Integrated Mathematics 3

correlated to the

California Standards Map for Mathematics
Algebra 2 and Probability & Statistics

McDougal Littell

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Publisher:	McDougal Littell
Program Title:	Integrated Mathematics Book 3
Components:	Pupil's Edition (PE), Teacher's Edition (TE)
Grade Level(s):	8-12
Intended Audience:	Integrated Mathematics Students

Standards Map - Basic Comprehensive Program
Grades Eight Through Twelve - Mathematics

The standards for grades eight through twelve are organized differently from those for kindergarten through grade seven. In this section strands are not used for organizational purposes as they are in the elementary grades because the mathematics studied in grades eight through twelve falls naturally under discipline headings: algebra, geometry, and so forth. Many schools teach this material in traditional courses; others teach it in an integrated fashion. To allow local educational agencies and teachers flexibility in teaching the material, the standards for grades eight through twelve do not mandate that a particular discipline be initiated and completed in a single grade. The core content of these subjects must be covered; students are expected to achieve the standards however these subjects are sequenced.

			PUBLISHER CITATIONS*			FOR LEA USE ONLY		
						Meets Standard		
Grade	Standard #	Text of Standard	Introduced	Practiced	Taught to Mastery	Y	N	Local Education Agency Evaluator Notes
DISCIPLINE		**Algebra II** **This discipline complements and expands the mathematical content and concepts of algebra I and geometry. Students who master algebra II will gain experience with algebraic solutions of problems in various content areas, including the solution of systems of quadratic equations, logarithmic and exponential functions, the binomial theorem, and the complex number system.**						
8-12	1.0	Students solve equations and inequalities involving absolute value.	PE/TE: 87-88†,~	PE/TE: 89-91~	PE/TE: 87-88†,~			
8-12	2.0	Students solve systems of linear equations and inequalities (in two or three variables) by substitution, with graphs, or with matrices.	PE/TE: 24-25†, 29-33†	PE/TE: 26-28, 34-36, 44, 52, 57-60, 62-63@	PE/TE: 24-25†, 29-33†, 53-56			
8-12	3.0	Students are adept at operations on polynomials, including long division.	PE/TE: 636-638†, 641†	PE/TE: 636-638†, 641†	PE/TE: 636-638†, 641†			

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8-12	4.0	Students factor polynomials representing the difference of squares, perfect square trinomials, and the sum and difference of two cubes.	PE/TE: 640†	PE/TE: 640†	PE/TE: 640†			
8-12	5.0	Students demonstrate knowledge of how real and complex numbers are related both arithmetically and graphically. In particular, they can plot complex numbers as points in the plane.	PE/TE: 643†	PE/TE: 643†	PE/TE:			
8-12	6.0	Students add, subtract, multiply, and divide complex numbers.	PE/TE: 643†	PE/TE: 116, 221, 643†	PE/TE:			
8-12	7.0	Students add, subtract, multiply, divide, reduce, and evaluate rational expressions with monomial and polynomial denominators and simplify complicated rational expressions, including those with negative exponents in the denominator.	PE/TE: 120-121, 641†	PE/TE: 124-125, 641†	PE/TE:			
8-12	8.0	Students solve and graph quadratic equations by factoring, completing the square, or using the quadratic formula. Students apply these techniques in solving word problems. They also solve quadratic equations in the complex number system.	PE/TE: 95-97†, 645†, 646†, 651†	PE/TE: 98-99, 646†, 651†	PE/TE: 95-97†, 645†, 646†, 651†			
8-12	9.0	Students demonstrate and explain the effect that changing a coefficient has on the graph of quadratic functions; that is, students can determine how the graph of a parabola changes as a , b , and c vary in the equation $y = a(x-b)^2 + c$.	PE/TE: 651†	PE/TE: 651†	PE/TE: 651†			
8-12	10.0	Students graph quadratic functions and determine the maxima, minima, and zeros of the function.	PE/TE: 651†	PE/TE: 651†	PE/TE: 651†			

