



# MathScape

Seeing and Thinking Mathematically

Course 3

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STANDARDS	PAGE REFERENCES
<b>NUMBER AND OPERATIONS</b>	
<b>Understand real number concepts</b>	
<p><b>N.ME.08.01</b> Understand the meaning of a square root of a number and its connection to the square whose area is the number; understand the meaning of a cube root and its connection to the volume of a cube.</p>	<p><b>Student Edition:</b> 99, 100-101, 124, 125, 150-151, 171, 177 #4</p> <p><b>Teacher's Guide:</b> 92, 93</p> <p><b>Quick Review Math Handbook Book 3:</b> 176-177, 351</p>
<p><b>N.ME.08.02</b> Understand meanings for zero and negative integer exponents.</p>	<p><b>Student Edition:</b> 296-297, 298-299, 300-301, 311, 312</p> <p><b>Teacher's Guide:</b> 269H, 296A</p> <p><b>Quick Review Math Handbook Book 3:</b> 168, 169, 188</p>

STANDARDS	PAGE REFERENCES
<p><b>N.ME.08.03</b> Understand that in decimal form, rational numbers either terminate or eventually repeat, and that calculators truncate or round repeating decimals; locate rational numbers on the number line; know fraction forms of common repeating decimals, e.g., <math>0.1=1/9</math>; <math>0.3=1/3</math>.</p>	<p>See Glencoe’s <i>MathScape—From Whole to Parts</i> © 2005</p> <p><b>Student Edition:</b> 112-113, 114-115, 148 #17, 149</p> <p><b>Teacher’s Guide:</b> 107, 112A,</p> <p>See Glencoe’s <i>MathScape—Beside the Point</i> © 2005</p> <p><b>Student Edition:</b> 212-213, 214-215, 216-217, 228-229, 232-233, 244-245, 257-259, 264, 266, 268 #27</p> <p><b>Teacher’s Guide:</b> 209, 216A, 228A</p> <p><b>Quick Review Math Handbook Book 3:</b> 138, 141, 159-161</p>
<p><b>N.ME.08.04</b> Understand that irrational numbers are those that cannot be expressed as the quotient of two integers, and cannot be represented by terminating or repeating decimals; approximate the position of familiar irrational numbers, (e.g., <math>\sqrt{2}</math>, <math>\sqrt{3}</math>, <math>\pi</math>) on the number line.</p>	<p><b>Student Edition:</b> 238-239, 261</p> <p><b>Teacher’s Guide:</b> 239A</p>
<p><b>N.FL.08.05</b> Estimate and solve problems with square roots and cube roots using calculators.</p>	<p><b>Student Edition:</b> 150-151, 171</p> <p><b>Quick Review Math Handbook Book 3:</b> 177-178, 181</p> <p>For additional examples see Glencoe’s <i>MathScape—Making Mathematical Arguments</i> © 2005</p> <p><b>Student Edition:</b> 106-107, 108-109, 110-111, 112-113, 128-131</p> <p><b>Teacher’s Guide:</b> 93H, 106A, 109A, 111A</p> <p><b>Quick Review Math Handbook Book 2:</b> 173-176</p>
<p><b>N.FL.08.06</b> Find square roots of perfect squares and approximate the square roots of nonperfect squares by locating between consecutive integers, e.g., <math>\sqrt{130}</math> is between 11 and 12.</p>	<p>See Glencoe’s <i>MathScape—Making Mathematical Arguments</i> © 2005</p> <p><b>Student Edition:</b> 106-107, 108-109, 112-113, 128, 131</p> <p><b>Teacher’s Guide:</b> 104, 105, 106A, 110A</p> <p><b>Quick Review Math Handbook Book 3:</b> 173</p>

