



MathMatters 2

An Integrated Program

© 2006

STANDARDS	PAGE REFERENCES
<p>Standard A--Mathematical Processes</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: 23 #12, 26 #b, 27 #4-#5, 32 #1-#2, 34-37, 44 #29-#30, 45 #7, 46 #7, 47 #25, 82 #4, 151 ex 1, 152 #11, 530 #c, 531 #1</p> <p>Annotated Teacher Edition: AA 34; CE 35, 531; QA 36, 152</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: 12 #5, 13 #19-#22, 14 #15-#17, 15 #24, 19 #16, 42 #14, 75 #59, 299 #23</p> <p>Annotated Teacher Edition: AA 10</p>
<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: 26-27, 92-93, 114-115, 154-155, 232-233, 274-275, 320-321, 358-359, 400-401, 462-463, 508-509, 530-531</p> <p>Teacher Resources: <i>Technology Activities 21</i></p>

STANDARDS	PAGE REFERENCES
A.12.4 Develop effective oral and written presentations employing correct mathematical terminology, notation, symbols, and conventions for mathematical arguments and display of data	Student Edition: 93 #20, 106 #20, 110 #43, 115 #20, 118 #10, 125 #41, 138 #13, 152 #11, 165 #26, 171 #21, 180 #19, 199 #24, 209 #31, 218 #32, 225 #36
A.12.5 Organize work and present mathematical procedures and results clearly, systematically, succinctly, and correctly	Student Edition: 93 #20, 106 #20, 110 #43, 115 #20, 118 #10, 125 #41, 138 #13, 152 #11, 165 #26, 171 #21, 180 #19, 199 #24, 209 #31, 218 #32, 225 #36
A.12.6 Read and understand <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 	Student Edition: <i>Reading Math</i> 28, 38, 53, 57, 82, 126, 127, 179, 217, 226, 297, 390, 498, 520, 542
Standard B--Number Operations and Relationships	
By the end of grade twelve, students will:	
B.12.1 Use complex counting procedures such as union and intersection of sets and arrangements (permutations* and combinations*) to solve problems	Student Edition: 172-175, 176 #19-#32, 177 #42-#45, 178-181, 184 #28-#33, 185 #15-#16, 187 #23-#24 Annotated Teacher Edition: CE 179; ETL 180, 181; QA 174, 180; TT 173 Teacher Resources: <i>Technology Activities</i> 23, 25
B.12.2 Compare real numbers using <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 	Student Edition: 53 ex 2, 54 #6, 55 #26, 60 #10-#11, 61 #51-#52, 94 #13-#14, 71 #1-#2, 91 #55-#56
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)	Student Edition: 50 #1-#18, 51 #27-#34, 56-59, 60 #25-#30, 61 #59-#64 Annotated Teacher Edition: CE 50, 56; ETL 57; QA 58; TT 56 Teacher Resources: <i>Technology Activities</i> 7, 9

