



Algebra

Concepts and Applications

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STANDARDS	PAGE REFERENCES
<p>I. MATHEMATICAL REASONING</p>	
<p>Standard: Apply skills of mathematical representation, communication and reasoning throughout the remaining three content strands.</p>	
<p><i>Note about assessment of this standard: The Mathematical Reasoning standards will primarily be assessed within the context of the standards in the remaining four content strands. The depth of mathematical reasoning will increase as the skill level in the four other strands increases.</i></p>	
<p>1. Assess the reasonableness of a solution by comparing the solution to appropriate graphical or numerical estimates or by recognizing the feasibility of solutions in a given context and rejecting extraneous solutions.</p>	<p>Student Edition: 24-29, 289 #29, 760</p> <p>Teacher Wraparound Edition: TT 25</p>
<p>2. Appropriately use examples and counterexamples to make and test conjectures, justify solutions, and explain results.</p>	<p>Student Edition: 16 ex 5, 17 #8, 18 #27, 22 #34, 287 #3, 299 #3, 314 #2, 339 #3, 344 #2, 396 #3, 517 #38, 603 #2</p> <p>Teacher Wraparound Edition: ICE 16</p> <p>Teacher Resources: Practice 13</p>
<p>3. Translate a problem described verbally or by tables, diagrams or graphs, into suitable mathematical language, solve the problem mathematically and interpret the result in the original context.</p>	<p>Student Edition: 162 ex 8, 164 #39, 166 ex 4, 170 #40, 172 ex 3, 174 #36, 292 ex 4, 293 #14, 295 #40, 298 ex 6, 299 #13, 300 #46-#47, 314 #11, 315 #39, 317 ex 3</p>

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4. Support mathematical results by explaining why the steps in a solution are valid and why a particular solution method is appropriate.	Student Edition: 107 #3, 120 #2, 125 #4, 130 #3, 148 #3, 163 #1, 168 #3, 173 #1, 201 #2, 287 #3, 299 #3, 314 #2, 339 #3, 344 #2, 396 #3
5. Determine whether or not relevant information is missing from a problem and if so, decide how to best express the results that can be obtained without that information.	This standard can be met in Glencoe's <i>Geometry</i> © 2005 pages 75-80.
6. Know and use the relationship that exists among a logical implication of the form "if A, then B," its converse "if B, then A," its inverse "if not A, then not B," and its contrapositive "if not B, then not A."	Student Edition: 30-31 Teacher Resources: <i>Enrichment 15</i>
II. NUMBER SENSE, COMPUTATION, AND OPERATIONS	
A. Number Sense	
Standard: Use real numbers, represented in a variety of ways, to quantify information and to solve real-world and mathematical problems.	
B. Computation and Operation	
Standard: Appropriately use calculators and other technologies to solve algebraic, geometric, probabilistic and statistical problems.	
1. Apply the correct order of operations and grouping symbols when using calculators and other technologies.	Student Edition: 751 Teacher Wraparound Edition: GCE 26 Teacher Resources: <i>Graphing Calculator Masters 2, 12, 13</i>
2. Know, use and translate calculator notational conventions to mathematical notation.	Student Edition: 491, 750, 751 <i>Graphing Calculator Exploration 26, 272</i> Teacher Wraparound Edition: GCE 26, 625 Teacher Resources: <i>Graphing Calculator Masters 2, 9, 10, 11, 12, 13</i>
3. Recognize the impact of units such as degrees and radians on calculations.	This standard can be met in Glencoe's <i>Geometry</i> © 2005 page 366.
4. Recognize that applying an inverse function with a calculator may lead to extraneous or incomplete solutions.	Student Edition: <i>Graphing Calculator Exploration 625</i>