STANDARDS	PAGE REFERENCES
<b>Solve problems</b>	
<p><b>N.MR.08.07</b> Understand percent increase and percent decrease in both sum and product form, e.g., 3% increase of a quantity <math>x</math> is <math>x + .03x = 1.03x</math>.</p>	<p>See Glencoe's <i>MathScape—Buyer Beware</i> © 2005  <b>Student Edition:</b>  30-31, 32-33, 44, 45  <b>Teacher's Guide:</b>  30A, 31A, 32A  <i>Quick Review Math Handbook Book 3:</i>  145-147</p>
<p><b>N.MR.08.08</b> Solve problems involving percent increases and decreases.</p>	<p>See Glencoe's <i>MathScape—Buyer Beware</i> © 2005  <b>Student Edition:</b>  30-31, 32-33, 44, 45  <b>Teacher's Guide:</b>  30A, 31A, 32A  <i>Quick Review Math Handbook Book 3:</i>  145-147</p>
<p><b>N.FL.08.09</b> Solve problems involving compounded interest or multiple discounts.</p>	<p><b>Student Edition:</b>  167 #8</p>
<p><b>N.MR.08.10</b> Calculate weighted averages such as course grades, consumer price indices, and sports ratings.</p>	<p><b>Student Edition:</b>  6-7, 8-9, 10-11  <b>Teacher's Guide:</b>  4, 9A  <i>Quick Review Math Handbook Book 3:</i>  229</p>
<p><b>N.MR.08.11</b> Solve problems involving ratio units such as miles per hour, dollars per pound, or persons per square mile.</p>	<p><b>Student Edition:</b>  50-51, 52-53, 54-55, 78, 79, 80  <b>Teacher's Guide:</b>  50A, 53A, 55A</p>
<b>ALGEBRA</b>	
<b>Understand the concept of non-linear functions using basic examples</b>	
<p><b>A.RP.08.01</b> Identify and represent linear functions, quadratic functions, and other simple functions including inverse functions (<math>y = k/x</math>), cubics (<math>y = ax^3</math>) roots, (<math>y = \sqrt{x}</math>), and exponentials (<math>y = a^x</math>, <math>a &gt; 0</math>), using tables, graphs, and equations.</p>	<p><b>Student Edition:</b>  276-277, 280-285, 288-293, 296-301, 305, 307, 308, 310, 311-313  <b>Teacher's Guide:</b>  276A, 277A, 278, 279, 286, 287, 290A, 293A, 294, 295</p>

STANDARDS	PAGE REFERENCES
<p><b>A.PA.08.02</b> For basic functions, e.g., simple quadratics, direct and indirect variation, and population growth, describe how changes in one variable affect the others.</p>	<p><b>Student Edition:</b> 152-153, 154, 162-163, 172, 173, 176, 274-275, 288-293, 303, 308, 310</p> <p><b>Teacher’s Guide:</b> 269G, 271, 286, 287</p>
<p><b>A.PA.08.03</b> Recognize basic functions in problem context, e.g., area of a circle is <math>\pi r^2</math>, volume of a sphere is <math>\frac{4}{3} \pi r^3</math>, and represent them using tables, graphs, and formulas.</p>	<p><b>Student Edition:</b> 272-273, 274-275</p> <p><b>Teacher’s Guide:</b> 273A</p>
<p><b>A.RP.08.04</b> Use the vertical line test to determine if a graph represents a function in one variable.</p>	<p><b>Student Edition:</b> 274-275, 280-281, 282-283, 284-285</p> <p><b>Teacher’s Guide:</b> 278, 279, 280A</p>
<p><b>Understand and represent quadratic functions</b></p>	
<p><b>A.RP.08.05</b> Relate quadratic functions in factored form and vertex form to their graphs and vice versa; in particular, note that solutions of a quadratic equation are the x-intercepts of the corresponding quadratic function.</p>	<p><b>Student Edition:</b> 288-289</p> <p><b>Teacher’s Guide:</b> 286, 287, 288A</p>
<p><b>A.RP.08.06</b> Graph factorable quadratic functions, finding where the graph intersects the x axis and the coordinates of the vertex; use words “parabola” and “roots”; include functions in vertex form and those with leading coefficient <math>-1</math>, e.g., <math>y = x^2 - 36</math>, <math>y = (x - 2)^2 - 9</math>; <math>y = -x^2</math>; <math>y = -(x - 3)^2</math>.</p>	<p><b>Student Edition:</b> 290-293</p> <p><b>Teacher’s Guide:</b> 269H, 287</p>
<p><b>Recognize, represent, and apply common formulas</b></p>	
<p><b>A.FO.08.07</b> Recognize and apply the common formulas:  <math>(a + b)^2 = a^2 + 2 ab + b^2</math>  <math>(a - b)^2 = a^2 - 2 ab + b^2</math>  <math>(a + b)(a - b) = a^2 - b^2</math>; represent geometrically.</p>	<p>Rules for polynomials, including binomials, will be needed to fulfill this standard.</p> <p><b>Student Edition:</b> 194-195</p> <p><b>Teacher’s Guide:</b> 194A</p>
<p><b>A.FO.08.08</b> Factor simple quadratic expressions with integer coefficients, e.g., <math>x^2 + 6x + 9</math>, <math>x^2 + 2x - 3</math> and <math>x^2 - 4</math>; solve simple quadratic equations, e.g., <math>x^2 = 16</math> or <math>x^2 = 5</math> (by taking square roots); <math>x^2 - x - 6 = 0</math>, <math>x^2 - 2x = 15</math> (by factoring); verify solutions by evaluation.</p>	<p><b>Student Edition:</b> 288-289, 290-293, 309, 310</p> <p><b>Teacher’s Guide:</b> 286</p>
<p><b>A.FO.08.09</b> Solve applied problems involving simple quadratic equations.</p>	<p><b>Student Edition:</b> 290-291, 292-293, 309, 310</p>

