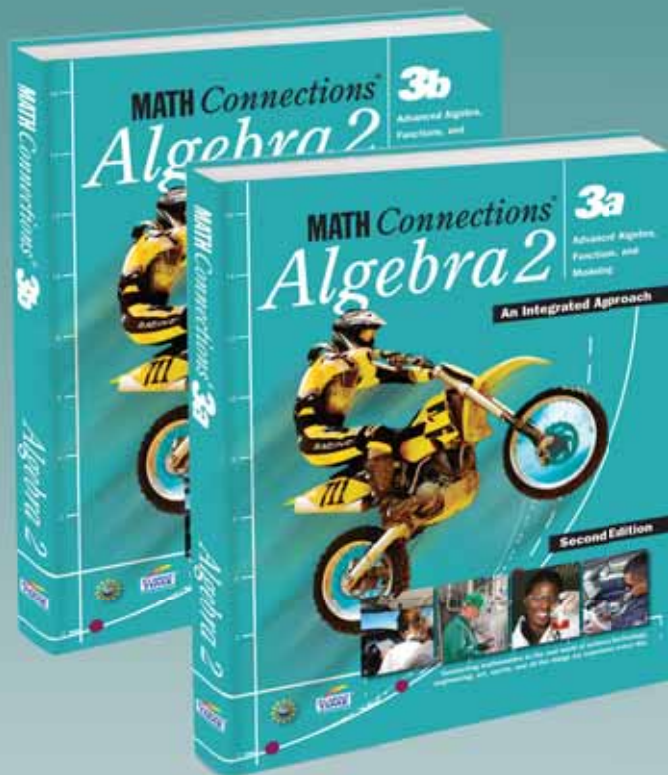


# MATH *Connections*<sup>®</sup>

Algebra 2 Correlation to the South Carolina  
Mathematics Academic Standards  
Grades 9–12

Intermediate Algebra



Indicators	Location/Page where Standard is found
<b>Standard IA-1: The students will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</b>	
IA-1.1 Communicate a knowledge of algebraic relationships by using mathematical terminology appropriately.	Book 3a: 15 – 17, 25, 30, 38, 46, 53, 56, 59, 70, 81, 93, 94, 99, 101, 110, 156, 160, 161, 163, 169, 170, 172, 173, 191, 194 – 196, 204, 212 – 215, 220, 264, 277 – 280, 328, 334 – 336, 339, 361, 378 Book 3b: 398, 399, 404, 412, 423, 425, 426, 428, 433, 435, 440, 441, 446, 447, 457, 458, 460, 461, 464, 465, 476, 478, 479, 481, 486, 488 – 490, 509, 515, 524, 527, 535, 541, 548, 552, 564, 570, 571, 574, 575, 585, 589 – 591, 605, 607, 611, 615, 617, 622, 624, 625, 629 – 631, 632, 638, 640, 642, 710, 712, 715, 719, 725, 727, 729, 735, 742, 744, 756, 758, 762, 763
IA-1.7 Understand how to represent algebraic relationships by using tools such as handheld computing devices, spreadsheets, and computer algebra systems (CAS).	Book 3a: 7, 16 – 22, 33, 34, 37, 41, 46, 57 – 60, 68, 71, 73, 77, 80 – 82, 93, 106, 117, 119, 120, 128, 129, 147, 153, 158, 165, 168, 173, 181, 182, 196, 199, 245, 257 – 273 Book 3b: 403, 407, 409, 423, 428, 439, 441, 445, 450, 451, 457, 459, 519, 520, 575, 577, 588 – 590, 597, 603, 609, 614, 621 – 626, 634, 637, 646, 648 – 650, 653, 717, 721, 730
IA-1.2 Connect algebra with other branches of mathematics.	Book 3a: 2, 6, 25 – 36, 87, 119, 120, 150, 184, 185, 238 – 329, 361 – 380, 385, 386 Book 3b: 475 – 566
IA-1.3 Apply algebraic methods to solve problems in real-world contexts.	Book 3a: 2, 4, 8, 9, 11 – 14, 19 – 26, 34 – 37, 44, 47, 51, 64 – 68, 72, 73, 77, 91, 96, 98, 105, 110, 113, 115, 125 – 127, 150, 153, 154, 162 – 165, 169 – 173, 176 – 178, 181, 186, 187, 205 – 215, 218 – 221, 236, 238 – 240, 243, 244, 274 – 280, 288, 289, 295 – 297, 326 – 361, 370, 371, 378 – 380, 383, 384 Book 3b: 394 – 401, 407 – 411, 418 – 425, 436, 437, 440, 441, 447, 454, 457, 464, 469, 471, 512 – 521, 543, 568, 578, 616, 618, 624, 625, 644, 645, 702
IA-1.4 Judge the reasonableness of mathematical solutions.	Book 3a: 9, 13, 14, 19, 20, 41, 67, 107, 105, 168 Book 3b: 478, 481, 502, 575, 585, 655, 727, 737
IA-1.5 Demonstrate an understanding of algebraic relationships by using a variety of representations (including verbal, graphic, numerical, and symbolic).	Book 3a: 9, 25, 30, 37, 38, 41, 44, 46, 56 – 59, 65, 70 – 78, 80 – 82, 90 – 93, 98, 106 – 108, 117, 123, 129, 142, 143, 147, 152, 153, 162, 163, 165 – 175, 179, 188, 193, 196, 198 – 208, 214, 215, 221, 238, 242, 245, 253, 257 – 260, 263 – 274, 277 – 280, 289, 293 – 296, 316, 319 – 322, 329 – 332, 337 Book 3b: 512 – 516, 527 – 532, 539 – 545, 576 – 582, 609 – 654, 682 – 700

