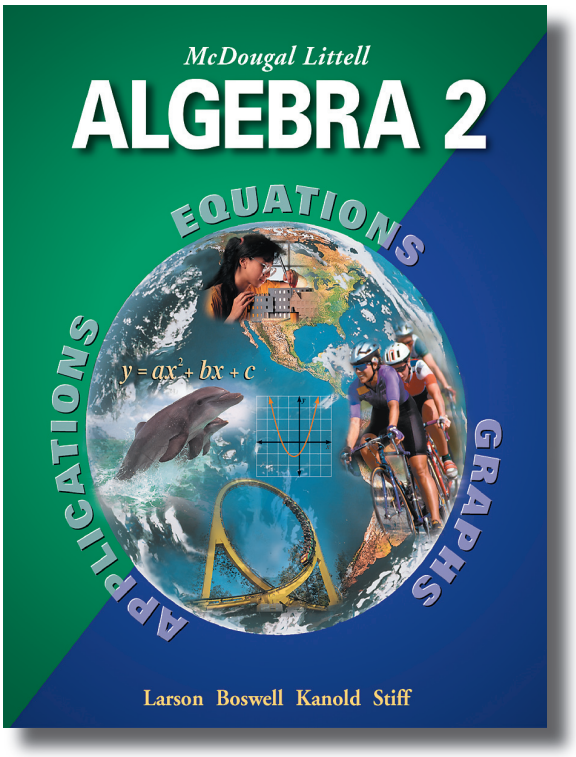

McDougal Littell

ALGEBRA 2

Larson Boswell Kanold Stiff

correlated to

District of Columbia Public Schools Algebra II Standards

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Algebra II Standards

NUMBER SENSE AND OPERATIONS INDICATORS

AII.N.1. Know and use the properties of operations on real numbers, including the existence of the identity and inverse elements for addition and multiplication and the existence of *nth* roots of positive real numbers for any positive integer *n*, and the *nth* power of positive real numbers

PE/TE: Lesson 1.1: Real Numbers and Number Operations, 3-10
Lesson 6.1: Using Properties of Exponents, 323-328
Lesson 7.1: n^{th} Roots and Rational Exponents, 401-406
Lesson 7.2: Properties of Rational Exponents, 407-414

AII.N.2. Simplify numerical expressions with powers and roots, including fractional and negative exponents.

PE/TE: Lesson 1.2: Algebraic Expressions and Models, 11, 14 (#19-26)
Lesson 5.3: … Finding Square Roots, 264, 267 (#19-50)
Lesson 6.1: Using Properties of Exponents, 323-324, 326 (#3-8, 16-31)
Lesson 7.1: n^{th} Roots and Rational Exponents, 401-402, 404 (#29-52)
Lesson 7.2: Properties of Rational Exponents, 407-409, 411 (#5-12, 22-49)

AII.N.3. Know the representation of complex numbers (e.g., a + b*i* where a and b are real numbers) and the procedures for adding, multiplying, and inverting complex numbers. Understand the associative, commutative, and identity properties for complex arithmetic.

PE/TE: Lesson 5.4: Complex Numbers, 272-280, 328 (#58-83)

PATTERNS, RELATIONS, AND ALGEBRA INDICATORS

AII.P.1. Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative and recursive patterns such as Fibonacci Numbers and Pascal's Triangle.

PE/TE: (selected patterns), 36, 38-39 (#24-27), 257, 280 (#100), 334, 339, 345, 681-687, 688, 710, 712 (#31-35), 804 (#53-55)

AII.P.2. Identify arithmetic and geometric sequences and finite arithmetic and geometric series. Use the properties of such sequences and series to solve problems, including finding the formula for the general term and the sum, recursively and explicitly.

PE/TE: Lesson 11.1: An Introduction to Sequences and Series, 651-657, 658
Lesson 11.2: Arithmetic Sequences and Series, 659-665
Lesson 11.3: Geometric Sequences and Series, 666-673, 687

AII.P.3. Understand functional notation, evaluate a function at a specified point in its domain, and perform operations on functions with emphasis on the domain and range.

PE/TE: Lesson 2.1: Functions and Their Graphs, 67-74
Lesson 2.7: Piecewise Functions, 114-120
Lesson 7.3: Power Functions and Function Operations, 415-420
Lesson 7.4: Inverse Functions, 421, 422-429, 430

AII.P.4. Understand exponential and logarithmic functions and their basic arithmetic properties, including change of base and formulas for exponential of a sum and logarithm of a product.

