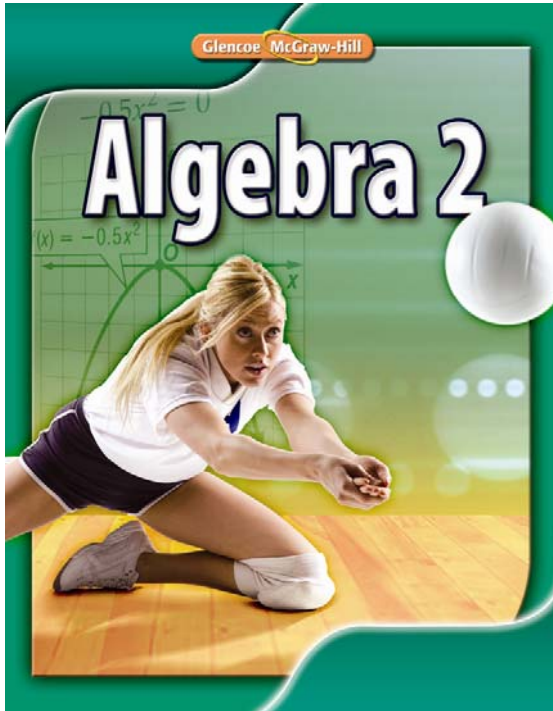




Glencoe

Model Academic Standards for
Mathematics Grade 12



STANDARDS	PAGE REFERENCES
Mathematical Processes Performance Standards A Grade 12	
By the end of grade twelve , students will:	
<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: 219 #11, 311 #4, 540 #5-#6, 630 #4, 638 #6-#10, 681-687, 688-695, 738-739, 740 #1, 785 #4-#6, 840 #4, 936</p> <p><i>Problem-Solving Tip</i> 921</p> <p>Teacher Edition: AE 682, 683; F 684; T 681, 688, 738; TWT 684</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: 219 #11, 311 #4, 540 #5-#6, 630 #4, 638 #6-#10, 727-731, 736 #63-#65, 737 #20-#21, 785 #4-#6, 840 #4, 896 #46, 898-903, 906 ex 3, 907 #19-#22</p> <p>Teacher Edition: AE 728, 899, 900, 906; DI 728, 931; TWT 728</p>

STANDARDS	PAGE REFERENCES
<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: 728 ex 3, 729 #6-#7, 730 #37, 731 #41, 736 #66-#69, 737 #22, 891 <i>Review Vocabulary</i> 728</p> <p>Teacher Edition: A 731; AE 729</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: 66 #40, 81 #40, 97 #16, 115 #47, 149 #68, 165 #33, 190 #40, 206 #50, 234 #42, 265 #56, 281 #70, 299 #48, 317 #62, 346 #48, 363 #53, 381 #43, 395 #51, 421 #56, 435 #64, 444 #65</p>
<p>A.12.5 Organize work and present mathematical procedures and results clearly, systematically, succinctly, and correctly</p>	<p>Student Edition: 73 #56, 88 #42, 106 #44, 120 #37, 140 #46, 156 #49-#50, 172 #29, 198 #40, 216 #48, 227 #61, 256 #65, 274 #86, 289 #62, 309 #52, 338 #69, 354 #68, 374 #83, 389 #60, 415 #63, 429 #52</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>Student Edition: <i>Reading Math</i> P13, 6, 35, 43, 47, 64, 95, 110, 152, 161, 194, 210, 223, 384, 411, 418, 425, 553, 625, 689, 760, 766, 811, 818</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: P3 #24-#25, P12-P14, 41, 42</p> <p>Teacher Edition: A P14; AE P12, P13, P14; DI 42; TWT P13; WO P13, 42</p>
<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: 19, 76-82, 681, 684 ex 6, 993-994</p> <p>Teacher Edition: A 82; AE 77, 78, 684, 993; TNT 994; TWT 78</p>

STANDARDS	PAGE REFERENCES
<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: 5 ex 4, 6 ex 2, 7 #18-#23, 8 #29-#34, 9 #43, 17 #67, 26 #1, 27, 50 #11-#16, 53 #1, 432 ex 1, 433 #1-#6, 434 #12-#35 <i>Key Concept</i> 5 <i>Study Tip</i> 12 Teacher Edition: A 10; AE 6, 432; TNT 6; TWT 6</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: 11-17, 26 #10, 32 #60-#61, 48 #72-#74 Teacher Edition: A 17; AE 13; DI 13; T 11; WO 15</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: 31 #45, 38 #45, 47 #53, 66 #35, 81 #36, 115 #44, 120 #35, 140 #43, 149 #64, 190 #37, 227 #58, 234 #38, 256 #61, 265 #52, 274 #79, 281 #66, 289 #58, 299 #43, 317 #58, 354 #63</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: 395 #46, 415 #60, 429 #51, 435 #59, 444 #60, 451 #70, 481 #35, 490 #43, 495 #65, 506 #38, 521 #68, 560 #60, 592 #48, 636 #62, 645 #40, 654 #44, 686 #57, 694 #74, 710 #60</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: 109-116, 126 #51-#52, 209-217, 228 #66-#67, 235 #50, 239 #19-#23, 241 #10 Teacher Edition: AE 110, 111, 112, 210, 211, 212, 213; DI 216, 217; F 112; T 209; TWT 210; WO 211, 212</p>