STANDARDS	PAGE REFERENCES
<b>Understand solutions and solve equations, simultaneous equations, and linear inequalities</b>	
<p><b>A.FO.08.10</b> Understand that to solve the equation <math>f(x) = g(x)</math> means to find all values of <math>x</math> for which the equation is true, e.g., determine whether a given value, or values from a given set, is a solution of an equation (0 is a solution of <math>3x^2 + 2 = 4x + 2</math>, but 1 is not a solution).</p>	<p><b>Student Edition:</b> 204-205, 206-207, 208-209, 219-221</p> <p><b>Teacher’s Guide:</b> 200</p>
<p><b>A.FO.08.11</b> Solve simultaneous linear equations in two variables by graphing, by substitution, and by linear combination; estimate solutions using graphs; include examples with no solutions and infinitely many solutions.</p>	<p><b>Student Edition:</b> 209, 221</p>
<p><b>A.FO.08.12</b> Solve linear inequalities in one and two variables, and graph the solution sets.</p>	<p><b>Student Edition:</b> See Glencoe’s <i>MathScape—The Language of Algebra</i> © 2005 186-187, 207, 213, 221</p>
<p><b>A.FO.08.13</b> Set up and solve applied problems involving simultaneous linear equations and linear inequalities.</p>	<p><b>Student Edition:</b> 209, 221</p>
<b>GEOMETRY</b>	
<b>Understand and use the Pythagorean Theorem</b>	
<p><b>G.GS.08.01</b> Understand at least one proof of the Pythagorean Theorem; use the Pythagorean Theorem and its converse to solve applied problems including perimeter, area, and volume problems.</p>	<p><b>Student Edition:</b> 236-237, 238-239, 246-247, 260, 261, 264</p> <p><b>Teacher’s Guide:</b> 223G, 223, 232</p> <p><b>Quick Review Math Handbook Book 3:</b> 369, 394-397</p>
<p><b>G.LO.08.02</b> Find the distance between two points on the coordinate plane using the distance formula; recognize that the distance formula is an application of the Pythagorean Theorem.</p>	<p><b>Student Edition:</b> 64-65, 66-67, 84, 85, 236-237, 238-239, 246-247, 260, 261, 264</p> <p><b>Teacher’s Guide:</b> 223, 232</p> <p><b>Quick Review Math Handbook Book 3:</b> 369, 394-397</p>

STANDARDS	PAGE REFERENCES
<b>Solve problems about geometric figures</b>	
<p><b>G.SR.08.03</b> Understand the definition of a circle; know and use the formulas for circumference and area of a circle to solve problems.</p>	<p>See Glencoe’s <i>MathScape—Getting In Shape</i> © 2005</p> <p><b>Student Edition:</b> 294-295, 298-299, 310-313</p> <p><b>Teacher’s Guide:</b> 292, 293, 294A, 299A</p> <p><b>Quick Review Math Handbook Book 3:</b> 372-374</p>
<p><b>G.SR.08.04</b> Find area and perimeter of complex figures by sub-dividing them into basic shapes (quadrilaterals, triangles, circles).</p>	<p><b>Student Edition:</b> 110-111, 129</p> <p><b>Teacher’s Guide:</b> 110A</p>
<p><b>G.SR.08.05</b> Solve applied problems involving areas of triangles, quadrilaterals, and circles.</p>	<p>See Glencoe’s <i>MathScape—From the Ground Up</i> © 2005</p> <p><b>Student Edition:</b> 146-147, 154-155, 160-161, 171, 176</p> <p><b>Teacher’s Guide:</b> 138, 139, 148, 149</p> <p>See Glencoe’s <i>MathScape—Getting In Shape</i> © 2005</p> <p><b>Student Edition:</b> 296, 298-299, 311, 312</p> <p><b>Teacher’s Guide:</b> 293</p> <p><b>Quick Review Math Handbook Book 3:</b> 357, 359, 360, 376</p>
<b>Understand concepts of volume and surface area, and apply formulas</b>	
<p><b>G.SR.08.06</b> Know the volume formulas for generalized cylinders ((area of base) x height), generalized cones and pyramids (<math>\frac{1}{3}</math> (area of base) x height) and spheres (<math>\frac{4}{3}\pi</math> (radius)<sup>3</sup>) and apply them to solve problems.</p>	<p><b>Student Edition:</b> 108-109, 110-111, 114-115, 116-117, 120-121, 126-127, 129, 130, 131, 133</p> <p><b>Teacher’s Guide:</b> 103, 109A, 112, 113, 114A, 115A, 117A</p> <p><b>Quick Review Math Handbook Book 3:</b> 384-385</p>

