

Mathematics Textbook Correlation Matrices

Algebra II Standards of Learning

Publisher: Pearson Prentice Hall

Text/Instructional Material Title: Prentice Hall Mathematics Algebra 2 © 2006, Virginia Edition

Mathematics Standards	Correlation By Page Numbers Make all correlations using the student text. Identify the five <i>most significant</i> correlations. Include correlations that address the introduction and development of each concept. Use each bullet of the standard in the context of the stem. Consult the 2002 Mathematics Curriculum Framework for further information about each standard.
AII.1 The student will identify field properties, axioms of equality and inequality, and properties of order that are valid for the set of real numbers and its subsets, complex numbers, and matrices.	SE/TE:6-10, 18-23, 26-31, 171-184, 270-275
AII.2 The student will add, subtract, multiply, divide, and simplify rational expressions, including complex fractions.	SE/TE:12-17, 499-503, 504-509, 511, 512-517
AII.3 The student will a) add, subtract, multiply, divide, and simplify radical expressions containing positive rational numbers and variables and expressions containing rational exponents; and	SE/TE:362, 363-367, 368-373, 374-378, 379-384
b) write radical expressions as expressions containing rational exponents and vice versa.	SE/TE:379-384, 385-390, 414, 416, 444 (Ex. 100-103)
AII.4 The student will solve absolute value equations and inequalities graphically and algebraically. Graphing calculators will be used as a primary method of solution and to verify algebraic solutions.	SE/TE:33-37, 86-89, 91-97, 101-103, 109

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AII.5 The student will identify and factor completely polynomials representing the difference of squares, perfect square trinomials, the sum and difference of cubes, and general trinomials.	SE/TE:255-261, 263-268, 278-283, 307-313, 322-326
AII.6 The student will select, justify, and apply a technique to solve a quadratic equation over the set of complex numbers. Graphing calculators will be used for solving and for confirming the algebraic solutions.	SE/TE:263-267, 273-275, 278-283, 285-291, 294-295
AII.7 The student will solve equations containing rational expressions and equations containing radical expressions algebraically and graphically. Graphing calculators will be used for solving and for confirming the algebraic solutions.	SE/TE:385-390, 391, 410-412, 495-497, 512-517
AII.8 The student will recognize multiple representations of functions (linear, quadratic, absolute value, step, and exponential functions) and convert between a graph, a table, and symbolic form. A transformational approach to graphing will be employed through the use of graphing calculators.	SE/TE:62-69, 91-97, 241-246, 348-353, 422-429

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AII.9 The student will find the domain, range, zeros, and inverse of a function; the value of a function for a given element in its domain; and the composition of multiple functions. Functions will include exponential, logarithmic, and those that have domains and ranges that are limited and/or discontinuous. The graphing calculator will be used as a tool to assist in investigation of functions.	SE/TE:56-61, 309-313, 393-405, 431-436, 440-444
AII.10 The student will investigate and describe through the use of graphs the relationships between the solution of an equation, zero of a function, x -intercept of a graph, and factors of a polynomial expression.	SE/TE:263-267, 276 (Ex. 81-83), 307-313, 321-326, 335-338
AII.11 The student will use matrix multiplication to solve practical problems. Graphing calculators or computer programs with matrix capabilities will be used to find the product.	SE/TE:178-184, 189-193, 195-201, 202-206, 210-214

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AII.12 The student will represent problem situations with a system of linear equations and solve the system, using the inverse matrix method. Graphing calculators or computer programs with matrix capability will be used to perform computations.	SE/TE:210-214, 216, 217-223, 227, 236-239
AII.13 The student will solve practical problems, using systems of linear inequalities and linear programming, and describe the results both orally and in writing. A graphing calculator will be used to facilitate solutions to linear programming problems.	SE/TE:99-104, 130-133, 135-140, 141, 158-159
AII.14 The student will solve nonlinear systems of equations, including linear-quadratic and quadratic-quadratic, algebraically and graphically. The graphing calculator will be used as a tool to visualize graphs and predict the number of solutions.	SE/TE:267 (Ex. 54-56), 321-326, 454-456, 486-489, 577
AII.15 The student will recognize the general shape of polynomial, exponential, and logarithmic functions. The graphing calculator will be used as a tool to investigate the shape and behavior of these functions.	SE/TE:234-246, 300-306, 307-313, 431-436, 438-444

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AII.16 The student will investigate and apply the properties of arithmetic and geometric sequences and series to solve practical problems, including writing the first n terms, finding the n^{th} term, and evaluating summation formulas. Notation will include Σ and a_n .	SE/TE:588-593, 594-598, 600-604, 607-611, 613-618
AII.17 The student will perform operations on complex numbers and express the results in simplest form. Simplifying results will involve using patterns of the powers of i .	SE/TE:270-276, 286-291, 323-326, 331-334, 335-338
AII.18 The student will identify conic sections (circle, ellipse, parabola, and hyperbola) from his/her equations. Given the equations in (h, k) form, the student will sketch graphs of conic sections, using transformations.	SE/TE:248-253, 535-540, 543-554, 556-567, 570-576
AII.19 The student will collect and analyze data to make predictions and solve practical problems. Graphing calculators will be used to investigate scatterplots and to determine the equation for a curve of best fit. Models will include linear, quadratic, exponential, and logarithmic functions.	SE/TE:78-83, 236-240, 302-304, 423-430, 461

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AII.20 The student will identify, create, and solve practical problems involving inverse variation and a combination of direct and inverse variations.	SE/TE: 72-76, 478-483, 485-489, 495, 527-528