PE/TE: Lesson 8.1: Exponential Growth, 465-472, 473
Lesson 8.2: Exponential Decay, 474-479
Lesson 8.3: The Number *e*, 480-485
Lesson 8.4: Logarithmic Functions, 486-492
Lesson 8.5: Properties of Logarithms, 493-499, 500

AII.P.5. Given algebraic, numeric, and/or graphical representations, recognize functions as polynomial, rational, logarithmic, or exponential, and describe their behavior.

PE/TE: Lesson 6.2: Evaluating and Graphing Polynomial Functions, 329-336, 337
Lesson 6.8: Analyzing Graphs of Polynomial Functions, 373-378
Lesson 6.9: Modeling with Polynomial Functions, 379, 380-385
Lesson 8.1: Exponential Growth, 465-472, 473
Lesson 8.2: Exponential Decay, 474-479
Lesson 8.4: Logarithmic Functions, 486-492
Lesson 9.2: Graphing Simple Rational Functions, 540-545, 546
Lesson 9.3: Graphing General Rational Function, 547-553

AII.P.6. Find solutions to radical equations; find solutions to quadratic equations (with real coefficients and real or complex roots) graphically, by factoring, by completing the square, or by using the quadratic formula.

PE/TE: Lesson 5.2: Solving Quadratic Equations by Factoring, 256-263
Lesson 5.3: Solving Quadratic Equations by Finding Square Roots, 264-270
Lesson 5.5: Completing the Square, 281, 282-289
Lesson 5.6: The Quadratic Formula and the Discriminant, 291-298
Lesson 7.6: Solving Radical Equations, 437-443

AII.P.7. Solve a variety of equations and inequalities using algebraic, graphical, and numerical methods, including the quadratic formula. Include polynomial, exponential, and logarithmic functions, expressions involving the absolute values, and simple rational expressions.

PE/TE: Lesson 1.3: Solving Linear Equations, 19-24
Lesson 1.4: Rewriting Equations and Formulas, 26-32
Lesson 1.5: Problem Solving Using Algebraic Models, 33-40
Lesson 1.6: Solving Linear Inequalities, 41-47
Lesson 1.7: Solving Absolute Value Equations and Inequalities, 50-55
Lesson 2.6: Linear Inequalities in Two Variables, 108-113
Lesson 2.8: Absolute Value Functions, 122-127
Lesson 5.2: Solving Quadratic Equations by Factoring, 256-263
Lesson 5.3: Solving Quadratic Equations by Finding Square Roots, 264-270
Lesson 5.5: Completing the Square, 281, 282-289
Lesson 5.6: The Quadratic Formula and the Discriminant, 291-298
Lesson 5.7: Graphing and Solving Quadratic Inequalities, 299-305
Lesson 6.2: Evaluating and Graphing Polynomial Functions, 329-336
Lesson 6.4: Factoring and Solving Polynomial Equations, 345-351
Lesson 6.5: The Remainder and Factor Theorems, 352-358
Lesson 6.6: Finding Rational Zeros, 359-365
Lesson 6.7: Using the Fundamental Theorem of Algebra, 366-371
Lesson 7.6: Solving Radical Equations, 437-443
Lesson 8.6: Solving Exponential and Logarithmic Equations, 501-508
Lesson 9.6: Solving Rational Equations, 568-573

AII.P.8. Explore matrices and their operations, including using them to solve systems of linear equations. Apply to solutions of everyday problems.

PE/TE: Lesson 4.1: Matrix Operations: Exploring Data and Statistics, 199-206, 207
Lesson 4.2: Multiplying Matrices, 208-213
Lesson 4.3: Determinants and Cramer's Rule, 214-221
Lesson 4.4: Identity and Inverse Matrices, 222, 223-229
Lesson 4.5: Solving Systems Using Inverse Matrices, 230-236
Chapter 4 Extension: Solving Systems Using Augmented Matrices, 237-238

AII.P.9. Use symbolic, numeric, and graphical methods to solve systems of equations and/or inequalities involving algebraic, exponential, and logarithmic expressions. Describe the relationships among the methods.