Indicators	Location/Page where Standard is found
<b>Standard IA-1: Continued</b>	
IA-1.6 Understand how algebraic relationships can be represented in concrete models, pictorial models, and diagrams.	Book 3a: 31, 40, 51, 52, 54, 56, 66 – 68, 337 – 345, 353 – 371, 382 – 386 Book 3b: 538 – 541, 559
IA-1.7 Understand how to represent algebraic relationships by using tools, such as handheld computing devices, spreadsheets, and computer algebra systems (CAS).	Book 3a: 7, 16 – 22, 33, 34, 37, 41, 46, 57 – 60, 68, 71, 73, 77, 80 – 82, 93, 106, 117, 119, 120, 128, 129, 147, 153, 158, 165, 168, 173, 181, 182, 196, 199, 245, 257 – 273 Book 3b: 403, 407, 409, 423, 428, 439, 441, 445, 450, 451, 457, 459, 519, 520, 575, 577, 588 – 590, 597, 603, 609, 614, 621 – 626, 634, 637, 646, 648 – 650, 653, 717, 721, 730
Indicators	Location/Page where Standard is found
<b>Standard IA-2: The students will demonstrate through the mathematical processes an understanding of functions, systems of equations, and systems of linear inequalities.</b>	
IA-2.1 Carry out a procedure to solve a system of linear inequalities algebraically.	Book 3a: 346 – 360
IA-2.2 Carry out a procedure to solve a system of linear inequalities graphically.	Book 3a: 334 – 345
IA-2.3 Analyze a problem situation to determine a system of linear inequalities that models the problem situation.	Book 3a: 340, 344, 345, 352, 360
IA-2.4 Use linear programming to solve contextual problems involving a system of linear inequalities.	Book 3a: 328 – 360
IA-2.5 Carry out procedures to perform operations on polynomial functions (including $f(x) + g(x)$ , $f(x) - g(x)$ , $f(x) \cdot g(x)$ , and $f(x)/g(x)$ ).	Book 3a: 79, 82, 84, 87, 89, 115, 138, 143 – 148 Book 3b: 423, 509, 580, 648, 650, 653, 672 – 677
IA-2.6 Apply a procedure to write the equation of a composition of given functions.	Book 3b: 543, 657
IA-2.7 Carry out a procedure to graph translations of parent functions (including $y = x$ , $y = x^2$ , $y = \sqrt{x}$ , $y =  x $ , and $y = \frac{1}{x}$ ).	Book 3a: 57 – 65, 317 – 324
IA-2.8 Carry out a procedure to graph transformations of parent functions (including $y = x$ , $y = x^2$ , and $y =  x $ ).	Book 3a: 57 – 65, 317 – 324
IA-2.9 Carry out a procedure to graph discontinuous functions (including piecewise and step functions).	In-depth Year 1 Chapter 6
IA-2.10 Carry out a procedure to determine the domain and range of discontinuous functions (including piecewise and step functions).	In-depth Year 1 Chapter 6
IA-2.11 Carry out a procedure to solve a system of equations (including two linear functions and one linear function with one quadratic function).	Book 3a: 109, 110, 126 – 130, 177, 186, 187, 212, 220, 342 – 345, 356, 357, 382 – 385, 388 – 391 Book 3b: 698 - 700

