading Mathematics</i> 453</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 264-265, 350-359, 394</p>
<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: 155-161, 187-195, 196-202, 204-209, 236-241 <i>Algebra Lab</i> 186, 237</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 324-337</p>

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C.12.5 Identify and demonstrate an understanding of the three ratios used in right-triangle trigonometry (sine, cosine, tangent)	For understanding of trigonometry, see Glencoe's <i>Geometry</i> © 2008 Lesson 8-4. Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 398-403
Mathematics Performance Standards D Grade 12	
By the end of grade twelve, students will:	
D.12.1 Identify, describe, and use derived attributes* (e.g., density, speed, acceleration, pressure) to represent and solve problem situations	Student Edition: 53-58, 122-128, 484 #33, 495 Ex 2, 498 #39 Algebra Lab 500-501
D.12.2 Select and use tools with appropriate degree of precision to determine measurements directly* within specified degrees of accuracy and error (tolerance)	Student Edition: 417 #11 <i>Algebra Lab</i> 228, 365 <i>Graphing Calculator Lab</i> 203 Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 444-451
D.12.3 Determine measurements indirectly*, using <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) 	Student Edition: 122-128, 482-483 Ex 5 & 6, 549-554, 555-559, 560-565 Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 366-371, 372-377, 378-381, 382-387, 388-393, 394-397, 398-403, 412-415, 416-419, 424-429

STANDARDS	PAGE REFERENCES
Mathematics, Standard E: Statistics and Probability Performance Standards - Grade 12	
By the end of grade twelve, students will:	
<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: 642-648, 672-676, 677-683 <i>Algebra Lab</i> 142, 228, 365, 509, 678 <i>Cross-Curricular Project</i> 683 <i>Reading Math</i> 649</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 196-201, 456-457</p>
<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: 227-233 <i>Graphing Calculator Lab</i> 234-235, 515 <i>Prerequisite Skills</i> 713, 714-715</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 202-213, 214-221</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>Student Edition: <i>Graphing Calculator Lab</i> 234-235, 515 <i>Prerequisite Skills</i> 711-712</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 222-231</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>Student Edition: 642-648 <i>Reading Math</i> 649</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 223</p>
<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: 650-654, 655-662, 663-671, 672-676, 677-683 <i>Algebra Lab</i> 678</p> <p>Teacher Resources: <i>Quick Review Math Handbook Book 3</i> 232-239, 240-253</p>

STANDARDS	PAGE REFERENCES
<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: 165-170, 172-176, 187-195, 196-202, 577-582 <i>Algebra Lab</i> 186 <i>Graphing Calculator Lab</i> 197, 576 <i>Reading Math</i> 171</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: 155-161, 172-176, 187-195, 196-202, 204-209, 213-218, 220-225, 227-233, 471-477, 510-514 <i>Algebra Lab</i> 186, 500 <i>Graphing Calculator Lab</i> 162-163, 197, 203, 210-211, 219, 234-235, 470, 478-479</p>
<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: 253-258, 260-265, 266-271, 272-278, 294-299, 301-307, 308-313, 341-345, 434-439, 441-446, 447-452, 454-459, 480-485, 486-491, 493-499 <i>Graphing Calculator Lab</i> 259, 309, 342, 470, 478-479 <i>Spreadsheet Lab</i> 252</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: 78-84, 85-90, 92-97, 98-103, 105-110, 111-115, 122-128, 294-299, 301-307, 308-313, 315-320, 480-485, 486-491, 493-499, 502-508, 510-514 <i>Algebra Lab</i> 500-501, 509</p>