PE/TE: Lesson 3.1: Solving Linear Systems by Graphing, 139-145
Lesson 3.2: Solving Linear Systems Algebraically, 148-155
Lesson 3.3: Graphing and Solving Systems of Linear Inequalities, 156-162
Lesson 3.4: Linear Programming: Exploring Data and Statistics, 163-169
Lesson 3.5: Graphing Linear Equations in Three Variables, 170-175
Lesson 3.6: Solving Systems of Linear Equations in Three Variables, 177-183
Lesson 4.5: Solving Systems Using Inverse Matrices, 230-236
Chapter 4 Extension: Solving Systems Using Augmented Matrices, 237-238
Lesson 10.7: Solving Quadratic Systems, 632-637

AII.P.10. Solve everyday problems that can be modeled using polynomial, rational, exponential, logarithmic, and step functions; absolute values; and square roots. Apply appropriate graphical, tabular, or symbolic methods to the solution. Include compound interest, exponential growth and decay, and direct and inverse variation problems.

PE/TE: Lesson 2.4: Writing Equations of Lines, 94, 97-98
Lesson 2.5: Correlation and Best-Fitting Lines, 100-106
Lesson 2.7: Piecewise Functions, 116, 119-120
Lesson 2.8: Absolute Value Functions, 124, 126-127
Lesson 5.8: Modeling with Quadratic Functions, 306-312
Lesson 6.4: Factoring and Solving Polynomial Equations, 347, 349-350
Lesson 6.9: Modeling with Polynomial Functions, 380-385
Lesson 8.1: Exponential Growth, 467-468, 470-472, 473
Lesson 8.2: Exponential Decay, 476, 478-479
Lesson 8.3: The Number *e*, 482, 484
Lesson 8.4: Logarithmic Functions, 489, 491
Lesson 8.7: Modeling with Exponential and Power Functions, 509-516
Lesson 9.1: Inverse and Joint Variation, 534-539
Lesson 9.6: Solving Rational Equations, 570, 572-573

AII.P.11. Recognize translations and scale changes of a given function f(x) resulting from substitutions for the various parameters a, b, c, and d in $y = af(b(x + c/b)) + d$. In particular, describe qualitatively the effect of such changes on polynomial, rational, exponential, and logarithmic functions.

PE/TE: Appendix 1: Transformations of Functions, 985-988

AII.P.12. Simplify rational expressions. Solve rational equations and inequalities.

PE/TE: Lesson 7.1: n^{th} Roots and Rational Exponents, 402-406
Lesson 7.2: Properties of Rational Exponents, 407-413
Lesson 9.6: Solving Rational Equations, 568-573

GEOMETRY INDICATORS

AII.G.1. Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems.

PE/TE: Lesson 13.1: Right Triangle Trigonometry, 769-775
Lesson 13.5: The Law of Sines, 799-806
Lesson 13.6: The Law of Cosines, 807-812

AII.G.2. Explain the identity $\sin^2\phi + \cos^2\phi = 1$. Relate the identity to the Pythagorean theorem.

PE/TE: Lesson 14.3 Verifying Trigonometric Identities, 848-849, 854 (#66-67)

AII.G.3. Relate geometric and algebraic representations of lines and simple curves.

PE/TE: Lesson 10.1: The Distance and Midpoint Formulas, 589-594
Lesson 10.2: Parabolas, 595-600
Lesson 10.3: Circles, 601-607, 608
Lesson 10.4: Ellipses, 609-614
Lesson 10.5: Hyperbolas, 615-621
Lesson 10.6: Graphing and Classifying Conic Sections, 622, 623-631
Lesson 13.7: Parametric Equations and Projectile Motion, 813-819, 820

DATA ANALYSIS, STATISTICS, AND PROBABILITY INDICATORS

AII.D.1. Select an appropriate graphical representation for a set of data and use appropriate statistics (e.g., quartile or percentile distribution) to communicate information about the data, including box plots.

PE/TE: Lesson 7.7: Statistics and Statistical Graphs, 445-452, 453-454
Lesson 12.6: Binomial Distributions, 738, 739-744, 745
Lesson 12.7: Normal Distributions, 746-752

AII.D.2. Use combinatorics (e.g., fundamental counting principle, permutations, and combinations) to solve problems, including computing geometric probabilities and probabilities of compound events.

PE/TE: Lesson 12.1 The Fundamental Counting Principle and Permutations, 701-707
Lesson 12.2 Combinations and the Binomial Theorem, 708-715
Lesson 12.3 An Introduction to Probability, 716-722, 723
Lesson 12.4 Probability of Compound Events, 724-729
Lesson 12.5 Probability of Independent and Dependent Events, 730-739
Lesson 12.6 Binomial Distributions, 738, 739-744, 745
Lesson 12.7 Normal Distributions, 746-752
Chapter 12.Extension: Expected Value, 753-754

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