



Pre-Algebra

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STANDARDS	PAGE REFERENCES
NUMBER AND OPERATIONS	
Understand real number concepts	
<p>N.ME.08.01 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>Student Edition: 182-183 #60-#65, 464-468, 482 #1, 587 #26-#28 <i>Algebra Lab</i> 462-463 Study Tip 583</p>
<p>N.ME.08.02 Understand meanings for zero and negative integer exponents.</p>	<p>Student Edition: 180, 182 #34, 209-213, 216 #1, 217 #11-#14, 222, 223</p>
<p>N.ME.08.03 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., $0.1 = \frac{1}{9}$; $0.3 = \frac{1}{3}$.</p>	<p>Student Edition: 228-233, 235, 282, 327 <i>Practice Test</i> 285</p>
<p>N.ME.08.04 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., $\sqrt{2}$, $\sqrt{3}$, π, on the number line.</p>	<p>Student Edition: 464-468, 469-474, 504 <i>Algebra Lab</i> 491</p>
<p>N.FL.08.05 Estimate and solve problems with square roots and cube roots using calculators.</p>	<p>Student Edition: 464-468 (applies to square roots) <i>Algebra Lab</i> 462-463</p>

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<p>N.FL.08.06 Find square roots of perfect squares and approximate the square roots of non-perfect squares by locating between consecutive integers, e.g., $\sqrt{130}$ is between 11 and 12.</p>	<p>Student Edition: 464-468, 482 #1-#8 <i>Algebra Lab</i> 462-463 <i>Standardized Test Practice</i> #4</p>
<p>Solve problems</p>	
<p>N.MR.08.07 Understand percent increase and percent decrease in both sum and product form, e.g., 3% increase of a quantity x is $x + .03x = 1.03x$.</p>	<p>Student Edition: 338-342, 352, 363 #38, #39, 799 #13</p>
<p>N.MR.08.08 Solve problems involving percent increases and decreases.</p>	<p>Student Edition: 338-342, 352, 799 #13</p>
<p>N.FL.08.09 Solve problems involving compounded interest or multiple discounts.</p>	<p>Student Edition: 332-336, 342 #28, 351 <i>Spreadsheet Lab</i> 337</p>
<p>N.MR.08.10 Calculate weighted averages such as course grades, consumer price indices, and sports ratings.</p>	<p>After the definition of <i>weighted averages</i> is provided, the following may be used to meet this standard. Student Edition: 796 #5, #6, 799 #1, 800 #6</p>
<p>N.FL.08.11 Solve problems involving ratio units, such as miles per hour, dollars per pound, or persons per square mile.*</p>	<p>Student Edition: 292-296, 306 #42, #43, 309 <i>Mid-Chapter Quiz</i> 319 #1, #3, #4</p>
<p>ALGEBRA</p>	
<p>Understand the concept of non-linear functions using basic examples</p>	
<p>A.RP.08.01 Identify and represent linear functions, quadratic functions, and other simple functions including inversely proportional relationships ($y = k/x$); cubics ($y = ax^3$); roots ($y = \sqrt{x}$); and exponentials ($y = ax$, $a > 0$); using tables, graphs, and equations.*</p>	<p>Student Edition: 365-369, 720-722, 726-730, 734 <i>Graphing Calculator Lab</i> 731 <i>Practice Test</i> 735</p>
<p>A.PA.08.02 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>Student Edition: 376-381, 382, 726-731</p>
<p>A.PA.08.03 Recognize basic functions in problem context, e.g., area of a circle is πr^2, volume of a sphere is $\frac{4}{3} \pi r^3$, and represent them using tables, graphs, and formulas.</p>	<p>Student Edition: 553, 554, 568, 590-591, 595 #15, #16</p>

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<p>A.RP.08.04 Use the vertical line test to determine if a graph represents a function in one variable.</p>	<p>Student Edition: 360, 363 #35</p>
<p>Understand and represent quadratic functions</p>	
<p>A.RP.08.05 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>See Glencoe's <i>Algebra 1</i> © 2008 Lessons 9-1 and 9-2.</p>
<p>A.RP.08.06 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 -1, e.g., $y = x^2 - 36$, $y = (x - 2)^2 - 9$; $y = -x^2$; $y = -(x - 3)^2$.</p>	<p>Student Edition: 726-730 (graphing) <i>Graphing Calculator Lab 731</i></p>
<p>Recognize, represent, and apply common formulas</p>	
<p>A.FO.08.07 Recognize and apply the common formulas: $(a + b)^2 = a^2 + 2ab + b^2$ $(a - b)^2 = a^2 - 2ab + b^2$ $(a + b)(a - b) = a^2 - b^2$; represent geometrically.</p>	<p>See Glencoe's <i>Algebra 1</i> © 2008 Lessons 8-5 and 8-6.</p>
<p>A.FO.08.08 Factor simple quadratic expressions with integer coefficients, e.g., $x^2 + 6x + 9$, $x^2 + 2x - 3$, and $x^2 - 4$; solve simple quadratic equations, e.g., $x^2 = 16$ or $x^2 = 5$ (by taking square roots); $x^2 - x - 6 = 0$, $x^2 - 2x = 15$ (by factoring); verify solutions by evaluation.</p>	<p>See Glencoe's <i>Algebra 1</i> © 2008 Lessons 8-2, 8-3, 8-4, 8-5, and 8-6.</p>
<p>A.FO.08.09 Solve applied problems involving simple quadratic equations.</p>	<p>See Glencoe's <i>Algebra 1</i> © 2008 Lessons 8-2, 8-3, 8-4, 8-5, and 8-6.</p>
<p>Understand solutions and solve equations, simultaneous equations, and linear inequalities</p>	
<p>A.FO.08.10 Understand that to solve the equation $f(x) = g(x)$ means to find all values of x 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 $3x^2 + 2 = 4x + 2$, but 1 is not a solution).</p>	<p>Student Edition: <i>Reading Math 370</i> (language of terms)</p>
<p>A.FO.08.11 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>Student Edition: <i>Graphing Calculator Lab 395</i> (graphing)</p>