STANDARDS	PAGE REFERENCES
<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: 92-93, 96 #74-#77, 114-115, 120 #1-#10, 121 #37, 141 #22-#25, 274-275</p> <p>Annotated Teacher Edition: CE 115, 275; GS 92; QA 93</p> <p>Teacher Resources: <i>Technology Activities 11</i></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: 13 #23, 79 #46, 111 #45, 124 #37, 155 #9, 165 #25, 181 #28, 215 #25, 218 #30, 246 #18, 341 #33, 357 #28, 399 #41, 411 #55, 424 #32</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>Student Edition: 5 #29-#40, 508-509, 512 #48-#50</p> <p>Annotated Teacher Edition: CE 4; QA 5; TT 4</p>
<p>Standard C—Geometry</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: 192-195, 196 #1-#4, 200 #1-#12, 202 #1-#3, 206-209, 216-219, 222-225, 234 #11-#14, 296-299, 300-303, 306-309</p> <p>Annotated Teacher Edition: ETL 219; QA 194, 218; TT 207</p> <p>Teacher Resources: <i>Technology Activities 29, 31</i></p>
<p>C.12.2 Use geometric models* to solve mathematical and real-world problems</p>	<p>Student Edition: 199 #23-#27, 209 #33, 214 #19, 217 ex 3, 218 #31, 219 #45, 299 #22, 302 #24, 303 #26, 307 ex 2, 309 #22, 317 ex 3, 318 #16, 425 #40</p> <p><i>MathWorks 221</i></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: 34-37, 44 #29-#30, 45 #7, 46 #7, 47 #25, 530 #c, 531 #1</p> <p>Annotated Teacher Edition: AA 34; CE 35, 531; QA 36</p> <p>Teacher Resources: <i>Technology Activities 69, 71</i></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: 242 #1-#8, 244-247, 248-251, 252 #1-#19, 253 #38-#49, 334-337, 342 #1-#18, 343 #40-#45</p> <p>Annotated Teacher Edition: CE 249, 335; GS 244; QA 246, 250, 336; TT 248</p> <p>Teacher Resources: <i>Technology Activities 33, 35</i></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: 488-491, 492 #8-#27, 493 #9-#14, 494-497, 498-501, 502 #10-#21, 503 #26-#28, 511 #20-#28, 512 #35-#39</p> <p>Annotated Teacher Edition: CE 489; ETL 488, 496; QA 490, 496; TT 494</p> <p>Teacher Resources: <i>Technology Activities 65</i></p>
<p>Standard D—Measurement</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: 75 #65, 89 #56 <i>Chapter Investigation 96</i></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>Student Edition: 295 #27-#34</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: 478-481, 482 #10-#14, 493 #3-#5, 503 #29, 510 #13-#15, 513 #16, 515 #19 <i>MathWorks</i> 483</p> <p>Annotated Teacher Edition: CE 479; DI 479; ETL 480; QA 480; TT 478</p>
<p>Standard E--Statistics and Probability</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: 9 #29, 13 #24, 19 #24, 23 #14, 25 #20-#23, 31 #29, 37 #20 <i>Chapter Investigation 3</i></p> <p>Annotated Teacher Edition: ETL 27, 29; GS 6; TT 6</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: 16-19, 20-23, 24 #10-#19, 28-31, 32 #10-#14, 44 #26-#28, 98 #3</p> <p>Annotated Teacher Edition: CE 21, 39; DI 20; ETL 21; QA 22, 30; TT 16</p>

STANDARDS	PAGE REFERENCES
<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: 16-19, 20-23, 24 #10-#19, 28-31, 32 #10-#14, 44 #26-#28, 98 #3</p> <p>Annotated Teacher Edition: CE 21, 39; DI 20; ETL 21; QA 22, 30; TT 16</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: 10-13, 14 #9-#17, 15 #22-#24, 19 #29-#30, 25 #21-#23, 33 #19</p> <p>Annotated Teacher Edition: AA 10; ETL 11; GS 10; QA 12</p> <p>Teacher Resources: <i>Technology Activities 5</i></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: 168-171, 176 #1-#18, 177 #41, 183 #21-#23, 184 #24-#27, 185 #7-#11, 186 #11, 187 #22</p> <p>Annotated Teacher Edition: ETL 169</p> <p>Teacher Resources: <i>Technology Activities 21</i></p>
<p>Standard F--Algebraic Relationships</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: 92-93, 96 #74-#77, 97 #40-#41, 99 #19, 274-277</p> <p>Annotated Teacher Edition: CE 93; GS 92; QA 93, 275</p> <p>Teacher Resources: <i>Technology Activities 11</i></p>

STANDARDS	PAGE REFERENCES
<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: 264-267, 268-271, 272 #14-#27, 281 #29-#30, 280 #1-#3, 287 #49-#50, 288 #54-#56</p> <p>Annotated Teacher Edition: AA 264; CE 269; QA 266, 271</p> <p>Teacher Resources: <i>Technology Activities 37</i></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: 116-119, 120 #11-#25, 121 #38-#46, 124 #35, 131 #42, 141 #26-#31, 143 #8-#12, 144 #7</p> <p>Annotated Teacher Edition: DI 116, ETL 117</p> <p>Teacher Resources: <i>Technology Activities 15, 17, 47</i></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: 104-107, 111 #51-#54, 112 #50-#53, 119 #46, 120 #26-#30, 121 #37, 141 #20-#21, 143 #33-#35, 144 #6</p> <p>Annotated Teacher Edition: CE 105; ETL 107; TT 105</p> <p>Teacher Resources: <i>Technology Activities 13</i></p>