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5. Understand the limitations of calculators such as missing or additional features on graphs due to viewing parameters or misleading representations of zero or very large numbers.	Student Edition: <i>Graphing Calculator Exploration</i> 272, 625, 638-639 Teacher Wraparound Edition: GCE 214, 272, 625, 639 Teacher Resources: <i>Graphing Calculator Masters</i> 24, 25, 40
6. Understand that use of a calculator requires appropriate mathematical reasoning and does not replace the need for mental computation.	Student Edition: <i>Graphing Calculator Exploration</i> 272, 625, 638-639 Teacher Wraparound Edition: GCE 214, 272, 625, 639
III. PATTERNS, FUNCTIONS, AND ALGEBRA	
A. Patterns and Functions	
Standard: Represent and analyze real-world and mathematical problems using numeric, graphic and symbolic methods for a variety of functions.	
1. Know the numeric, graphic and symbolic properties of linear, step, absolute value and quadratic functions. Graphic properties may include rates of change, intercepts, maxima and minima.	Student Edition: 284-289, 310-315, 316-321, 328 #11-#14, 329 #28-#31, 330 #32-#35, 331 #13-#18 Teacher Wraparound Edition: ICE 312; RA 286 Teacher Resources: <i>Practice</i> 288, 311, 316 <i>Study Guide</i> 289, 309, 314
2. Model exponential growth and decay, numerically, graphically and symbolically, using exponential functions with integer inputs.	Student Edition: 490 ex 4, 492 #9, 493 #24, 498 #52, 499 #25, 508 #43, 729 #7 Teacher Wraparound Edition: MTL 489; RA 492
3. Analyze the effects of coefficient changes on linear and quadratic functions and their graphs.	Student Edition: 316-321, 327 #42-#44, 330 #32-#35, 331 #2, 464-467 Teacher Wraparound Edition: A 321; EC 321; F 322; IS 320; MTL 322; RA 318 Teacher Resources: <i>Practice</i> 316, 466 <i>Study Guide</i> 314, 478

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<p>4. Apply basic concepts of linear, quadratic and exponential expressions or equations in real-world problems such as loans, investments and the path of a projectile.</p>	<p>Student Edition: 315 #39, 472 #24, 475 ex 2, 477 #32, 481 #35, 482 #42, 485 ex 3, 486 #26-#27, 490 ex 4, 492 #22, 493 #24, 498 #52, 499 #23, 508 #43</p> <p>Teacher Wraparound Edition: RA 492</p>
<p>5. Distinguish functions from other relations using graphic and symbolic methods.</p>	<p>Student Edition: 256-261, 269 #1-#2, 275 #32, 277 #33-#35, 279 #11-#12, 289 #32-#33</p> <p>Teacher Wraparound Edition: A 261; ICE 256, 257; MTL 256</p> <p>Teacher Resources: <i>Practice 262</i> <i>Study Guide 260</i></p>
<p>B. Algebra (Algebraic Thinking)</p>	
<p>Standard: Solve simple equations and inequalities numerically, graphically, and symbolically. Use recursion to model and solve real-world and mathematical problems.</p>	
<p>1. Translate among equivalent forms of expressions, such as, simplify algebraic expressions involving nested pairs of parentheses and brackets, simplify rational expressions, factor a common term from an expression and apply associative, commutative and distributive laws.</p>	<p>Student Edition: 15 ex 3, 17 #6-#7, 19 ex 1-ex 2, 20 ex 3-ex 4, 22 #8-#13, 67 ex 6, 68 #17-#19, 341-345, 428-433</p> <p>Teacher Wraparound Edition: A 433; EC 23, 433; ICE 20, 342, 430</p> <p>Teacher Resources: <i>Practice 440</i> <i>Study Guide 431</i></p>
<p>2. Understand the relationship between absolute value and distance on the number line and graph simple expressions involving absolute value such as, $x - 3 = 6$ or $x + 2 < 5$.</p>	<p>Student Edition: 54-55, 128-131, 134 #50-#56, 135 #22-#24, 145 #49-#51, 301 #57, 530-534</p> <p>Teacher Wraparound Edition: A 131; BQ 135; EC 57, 534; ICE 128; RA 130</p> <p>Teacher Resources: <i>Practice 127</i> <i>Study Guide 125</i></p>

