

# Correlation of Massachusetts Mathematics Learning Standards for Algebra I to *Cord Algebra I, Mathematics in Context*

Note: The parentheses at the end of a learning standard contain the code number(s) for the corresponding standard(s) in the two-year grade spans.

Grade-Level Expectations		Student Edition Pages
<b>Number and Operations</b>		
<i>Students engage in problem solving, communicating, reasoning, connecting, and representing as they:</i>		
AI.N.1	Identify and use the properties of operations on real numbers, including the associative, commutative, and distributive properties; the existence of the identity and inverse elements for addition and multiplication; the existence of $n^{\text{th}}$ roots of positive real numbers for any positive integer $n$ ; the inverse relationship between taking the $n^{\text{th}}$ root of and the $n^{\text{th}}$ power of a positive real number; and the density of the set of rational numbers in the set of real numbers. (10.N.1)	4-8, 85-92, 161-168, 304-311, 694-698
AI.N.2	Simplify numerical expressions, including those involving positive integer exponents or the absolute value, e.g., $3(2^4 - 1) = 45$ , $4 3 - 5  + 6 = 14$ ; apply such simplifications in the solution of problems. (10.N.2)	13-17, 18-25, 26-31, 80-84, 287-290, 564-569, 570-574, 575-580
AI.N.3	Find the approximate value for solutions to problems involving square roots and cube roots without the use of a calculator, e.g., $\sqrt{3^2 - 1} \approx 2.8$ . (10.N.3)	304-311, 694-698
AI.N.4	Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers. (10.N.4)	Covered in Cord Bridges to Algebra & Geometry

<b>Patterns, Relations, and Algebra</b>		
<i>Students engage in problem solving, communicating, reasoning, connecting, and representing as they:</i>		
AI.P.1	Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative, recursive (e.g., Fibonacci Numbers), linear, quadratic, and exponential functional relationships. (10.P.1)	9-12
AI.P.2	Use properties of the real number system to judge the validity of equations and inequalities, to prove or disprove statements, and to justify every step in a sequential argument.	85-92, 146-154, 155-160, 161-168, 169-174, 175-179, 180-184, 501-505, 506-511, 512-518, 519-522, 544-553
AI.P.3	Demonstrate an understanding of relations and functions. Identify the domain, range, dependent, and independent variables of functions.	280-286, 291-295, 296-303, 304-311, 312-319, 320-322, 323-337
AI.P.4	Translate between different representations of functions and relations: graphs, equations, point sets, and tabular.	206-211, 213-217, 225-233, 234-240, 241-248, 249-254, 255-259, 265-275
AI.P.5	Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and x-and y-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope y-intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope. (10.P.2)	218-224, 225-233, 234-240, 241-248, 249-254, 255-259, 265-275
AI.P.6	Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the "point-slope" form of the equation. (10.G.8)	249-254
AI.P.7	Add, subtract, and multiply polynomials. Divide polynomials by monomials. (10.P.3)	558-563, 570-574, 575-580, 581-585, 586-592, 601-606, 609-610, 611-615
AI.P.8	Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms, factoring (e.g., $a^2 - b^2 = (a + b)(a - b)$ , $x^2 + 10x + 21 = (x + 3)(x + 7)$ , $5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)$ ), identifying and canceling common factors in rational expressions, and applying the properties of positive integer exponents. (10.P.4)	593-599, 601-606, 607-608, 611, 612, 613

AI.P.9	Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods. (10.P.5)	633-636, 638-643, 645-648, 649-656, 657-663, 664-675
AI.P.10	Solve equations and inequalities including those involving absolute value of linear expressions (e.g., $ x - 2  > 5$ ) and apply to the solution of problems. (10.P.6)	146-154, 155-160, 161-168, 169-174, 175-179, 180-184, 185-189, 190-201, 501-505, 506-511, 512-518, 519-522, 544-553
AI.P.11	Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate. (10.P.7)	93-96, 122, 291-295, 296-303, 304-311, 312-319, 320-322, 323-337, 620-624, 626-632, 633-636, 638-643, 645-648, 649-656, 657-663, 664-675
AI.P.12	Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems. (10.P.8)	442-448, 449-454, 456-461, 463-469, 470-475, 476-480, 481-491, 532-536, 540-543

<b>Data Analysis, Statistics, and Probability</b>		
<i>Students engage in problem solving, communicating, reasoning, connecting, and representing as they</i>		
AI.D.1	Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, circle graph, line graph, and line plot) for a set of data and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data. (10.D.1)	390-396, 397-403, 404-410, 411-414, 415-419, 426-429, 430-437
AI.D.2	Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate. (10.D.2)	407-410, 432, 437
AI.D.3	Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data. (10.D.3)	Covered in Cord Bridges to Algebra & Geometry