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A.FO.08.12 Solve linear inequalities in one and two variables, and graph the solution sets.	Student Edition: 432-434, 435-439, 441-445, 446-450, 453, 454, 536 #38 <i>Mid-Chapter Quiz</i> 440 <i>Practice Test</i> 455 #19-#24 <i>Standardized Test Practice</i> 457 #14
A.FO.08.13 Set up and solve applied problems involving simultaneous linear equations and linear inequalities.	Student Edition: <i>Graphing Calculator Lab</i> 395 (linear equations)
GEOMETRY	
Understand and use the Pythagorean Theorem	
G.GS.08.01 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.	Student Edition: 485-490, 505 <i>Algebra Lab</i> 483-484 <i>Practice Test</i> 507
G.LO.08.02 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.	Student Edition: 492-496, 506 <i>Practice Test</i> 507 #17-#19 <i>Standardized Test Practice</i> 509 #13
Solve problems about geometric figures	
G.SR.08.03 Understand the definition of a circle; know and use the formulas for circumference and area of a circle to solve problems.	Student Edition: 551-556, 568
G.SR.08.04 Find area and perimeter of complex figures by sub-dividing them into basic shapes (quadrilaterals, triangles, circles).	Student Edition: 558-562, 568, 569 #11-#14 (area)
G.SR.08.05 Solve applied problems involving areas of triangles, quadrilaterals, and circles.	Student Edition: 545-550, 551-556, 562 #19-#25, 567
Understand concepts of volume and surface area, and apply formulas	
G.SR.08.06 Know the volume formulas for generalized cylinders ((area of base) x height), generalized cones and pyramids ($\frac{1}{3}$ (area of base) x height), and spheres ($\frac{4}{3} \pi$ (radius) ³) and apply them to solve problems.	Student Edition: 583-588, 589-594, 616-617 <i>Geometry Lab</i> 607 <i>Mid-Chapter Quiz</i> 595 <i>Practice Test</i> 619 <i>Standardized Test Practice</i> 621

STANDARDS	PAGE REFERENCES
<p>G.SR.08.07 Understand the concept of surface area, and find the surface area of prisms, cones, spheres, pyramids, and cylinders.</p>	<p>Student Edition: 597-601, 602-606, 617-618 <i>Geometry Lab</i> 596, 607 <i>Practice Test</i> 619</p>
<p>Visualize solids</p>	
<p>G.SR.08.08 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>Student Edition: 597, 598, 600 #7-#16, 602-604, 804 #10 <i>Geometry Lab</i> 596 <i>Study Tip</i> 598</p>
<p>Understand and apply concepts of transformation and symmetry</p>	
<p>G.TR.08.09 Understand the definition of a dilation from a point in the plane, and relate it to the definition of similar polygons.</p>	<p>Student Edition: 497, 524, 526-530, 566 <i>Mid-Chapter Quiz</i> 537 #10 <i>Spreadsheet Lab</i> 563</p>
<p>G.TR.08.10 Understand and use reflective and rotational symmetries of two-dimensional shapes and relate them to transformations to solve problems.</p>	<p>Student Edition: 524-530, 566 <i>Geometry Lab</i> 531 <i>Mid-Chapter Quiz</i> 537 #8</p>
<p>DATA AND PROBABILITY</p>	
<p>Draw, explain, and justify conclusions based on data</p>	
<p>D.AN.08.01 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>Student Edition: 274-279, 284, 798 #11-#14 <i>Graphing Calculator Lab</i> 281 <i>Practice Test</i> 285 #25 <i>Standardized Test Practice</i> 287 #13, 354 #4</p>
<p>D.AN.08.02 Recognize practices of collecting and displaying data that may bias the presentation or analysis.</p>	<p>Student Edition: 343-347, 352, 659-663, 693, 805 #5 <i>Practice Test</i> 353 #24, 695 #12 <i>Standardized Test Practice</i> 354 #2, 696 #2 <i>Reading Math</i> 664</p>

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Understand probability concepts for simple and compound events	
<p>D.PR.08.03 Compute relative frequencies from a table of experimental results for a repeated event. Interpret the results using relationship of probability to relative frequency.*</p>	<p>After the definition is provided and explained, the following pages can be used to meet this standard. Student Edition: 644-651, 692, 805 #4 <i>Practice Test 695 #8</i></p>
<p>D.PR.08.04 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>Student Edition: 670-674, 694, 805 #7 <i>Practice Test 695 #9</i></p>
<p>D.PR.08.05 Find and/or compare the theoretical probability, the experimental probability, and/or the relative frequency of a given event.*</p>	<p>Student Edition: 665-669, 693 <i>Algebra Lab 688-689</i></p>
<p>D.PR.08.06 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>Student Edition: 682-687, 805 #9, #10 <i>Algebra Lab 688-689</i></p>

* revised expectations in italics