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8-12	11.0	Students prove simple laws of logarithms:						
8-12	11.1	Students understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	PE/TE: 301-304†	PE/TE: 305-308	PE/TE: 301-304†			
8-12	11.2	Students judge the validity of an argument according to whether the properties of real numbers, exponents, and logarithms have been applied correctly at each step.	PE/TE: 309-312†, 318-319†, 636-637†	PE/TE: 313-316, 320-321, 636-637†	PE/TE: 309-312†, 318-319†, 636-637†			
8-12	12.0	Students know the laws of fractional exponents, understand exponential functions, and use these functions in problems involving exponential growth and decay.	PE/TE: 267-270†, 281-284†	PE/TE: 271-273, 285-287	PE/TE: 267-270†, 281-284†			
8-12	13.0	Students use the definition of logarithms to translate between logarithms in any base.	PE/TE: 312†	PE/TE: 313-314, 325@	PE/TE: 312†			
8-12	14.0	Students understand and use the properties of logarithms to simplify logarithmic numeric expressions and to identify their approximate values.	PE/TE: 309-312†, 318-319†	PE/TE: 313-315	PE/TE: 309-312†, 318-319†			
8-12	15.0	Students determine whether a specific algebraic statement involving rational expressions, radical expressions, or logarithmic or exponential functions is sometimes true, always true, or never true.	PE/TE: 283-284†, 302†, 309-312†, 317-319†, 641-642†	PE/TE: 285-286, 305, 313-314, 320, 641-642†	PE/TE: 283-284†, 302†, 309-312†, 317-319†, 641-642†			
8-12	16.0	Students demonstrate and explain how the geometry of the graph of a conic section (e.g., asymptotes, foci, eccentricity) depends on the coefficients of the quadratic equation representing it.	PE/TE: 677-678†	PE/TE: 679-680	PE/TE: 677-678†			

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8-12	17.0	Given a quadratic equation of the form $ax^2 + by^2 + cx + dy + e = 0$, students can use the method for completing the square to put the equation into standard form and can recognize whether the graph of the equation is a circle, ellipse, parabola, or hyperbola. Students can then graph the equation.	PE/TE: 46, 95, 121-123, 651, 677-678∞	PE/TE: 679-680∞	PE/TE:			
8-12	18.0	Students use fundamental counting principles to compute combinations and permutations.	PE/TE: 628-629†	PE/TE: 628-629†	PE/TE: 628-629†			
8-12	19.0	Students use combinations and permutations to compute probabilities.	PE/TE: 382-386, 397, 628-629†, 631-632†,∞	PE/TE: 387-389, 399, 628-629†, 631-632†,∞	PE/TE:			
8-12	20.0	Students know the binomial theorem and use it to expand binomial expressions that are raised to positive integer powers.	PE/TE: 639†	PE/TE: 639†	PE/TE: 639†			
8-12	21.0	Students apply the method of mathematical induction to prove general statements about the positive integers.	PE/TE: 223†, 230-231†, 238†, 245†	PE/TE: 225-227, 233, 242, 248	PE/TE: 223†, 230-231†, 238†, 245†			
8-12	22.0	Students find the general term and the sums of arithmetic series and of both finite and infinite geometric series.	PE/TE: 237-240†, 244-247†, 251-255†	PE/TE: 241-243, 248-250, 256-258, 261@	PE/TE: 237-240†, 244-247†, 251-255†			

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8-12	23.0	Students derive the summation formulas for arithmetic series and for both finite and infinite geometric series.	PE/TE: 238†, 245†, 252†	PE/TE: 241-242, 247, 255-257, 261@	PE/TE: 238†, 245†, 252†			
8-12	24.0	Students solve problems involving functional concepts, such as composition, defining the inverse function and performing arithmetic operations on functions.	PE/TE: 126-128†, 296-298†	PE/TE: 129-131, 134@, 299-300, 325@	PE/TE: 126-128†, 296-298†			
8-12	25.0	Students use properties from number systems to justify steps in combining and simplifying functions.	PE/TE: 126-128†	PE/TE: 129-131, 134@	PE/TE: 126-128†			