STANDARDS	PAGE REFERENCES
<p>C.12.2 Use geometric models* to solve mathematical and real-world problems</p>	<p>This standard is met in Glencoe's <i>Geometry</i> © 2010.</p> <p>Student Edition: 80 #42, 90 ex 2, 150 ex 2, 155 #20, 173 ex 3, 175 #45, 181 #7, 188 ex 2, 193 #55, 195 #14, 250 #33, 923 ex 1 <i>Graphing Technology Lab</i> 185 <i>Real World Link</i> 152, 182</p> <p>Teacher Edition: AE 90, 150, 173, 188, 265, 924</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: 395 #48, 415 #62, 421 #55, 435 #61, 451 #66, 458 #69, 481 #34, 490 #46, 514 #66, 521 #71, 530 #59, 538 #68, 560 #63, 567 #64, 583 #45, 659 #45, 694 #80-#82, 701 #64-#65, 710 #61</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: 76-82, 86 ex 4, 87 #23-#24, 88 #40, 91 #19, 107 #50-#52, 124 #30-#32, 127 #7-#8, 129 #2, 130 #2 <i>Algebra Lab</i> 75 <i>Graphing Technology Lab</i> 108 <i>Key Concept</i> 85</p> <p>Teacher Edition: A 82; AE 78, 86; DI 82; TWT 78; WO 81</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: 808-816, 823 #58-#60, 825-831, 832-839, 841-846, 847 #3 <i>Spreadsheet Lab</i> 807</p> <p>Teacher Edition: A 816, 839; AE 809, 810, 811, 812, 826, 827, 828, 833, 834, 842; DI 828, 846; F 810, 835; TWT 809, 826</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: <i>Algebra Lab</i> 340</p> <p>Teacher Edition: T 340</p>

STANDARDS	PAGE REFERENCES
<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>This standard is met in Glencoe's <i>Geometry</i> © 2010. Student Edition: 22-24 Teacher Edition: A 24; WO 23</p>
<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: 808-816, 825-831, 944, 993-994 Teacher Edition: A 816, 994; AE 809, 810, 811, 812, 828; DI 811</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: <i>Graphing Technology Lab</i> 319 Teacher Edition: A 750; DI 747; TWT 186, 746</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: 92-98, 186 ex 2, 188 #8, 189 #21, 190 #34, 208 #14, 217 #56, 238 #11, 241 #7, 764-771 <i>Algebra Lab</i> 99-100, 777 <i>Spreadsheet Lab</i> 192 <i>Study Tip</i> 187</p> <p>Teacher Edition: AE 93, 95, 186, 766; TWT 95, 186, 766</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: 187 ex 3, 244 #1, 780-784, 793 #52, 797 #29-#35, 799 #19-#20</p> <p>Teacher Edition: A 784; AE 187, 781; F 782; TWT 782</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: 745-750, 755 #10, 757 #25, 795 #7-#16, 799 #3-#4 <i>Graphing Technology Lab</i> 751</p> <p>Teacher Edition: A 98, 750, 751; AE 746, 747; DI 753; F 746; T 745</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: 759-763, 764-771, 772 #11-#13, 778 #28, 796 #17-#18, 799 #15-#17, 801 #1, 802 #1, 803 #15 <i>Algebra Lab</i> 785</p> <p>Teacher Edition: A 763; AE 760, 765, 766, 767; DI 763, 771</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: 586-593, 602 #44-#46, 608 #39-#44, 609 #25-#27, 611 #4, 613 #10, 681-687</p> <p>Teacher Edition: A 593; AE 587, 588, 589, 682, 683; F 587, 684; T 586, 681; TNT 588; TWT 589, 684; WO 587</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: 83-89, 305-310, 318 #67-#69, 324 #59-#63, 325 #22-#23 <i>Algebra Lab</i> 99-100, 311 <i>Graphing Technology Lab</i> 303-304, 319, 365-366</p> <p>Teacher Edition: A 304; AE 84, 85, 86, 307; DI 307, 310; F 85, 306; T 305; TWT 306; WO 306</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: 18-25, 26 #18, 32 #56-#58, 117-121, 126 #54-#61, 127 #19-#20, 135-141, 143-150, 151-157 <i>Graphing Technology Lab</i> 158</p> <p>Teacher Edition: A 121; AE 19, 20, 21, 118, 119, 136, 137, 138, 144, 145, 152, 153; DI 141; F 20; TWT 21</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: 5-10, 22 #29, 23 #44, 24 #60, 26 #12, 28 ex 2, 30 #22, 36 ex 4, 37 #22, 38 #41, 39 #57, 44 ex 5, 45 #11, 46 #31</p> <p>Teacher Edition: AE 6, 7, 28, 36, 44; T 5, 33; TNT 7</p>