Grade 8 Middle School Advanced Mathematics, Algebra I TEKS Crosswalk

Advanced Mathematics TEKS #s	Grade 8, Middle School Advanced Mathematics, Algebra I	Corresponding Grade 6,7,8, Alg I TEKS #s	Grade 6, 7, 8, Alg I Mathematics TEKS, Adopted 2012	Notes
Coding Key	New language is formatted in green font and underlined.			
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(a)	Implementation. The provisions of this section may be implemented by school districts beginning with the 2025-2026 school year.			
(b)	General requirements. This course is recommended for students in Grade 8. Prerequisite: Grade 7, Middle School Advanced Mathematics or Mathematics, Grade 8. Students shall be awarded one credit that satisfies the Algebra I requirement for high school graduation. This course satisfies the requirement for any course which identifies Algebra I as a prerequisite.	(a)		
(c)	Introduction.	(b)		Reorganization helps to support the compacting of standards in a shorter time period
(1)	The desire to achieve educational excellence is the driving force behind the Texas essential knowledge and skills for mathematics, guided by the college and career readiness standards. By embedding statistics, probability, and finance, while focusing on fluency and solid understanding, Texas will lead the way in mathematics education and prepare all Texas students for the challenges they will face in the 21st century.	(1)		Identical language
(2)	The process standards describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed for each grade and course is intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life. The process standards are integrated at every grade level and course. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace. Students will use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Students will select appropriate tools such as real objects, manipulatives, paper and pencil, and technology and techniques such as mental math, estimation, and number sense to solve problems. Students will effectively communicate mathematical ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, and language. Students will use mathematical relationships to generate solutions and make connections and predictions. Students will analyze mathematical relationships to connect and communicate mathematical ideas. Students will display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	(2)		Identical language
(3)	To increase the number of students who complete advanced mathematics courses in high school, the middle school advanced mathematics courses are designed to enable students to complete Algebra I by the end of Grade 8.			Focus for advanced mathematics courses to have student reach Algebra I by end of Grade 8
(4)	In Grade 8, Middle School Advanced Mathematics, Algebra I, students will build on the knowledge and skills for mathematics in Middle School Advanced Mathematics, Grades 6 and 7, which provide a foundation in linear relationships, number and operations, and proportionality. Students will study linear, quadratic, and exponential functions and their related transformations, equations, and associated solutions. Students will connect functions and their associated solutions in both mathematical and real-world situations. Students will use technology to collect and explore data and analyze statistical relationships. In addition, students will study polynomials of degree one and two, radical expressions, sequences, and laws of exponents. Students will generate and solve linear systems with two equations and two variables and will create new functions through transformations. The use of technology, including graphing tools, is essential in Middle School Advanced Mathematics, Algebra I to bridge conceptual understanding and procedural fluency.	(3)	In Algebra I, students will build on the knowledge and skills for mathematics in Grades 6–~~8~~, which provide a foundation in linear relationships, number and operations, and proportionality. Students will study linear, quadratic, and exponential functions and their related transformations, equations, and associated solutions. Students will connect functions and their associated solutions in both mathematical and real-world situations. Students will use technology to collect and explore data and analyze statistical relationships. In addition, students will study polynomials of degree one and two, radical expressions, sequences, and laws of exponents. Students will generate and solve linear systems with two equations and two variables and will create new functions through transformations.	Updates for strand and sub-strand names, including function foundations, and clarifying use of technology tools to support student learning regardless of use allowed on assessments. Included conceptual understanding and procedural fluency to update for connections to math RBIS.
(5)	Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.	(4)		Identical language

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(d)	Knowledge and skills.	(c)		
8AM.1	Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	AlgI.1		These KSs are identical.
8AM.1.A	apply mathematics to problems arising in everyday life, society, and the workplace;	AlgI.1.A		These SEs are identical.
8AM.1.B	use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;	AlgI.1.B		These SEs are identical.
8AM.1.C	select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;	AlgI.1.C		These SEs are identical.
8AM.1.D	communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;	AlgI.1.D		These SEs are identical.
8AM.1.E	create and use representations to organize, record, and communicate mathematical ideas;	AlgI.1.E		These SEs are identical.
8AM.1.F	analyze mathematical relationships to connect and communicate mathematical ideas; and	AlgI.1.F		These SEs are identical.
8AM.1.G	display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	AlgI.1.G		These SEs are identical.
8AM.2	Linear functions, equations, and inequalities. The student applies the mathematical process standards when using properties of linear functions to write and represent in multiple ways, with and without technology, linear equations, inequalities, and systems of equations. The student is expected to:	AlgI.2		These KSs are identical.
8AM.2.A	determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities;	AlgI.2.A		These SEs are identical.
8AM.2.B	write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points;	AlgI.2.B		These SEs are identical.
8AM.2.C	write linear equations in two variables given a table of values, a graph, and a verbal description;	AlgI.2.C		These SEs are identical.
8AM.2.D	write and solve equations involving direct variation;	AlgI.2.D		These SEs are identical. 8AM.2.D combines 8.5.E and AlgI.2.D.
		8.5.E	*[~~solve problems involving direct variation;~~]*	Subsumed into 8AM.2.D.
8AM.2.E	write the equation of a line that contains a given point and is parallel to a given line;	AlgI.2.E		These SEs are identical.
8AM.2.F	write the equation of a line that contains a given point and is perpendicular to a given line;	AlgI.2.F		These SEs are identical.
8AM.2.G	write an equation of a line that is parallel or perpendicular to the *x*- or *y*-axis and determine whether the slope of the line is zero or undefined;	AlgI.2.G		These SEs are identical.
8AM.2.H	write linear inequalities in two variables given a table of values, a graph, and a verbal description; and	AlgI.2.H		These SEs are identical.
8AM.2.I	write systems of two linear equations given a table of values, a graph, and a verbal description.	AlgI.2.I		These SEs are identical.