Indicators		Location/Page where Standard is found
<b>Standard IA-3: The students will demonstrate through the mathematical processes an understanding of quadratic equations and the complex number system.</b>		
IA-3.1	Carry out a procedure to simplify expressions involving powers of $i$ .	Book 3a: 43 – 56
IA-3.2	Carry out a procedure to perform operations with complex numbers (including addition, subtraction, multiplication, and division).	Book 3a: 43 – 56, 83, 84
IA-3.3	Carry out a procedure to solve quadratic equations algebraically (including factoring, completing the square, and applying the quadratic formula).	Book 3a: 37 – 47, 62, 79, 88
IA-3.4	Use the discriminant to determine the number and type of solutions of a quadratic equation.	Book 3a: 43 – 47, 138
IA-3.5	Analyze given information (including quadratic models) to solve contextual problems.	Book 3a: 16 – 23, 34, 47, 64, 65, 114, 115
IA-3.6	Carry out a procedure to write an equation of a quadratic function when given its roots.	Book 3a: 113
Indicators		Location/Page where Standard is found
<b>Standard IA-4: The students will demonstrate through the mathematical processes an understanding of algebraic expressions and nonlinear functions.</b>		
IA-4.1	Carry out a procedure to perform operations (including multiplication, exponentiation, and division) with polynomial expressions.	Book 3a: 79 – 89, 115 – 117, 143 – 148
IA-4.2	Carry out a procedure to determine specified points (including zeros, maximums, and minimums) of polynomial functions.	Book 3a: 25, 34, 37, 38, 42 – 47, 64, 65, 68, 74 – 86, 109, 113 – 116, 132, 143 – 147
IA-4.3	Carry out a procedure to solve polynomial equations (including factoring by grouping, factoring the difference between two squares, factoring the sum of two cubes, and factoring the difference between two cubes).	Book 3a: 25, 34, 37, 38, 42 – 47, 64, 65, 68, 74 – 86, 109, 113 – 116, 132, 143 – 147
IA-4.4	Analyze given information (including polynomial models) to solve contextual problems.	Book 3a: 16 – 23, 34, 47, 66 - 76, 114, 115
IA-4.5	Carry out a procedure to simplify algebraic expressions involving rational exponents.	Book 3a: 156 – 163, 195
IA-4.6	Carry out a procedure to simplify algebraic expressions involving logarithms.	Book 3a: 180, 194 – 225, 322
IA-4.7	Carry out a procedure to perform operations with expressions involving rational exponents (including addition, subtraction, multiplication, division, and exponentiation)	Book 3a: 155 – 163, 195
IA-4.8	Carry out a procedure to perform operations with rational expressions (including addition, subtraction, multiplication, and division).	Book 3a: 156, 157, 161, 217 Book 3b: 673 – 681