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DISCIPLINE		**Probability and Statistics** **This discipline is an introduction to the study of probability, interpretation of data, and fundamental statistical problem solving. Mastery of this academic content will provide students with a solid foundation in probability and facility in processing statistical information.**						
8-12	1.0	Students know the definition of the notion of *independent events* and can use the rules for addition, multiplication, and complementation to solve for probabilities of particular events in finite sample spaces.	PE/TE: 397-398†	PE/TE: 399-402, 419-420@	PE/TE: 397-398†			
8-12	2.0	Students know the definition of *conditional probability* and use it to solve for probabilities in finite sample spaces.	PE/TE: 395-398†	PE/TE: 399-402, 419-420@	PE/TE: 395-398†			
8-12	3.0	Students demonstrate an understanding of the notion of *discrete random variables* by using them to solve for the probabilities of outcomes, such as the probability of the occurrence of five heads in 14 coin tosses.	PE/TE: 373-378, 382-386†, 390-392†, 395-398†, 403-406†, 410-414†	PE/TE: 378-381, 387-389, 392-394, 399-402, 406-409, 415-417, 419-420@	PE/TE: 373-378, 382-386†, 390-392†, 395-398†, 403-406†, 410-414†			

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8-12	4.0	Students are familiar with the standard distributions (normal, binomial, and exponential) and can use them to solve for events in problems in which the distribution belongs to those families.	PE/TE: 344-346†, 350-353†, 410-414†, 483-485†, 496-498†, 519-523†	PE/TE: 347-349, 354-358, 365, 366-367@, 415-418, 420@, 486-488, 498-500, 523-525, 534-535@	PE/TE: 344-346†, 350-353†, 410-414†, 483-485†, 496-498†, 519-523†			
8-12	5.0	Students determine the mean and the standard deviation of a normally distributed random variable.	PE/TE: 338-340†, 344-346†, 483-485†, 496-498†, 519-523†	PE/TE: 341-343, 347-349, 365, 366-367@, 417, 483, 486-488, 498-500, 509@, 514-515, 523-525, 534-535@	PE/TE: 338-340†, 344-346†, 483-485†, 496-498†, 519-523†			
8-12	6.0	Students know the definitions of the *mean, median,* and *mode* of a distribution of data and can compute each in particular situations.	PE/TE: 16-17, 332-333†, 483-485†, 496-498†, 519-523†	PE/TE: 341-343, 347-349, 365, 366-367@, 417, 483, 486-488, 498-500, 509@, 514-515, 523-525, 534-535@	PE/TE: 332-333†, 483-485†, 496-498†, 519-523†			

* For more information, see Notes.

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8-12	7.0	Students compute the variance and the standard deviation of a distribution of data.	PE/TE: 338-340†, 483-485†, 496-498†, 519-523†	PE/TE: 341-343, 365, 367@, 417, 483, 486-488, 498-500, 514-515, 523-525, 534-535@	PE/TE: 338-340†, 483-485†, 496-498†, 519-523†			
8-12	8.0	Students organize and describe distributions of data by using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem-and-leaf displays, scatterplots, and box-and-whisker plots.	PE/TE: 16-18†, 23-26†, 331-334†, 338-340†, 344-346†, 350-353†, 359-361†, 483-485†, 496-498†, 510-511†, 519-523†	PE/TE: 19-22, 26-28, 335-337, 341-343, 347-349, 354-358, 362-364, 366-368@, 376, 379, 408-409, 416, 419-420@, 486-488, 498-500, 514-515, 523-525, 534@	PE/TE: 16-18†, 23-26†, 331-334†, 338-340†, 344-346†, 350-353†, 359-361†, 483-485†, 496-498†, 510-511†, 519-523†			

Publisher Notes/Additional Comments (note to publishers: please include grade level/standard when listing comments):

† indicated page(s) contain material appropriate for more than one category of instruction

@ indicated page(s) contain assessment items

~ Standard 1.0: prerequisite concepts are taught on the pages listed

∞ related concepts are taught on the pages listed