STANDARDS	PAGE REFERENCES
<p><b>G.SR.08.07</b> Understand the concept of surface area, and find the surface area of prisms, cones, spheres, pyramids, and cylinders.</p>	<p><b>Student Edition:</b> 104-105, 106-107, 108-109, 114-115, 116-117, 126, 127, 128, 131</p> <p><b>Teacher’s Guide:</b> 102, 103, 104A, 106A, 108A, 112, 113</p> <p><b>Quick Review Math Handbook Book 3:</b> 378-380</p>
<b>Visualize solids</b>	
<p><b>G.SR.08.08</b> Sketch a variety of two-dimensional representations of three-dimensional solids including orthogonal views (top, front, and side), picture views (projective or isometric), and nets; use such two-dimensional representations to help solve problems.</p>	<p><b>Student Edition:</b> 94-95, 104, 105, 108, 114-115, 122, 126</p> <p><b>Teacher’s Guide:</b> 92, 93, 94A, 114A</p> <p><b>Quick Review Math Handbook Book 3:</b> 378</p> <p>For orthogonal drawings or isometric views see Glencoe’s <i>MathScape—From the Ground Up</i> © 2005</p> <p><b>Student Edition:</b> 168-173</p> <p><b>Teacher’s Guide:</b> 163G, 163H</p> <p>See Glencoe’s <i>MathScape—The Language of Algebra</i> © 2005</p> <p><b>Student Edition:</b> 195-197</p>
<b>Understand and apply concepts of transformation and symmetry</b>	
<p><b>G.TR.08.09</b> Understand the definition of a dilation from a point in the plane, and relate it to the definition of similar polygons.</p>	<p>See Glencoe’s <i>MathScape—Getting In Shape</i> © 2005</p> <p><b>Student Edition:</b> 288-289, 291, 308 (with definition given)</p> <p><b>Teacher’s Guide:</b> 289A</p>
<p><b>G.TR.08.10</b> Understand and use reflective and rotational symmetries of two-dimensional shapes, and relate them to transformations to solve problems.</p>	<p><b>Student Edition:</b> 288-289, 290-291, 308</p> <p><b>Quick Review Math Handbook Book 3:</b> 344-345, 346, 347</p>

STANDARDS	PAGE REFERENCES
<b>DATA AND PROBABILITY</b>	
<b>Draw, explain, and justify conclusions based on data</b>	
<p><b>D.AN.08.01</b> Determine which measure of central tendency (mean, median, mode) best represents a data set, e.g., salaries, home prices for answering certain questions; justify the choice made.</p>	<p><b>Student Edition:</b> 6-7, 8-9, 10-11, 34, 35, 36</p> <p><b>Teacher’s Guide:</b> 4, 8A</p> <p><i>Quick Review Math Handbook Book 3:</i> 222, 224-225, 226</p>
<p><b>D.AN.08.02</b> Recognize practices of collecting and displaying data that may bias the presentation or analysis.</p>	<p><b>Student Edition:</b> 6-7, 10-11, 12-13, 18-19, 22-23, 34, 36, 37, 39, 41</p> <p><b>Teacher’s Guide:</b> 6A, 7A, 19A, 22A</p> <p><i>Quick Review Math Handbook Book 3:</i> 196-200</p>
<b>Understand probability concepts for simple and compound events</b>	
<p><b>D.PR.08.03</b> Compute relative frequencies from a table of experimental results for a repeated event, and be able to answer questions about the result, using relationship of probability to relative frequency.</p>	<p><b>Student Edition:</b> 26-27, 42</p> <p><i>Quick Review Math Handbook Book 3:</i> 241-242</p>
<p><b>D.PR.08.04</b> Apply the Basic Counting Principle to find total number of outcomes possible for independent and dependent events, and calculate the probabilities using organized lists or tree diagrams.</p>	<p><b>Student Edition:</b> 28-29, 32-33, 43, 45</p> <p><b>Teacher’s Guide:</b> 24, 25, 29A</p>
<p><b>D.PR.08.05</b> Understand the relationship of probability to relative frequency.</p>	<p><b>Student Edition:</b> 26-27, 42</p>
<p><b>D.PR.08.06</b> Understand the difference between independent and dependent events, and recognize common misconceptions involving probability, e.g., Alice rolls a 6 on a die three times in a row; she is just as likely to roll a 6 on the fourth roll as she was on any previous roll.</p>	<p><b>Student Edition:</b> 26-27, 28-29, 42-45</p> <p><b>Teacher’s Guide:</b> 24, 27A</p> <p><i>Quick Review Math Handbook Book 3:</i> 249</p>
<p><b>D.AN.08.07</b> Compute relative frequencies from a table of experimental results for a repeated event; understand the relationship of experimental probability to relative frequency; answer questions regarding the results.</p>	<p><b>Student Edition:</b> 26-27, 42</p> <p><i>Quick Review Math Handbook Book 3:</i> 241, 242</p>