Indicators	Location/Page where Standard is found
<b>Standard IA-4: Continued</b>	
IA-4.9 Carry out a procedure to solve radical equations algebraically.	Book 3a: 231 – 234, 375, 377, 379, 380, 386
IA-4.10 Carry out a procedure to solve logarithmic equations algebraically.	Book 3a: 224 – 226
IA-4.11 Carry out a procedure to solve logarithmic equations graphically.	Book 3a: 209 – 215
IA-4.12 Carry out a procedure to solve rational equations algebraically.	Book 3b: 648 – 645
IA-4.13 Carry out a procedure to graph logarithmic functions.	Book 3a: 188, 186, 198 – 208, 214
IA-4.14 Carry out a procedure to graph exponential functions.	Book 3a: 153, 166 – 168, 173, 188, 196, 198, 204, 322
Indicators	Location/Page where Standard is found
<b>Standard IA-5: The students will demonstrate through the mathematical processes an understanding of conic sections.</b>	
IA-5.1 Carry out a procedure to graph the circle whose equation is the form $x^2 + y^2 = r^2$	Book 3b: 682 – 684, 694 – 696, 698 – 700
IA-5.2 Carry out a procedure to write an equation of a circle centered at the origin when given its radius.	Book 3b: 683
IA-5.3 Carry out a procedure to graph the ellipse whose equation is the form $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$	Book 3b: 689, 690, 694, 696, 697, 700
IA-5.4 Carry out a procedure to write an equation of an ellipse centered at the origin when given information from among length of major axis, length of minor axis, and vertices.	Book 3b: 690
IA-5.5 Carry out a procedure to graph the hyperbola whose equation is the form $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$	Book 3b: 691 – 694, 696, 700
IA-5.6 Carry out a procedure to write an equation of a hyperbola centered at the origin with specified vertices.	Book 3b: 693
IA-5.7 Match the equation of a conic section with its graph.	Book 3b: 695 – 697

Indicators	Location/Page where Standard is found
<b>Standard IA-6: The students will demonstrate through the mathematical processes an understanding of sequences and series.</b>	
IA-6.1 Categorize a sequence as arithmetic, geometric, or neither.	Book 3b: 611 – 617 Also Presented Year 1 Ch. 6
IA-6.2 Carry out a procedure to write a specified term of an arithmetic or geometric sequence when given the <i>n</i> th term of the sequence.	Book 3b: 577, 615 – 617 Also Presented Year 1 Ch. 6
IA-6.3 Carry out a procedure to write a formula for the <i>n</i> th term of an arithmetic or geometric sequence when given at least four consecutive terms of the sequence.	Book 3b: 577, 615 – 617 Also Presented Year 1 Ch. 6
IA-6.4 Carry out a procedure to write a formula for the <i>n</i> th term of an arithmetic or geometric sequence when given at least four terms of the sequence.	Book 3b: 577, 615 – 617 Also Presented Year 1 Ch. 6
IA-6.5 Represent an arithmetic or geometric series by using sigma notation.	Not presented
IA-6.6 Carry out a procedure to calculate the sum of an arithmetic or geometric series written in sigma notation.	Book 3b: 378 – 582, 607 – 613, 616, 617, 676 Also Presented Year 1 Ch. 6
IA-6.7 Carry out a procedure to determine consecutive terms of a sequence that is defined recursively.	Book 3b: 577, 579 Also Presented Year 1 Ch. 6
IA-6.8 Carry out a procedure to define a sequence recursively when given four or more consecutive terms of the sequence.	Book 3b: 577, 579 Also Presented Year 1 Ch. 6
IA-6.9 Translate between the explicit form and the recursive form of sequences.	Book 3b: 577 – 582 Also Presented Year 1 Ch. 6