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<p>3. Find equations of a line given two points on the line, a point and the slope of the line or the slope and the y-intercept of the line.</p>	<p>Student Edition: 290-295, 296-301, 307 #19, 329 #15-#25, 331 #6-#11</p> <p>Teacher Wraparound Edition: A 295; EC 301; F 291; ICE 291, 297, 298</p> <p>Teacher Resources: <i>Practice</i> 296, 301 <i>Study Guide</i> 294, 299</p>
<p>4. Translate among equivalent forms of linear equations and inequalities.</p>	<p>Student Edition: 290-295, 296-301, 307 #19, 329 #15-#25, 331 #6-#11</p> <p>Teacher Wraparound Edition: A 295; EC 301; F 291; ICE 291, 297, 298</p> <p>Teacher Resources: <i>Practice</i> 296, 301 <i>Study Guide</i> 294, 299</p>
<p>5. Use a variety of models such as equations, inequalities, algebraic formulas, written statements, tables and graphs or spreadsheets to represent functions and patterns in real-world and mathematical problems.</p>	<p>Student Edition: 162 ex 8, 164 #39, 166 ex 4, 170 #40, 172 ex 3, 174 #36, 292 ex 4, 293 #14, 295 #40, 298 ex 6, 299 #13, 300 #46-#47, 314 #11, 315 #39, 317 ex 3</p>
<p>6. Apply the laws of exponents to perform operations on expressions with integer exponents.</p>	<p>Student Edition: 336-340, 341-345, 347-351, 356 #51-#59, 375 #21-#36</p> <p>Teacher Wraparound Edition: A 340, 345; ICE 337, 342, 343, 344</p> <p>Teacher Resources: <i>Practice</i> 341, 346 <i>Study Guide</i> 339, 344</p>
<p>7. Solve linear equations and inequalities in one variable with numeric, graphic and symbolic methods.</p>	<p>Student Edition: 117-121, 122-127, 160-164, 165-170</p> <p>Teacher Wraparound Edition: A 121; EC 121; ICE 123; RA 168</p> <p>Teacher Resources: <i>Practice</i> 120, 122, 162, 167 <i>Study Guide</i> 115, 120, 160, 165</p>

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<p>8. Find real solutions to quadratic equations in one variable with numeric, graphic and symbolic methods.</p>	<p>Student Edition: 468-473, 474-477, 478-482, 483-487</p> <p>Teacher Wraparound Edition: A 482; EC 473; F 474; ICE 469</p> <p>Teacher Resources: <i>Practice</i> 485, 490, 495, 500 <i>Study Guide</i> 483, 488, 493, 498</p>
<p>9. Use appropriate terminology and mathematical notation to define and represent recursion.</p>	<p>Student Edition: 110-111, 494-495</p> <p>Teacher Wraparound Edition: A 111; MTL 494</p>
<p>10. Create and use recursive formulas to model and solve real-world and mathematical problems.</p>	<p>Student Edition: 110-111, 494-495</p> <p>Teacher Wraparound Edition: A 111; MTL 494</p>
<p>11. Solve systems of two linear equations and inequalities with two variables using numeric, graphic and symbolic methods.</p>	<p>Student Edition: 550-553, 554-559, 560-565, 566-571, 572-577, 586-590, 592 #1-#16, 593 #17-#38, 594 #46-#50</p> <p>Teacher Wraparound Edition: EC 590; ICE 551</p> <p>Teacher Resources: <i>Practice</i> 575, 580, 585 <i>Study Guide</i> 573, 578, 583</p>
<p>12. Understand how slopes can be used to determine whether lines are parallel or perpendicular. Given a line and a point not on the line, find the equations for the lines passing through that point and parallel or perpendicular to the given line.</p>	<p>Student Edition: 322-327, 330 #36-#39, 331 #19</p> <p>Teacher Wraparound Edition: A 327; EC 327; ICE 323; MTL 322; TT 324</p> <p>Teacher Resources: <i>Practice</i> 321 <i>Study Guide</i> 319</p>