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1. Materials emphasize the use of effective instructional practices and learning theory:	SE/TE:18-23, 116-122, 300-305, 392-399, 438-444
<ul style="list-style-type: none">• Students are guided through problem-solving approaches.	The student text provides examples of real-world problem solving and uses the "Relate-Define-Write" format to guide the student in choosing and writing a symbolic model for solving a problem. Many examples show more than one method for solving a problem and include a check for reasonableness. Reading for Problem Solving pages and Writing, Critical Thinking, and Error Analysis exercises provide additional guidance and practice in problem solving. Problem-solving strategies are reviewed in the Skills Handbook in the student text. SE/TE:32, 73-77, 100-105, 327, 836-841
<ul style="list-style-type: none">• Concepts are introduced through concrete experiences that use manipulatives and other technologies.	Students use algebra tiles to model a variety of concepts, including operations with integers and equation solving. SE/TE:39, 256, 277, 534, 588-593

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<ul style="list-style-type: none">Multiple opportunities are provided for students to develop and apply concepts through the use of calculators, computers, and other technologies.	Technology components in the student text include technology lessons, graphing calculator exercises, and the use of spreadsheets. SE/TE: 14, 25, 236-240, 265-269, 300
<ul style="list-style-type: none">Students use the language of mathematics including specialized vocabulary and symbols.	Students are introduced to new vocabulary and symbols in the instructional component of lessons. New terms are highlighted in the text. Reading Math Vocabulary is a section devoted to relating the English meaning of a word to its mathematical meaning and usage. SE/TE: 188-190, 284, 399, 579-580, 670
<ul style="list-style-type: none">Students use a variety of representations (graphical, numerical, symbolic, verbal, and physical) to connect mathematical concepts.	Students use a variety of representations to connect mathematical concepts throughout the course. For example, they connect graphic, numerical, symbolic, and verbal representations of functions. SE/TE: 55-61, 78-85, 234-240, 302, 400-406

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2. Materials present content in an accurate, unbiased manner:	SE/TE:4-10, 78-84, 205-207, 595-597, 780-781
<ul style="list-style-type: none">Materials are relatively free of content and production errors (misspelled words, word omissions, incorrect answers).	Materials have been through solvings and many internal checks to make them relatively free of content and production errors.
<ul style="list-style-type: none">Diverse groups (racial, ethnic, cultural, linguistic), males and females, people with disabilities, and people of all ages are represented appropriately.	People of different ethnic and cultural backgrounds, ages, and physical abilities are represented in the student text in photographs, Point in Time features, and Real-World Snapshots features. SE/TE:76-77, 206-207, 406, 520, 781

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3. The mathematics content is significant and accurate:	SE/TE: 18-24, 135-139, 243-247, 519-525, 663-669
<ul style="list-style-type: none">Materials are presented in an organized, logical manner which represents the current thinking on how students learn mathematics.	Each lesson in the student text begins with Check Skills You'll Need to make sure students have prerequisite skills. This is followed by an activity and/or examples to introduce the concepts covered in the lesson. Examples are followed by exercises to insure students understand the example. The instructional pages are followed by exercises that build in level of difficulty and application beginning with Practice by Example, followed by Apply Your Skills, and ending with Challenge. Additionally, students are provided with Standardized Test Prep and Mixed Review exercises. Check Understanding exercises and Checkpoint Quizzes are integrated in the instructional pages and problem sets to periodically assess students' levels of skill and understanding. SE/TE: 18-24, 178-185, 248-254, 511-517

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<ul style="list-style-type: none">Materials are organized appropriately within and among units of study.	Each chapter of the student text is unified by a major concept area (e.g., matrices, quadratics, polynomials) and each lesson within a chapter presents one important component of that concept area. Additionally, the lessons progress from basic to more complex concepts and skills related to the chapter's content area (e.g., the lessons in the chapter on linear systems progresses from solving systems by graphing and algebraically, to solving systems of inequalities and linear programming, and then to graphs in three-dimensions). SE/TE: 116-121, 122-129, 130-134, 135-141, 142-155
<ul style="list-style-type: none">Format design includes titles, subheadings, and appropriate cross-referencing for ease of use.	Titles and subheadings are clearly set off in the student text with different sizes, colors, and highlights. Practice by Example exercises are cross-referenced with the appropriate examples from the instructional pages. Mixed Review exercises and Chapter Review exercises are cross-referenced with the appropriate lessons from the current chapter or previous chapters. SE/TE: 233, 234-239, 240, 254, 293-295

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<ul style="list-style-type: none">• Writing style, length of sentences, vocabulary, graphics, and illustrations are appropriate.	The writing style and length of sentences in the instructional pages are consistent with an age- and grade-appropriate reading level. New vocabulary is highlighted. Graphics and illustrations are colorful, clear, and enhance the overall presentation for the student by providing additional and complementary representations of the concepts being taught. SE/TE: 137, 164-169, 300-302, 422-426, 534-541
<ul style="list-style-type: none">• Level of abstraction is appropriate, and real life examples, including careers, are provided.	The level of abstraction is age- and grade-appropriate, and real-life examples are integrated into every lesson. Careers and other extracurricular and interdisciplinary connections are integrated throughout the instructional pages and the problem sets of each lesson. Real-World Snapshots provide students with open-ended activities and opportunities for in-depth exploration of the concepts of the chapter. SE/TE: 234-240, 246-247, 322-327, 358-359, 495

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<ul style="list-style-type: none">• Sufficient applications are provided to promote depth of application.	The student text integrates applications, including connections to real-world problem-solving situations, careers, other educational disciplines, and other areas of mathematics, throughout the lessons and chapters in the text. Applications range in scope from examples and short-answer exercises to challenge problems and open-ended projects. SE/TE: 135-141, 187-194, 346-351, 380-384, 584-585