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IV. DATA ANALYSIS, STATISTICS, AND PROBABILITY	
A. Data and Statistics	
Standard: Represent data and use various measures associated with data to draw conclusions and identify trends. Understand the effects of display distortion and measurement error on the interpretation of data.	
<p>1. Construct and analyze circle graphs, bar graphs, histograms, box-and-whisker plots, scatter plots and tables, and demonstrate the strengths and weaknesses of each format by choosing appropriately among them for a given situation.</p>	<p>Student Edition: 32-37, 38-43, 210-211, 302-307, 308-309, 315 #41</p> <p>Teacher Wraparound Edition: A 211, 307; FTC 109; ICE 304; RA 304; TT 33</p> <p>Teacher Resources: <i>Practice</i> 33, 306 <i>Study Guide</i> 31, 304</p>
<p>2. Use measures of central tendency and variability, such as, mean, median, maximum, minimum, range, standard deviation, quartile and percentile, to describe, compare and draw conclusions about sets of data.</p>	<p>Student Edition: 104-109, 116 #41-#42, 121 #42, 127 #49, 131 #41, 133 #23-#25, 135 #13</p> <p>Teacher Wraparound Edition: A 109; EC 109; FTC 106; ICE 105, 106</p> <p>Teacher Resources: <i>Enrichment</i> 108 <i>Practice</i> 107 <i>Study Guide</i> 105</p>
<p>3. Determine an approximate best-fit line from a given scatter plot and use the line to draw conclusions.</p>	<p>Student Edition: 302-307, 308-309, 315 #41, 321 #1, 329 #26-#27, 331 #12</p> <p>Teacher Wraparound Edition: A 307, 309; EC 307; ICE 304; RA 304; TT 309</p> <p>Teacher Resources: <i>Enrichment</i> 307 <i>Practice</i> 306 <i>Study Guide</i> 304</p>
<p>4. Know the influence of outliers on various measures and representations of data about real-world and mathematical problems.</p>	<p>Student Edition: 211 #3</p>

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5. Understand the relationship between correlation and causation.	<p>Student Edition: 302-307, 308-309, 315 #41, 321 #1, 329 #26-#27, 331 #12</p> <p>Teacher Wraparound Edition: A 307, 309; EC 307; ICE 304; RA 304; TT 309</p> <p>Teacher Resources: <i>Enrichment 307</i> <i>Practice 306</i> <i>Study Guide 304</i></p>
6. Interpret data credibility in the context of measurement error and display distortion.	<p>Student Edition: 32 ex 1, 34 #2-#4, 35 #10-#15, 37 #23</p> <p>Teacher Wraparound Edition: ICE 33</p>
7. Compare outcomes of voting methods such as majority, plurality, ranked by preference, run-off and pair-wise comparison.	This standard can be met in Glencoe's <i>Contemporary Mathematics in Context Course 2</i> © 2003 page 207.
B. Probability	
Standard: Use appropriate counting procedures, calculate probabilities in various ways and apply theoretical probability concepts to solve real-world and mathematical problems.	
1. Select and apply appropriate counting procedures to solve real-world and mathematical problems, including probability problems.	<p>Student Edition: 146-151, 152-153, 158 #51, 159 #4-#6, 174 #42, 181 #19-#20</p> <p>Teacher Wraparound Edition: A 151; EC 151; FTC 153; ICE 147, 148; MTL 152</p> <p>Teacher Resources: <i>Enrichment 154</i> <i>Practice 152</i> <i>Study Guide 150</i></p>

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<p>2. Use area, trees, unions and intersections to calculate probabilities and relate the results to mutual exclusiveness, independence and conditional probabilities, in real-world and mathematical problems.</p>	<p>Student Edition: 219-223, 224-229, 232 #37-#43, 233 #19-#20, 280 ex 2, 281 #1</p> <p>Teacher Wraparound Edition: ICE 221, 225; MTL 224</p> <p>Teacher Resources: <i>Enrichment 229</i> <i>Practice 222, 227</i> <i>Study Guide 220, 225</i></p>
<p>3. Use probability models, including area and binomial models, in real-world and mathematical problems.</p>	<p>Teacher Resources: <i>Enrichment 229</i></p>
<p>4. For simple probability models, determine the expected values of random variables.</p>	<p>This standard can be met in Glencoe's <i>Geometry</i> © 2005 pages 549-550.</p>
<p>5. Know the effect of sample size on experimental and simulation probabilities.</p>	<p>Student Edition: 220, 221 ex 2, 222 #1, 223 #23</p> <p>Teacher Wraparound Edition: HOA 220</p>
<p>6. Use a variety of experimental, simulation and theoretical methods to calculate probabilities.</p>	<p>Student Edition: 220, 221 ex 2, 222 #1, 223 #23, 224-229, 232 #37-#43, 233 #19-#20, 280 ex 2, 281 #1</p> <p>Teacher Wraparound Edition: HOA 220</p>