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8AM.3	Linear functions, equations, and inequalities. The student applies the mathematical process standards when using graphs of linear functions, key features, and related transformations to represent in multiple ways and solve, with and without technology, equations, inequalities, and systems of equations. The student is expected to:	AlgI.3		These KSs are identical.
8AM.3.A	use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/ (x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line;	8.4.A		These SEs are identical.
8AM.3.B	graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship; ~~and~~	8.4.B		These SEs are identical.
8AM.3.C	determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$;	AlgI.3.A		These SEs are identical.
8AM.3.D	calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems;	AlgI.3.B		These SEs are identical.
8AM.3.E	use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems; ~~.~~	8.4.C		These SEs are identical.
8AM.3.F	graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems;	AlgI.3.C		These SEs are identical.
8AM.3.G	graph the solution set of linear inequalities in two variables on the coordinate plane;	AlgI.3.D		These SEs are identical.
8AM.3.H	determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d;	AlgI.3.E		These SEs are identical.
8AM.3.I	graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist;	AlgI.3.F		These SEs are identical. 8AM.3.I combines AlgI.3.F and 8.9.A
		8.9.A	[~~*identify and verify the values of x and y that simultaneously satisfy two linear equations in the form y = mx + b from the intersections of the graphed equations*~~]	Subsumed into 8AM.3.I
8AM.3.J	estimate graphically the solutions to systems of two linear equations with two variables in real-world problems; and	AlgI.3.G		These SEs are identical.
8AM.3.K	graph the solution set of systems of two linear inequalities in two variables on the coordinate plane.	AlgI.3.H		These SEs are identical.

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8AM.4	Linear functions, equations, and inequalities. The student applies the mathematical process standards to formulate statistical relationships and evaluate their reasonableness based on real-world data. The student is expected to:	AlgI.4		These KSs are identical.
8AM.4.A	construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data;	8.11.A		These SEs are identical.
8AM.4.B	contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation;	8.5.C		These SEs are identical.
8AM.4.C	use a trend line that approximates the linear relationship between bivariate sets of data to make predictions;	8.5.D		These SEs are identical.
8AM.4.D	calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association;	AlgI.4.A		These SEs are identical.
8AM.4.E	compare and contrast association and causation in real-world problems; and	AlgI.4.B		These SEs are identical.
8AM.4.F	write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems.	AlgI.4.C		These SEs are identical.
8AM.5	Linear functions, equations, and inequalities. The student applies the mathematical process standards to solve, with and without technology, linear equations and evaluate the reasonableness of their solutions. The student is expected to:	AlgI.5		These KSs are identical.
8AM.5.A	solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides;	AlgI.5.A		These SEs are identical.
8AM.5.B	solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides; and	AlgI.5.B		These SEs are identical.
8AM.5.C	solve systems of two linear equations with two variables for mathematical and real-world problems.	AlgI.5.C		These SEs are identical.
8AM.6	Quadratic functions and equations. The student applies the mathematical process standards when using properties of quadratic functions to write and represent in multiple ways, with and without technology, quadratic equations. The student is expected to:	AlgI.6		These KSs are identical.
8AM.6.A	determine the domain and range of quadratic functions and represent the domain and range using inequalities;	AlgI.6.A		These SEs are identical.
8AM.6.B	write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form $f(x) = a(x - h)^2 + k$, and rewrite the equation from vertex form to standard form $f(x) = ax^2 + bx + c$; and	AlgI.6.B		These SEs are identical.
8AM.6.C	write quadratic functions when given real solutions and graphs of their related equations.	AlgI.6.C		These SEs are identical.
8AM.7	Quadratic functions and equations. The student applies the mathematical process standards when using graphs of quadratic functions and their related transformations to represent in multiple ways and determine, with and without technology, the solutions to equations. The student is expected to:	AlgI.7		These KSs are identical.
8AM.7.A	graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry;	AlgI.7.A		These SEs are identical.
8AM.7.B	describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions; and	AlgI.7.B		These SEs are identical.
8AM.7.C	determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d.	AlgI.7.C		These SEs are identical.
8AM.8	Quadratic functions and equations. The student applies the mathematical process standards to solve, with and without technology, quadratic equations and evaluate the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data. The student is expected to:	AlgI.8		These KSs are identical.
8AM.8.A	solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula; and	AlgI.8.A		These SEs are identical.

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8AM.8.B	write, using technology, quadratic functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems.	AlgI.8.B		These SEs are identical.
8AM.9	Exponential functions and equations. The student applies the mathematical process standards when using properties of exponential functions and their related transformations to write, graph, and represent in multiple ways exponential equations and evaluate, with and without technology, the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data. The student is expected to:	AlgI.9		These KSs are identical.
8AM.9.A	determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities;	AlgI.9.A		These SEs are identical.
8AM.9.B	interpret the meaning of the values of a and b in exponential functions of the form $f(x) = ab^x$ in real-world problems;	AlgI.9.B		These SEs are identical.
8AM.9.C	write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay;	AlgI.9.C		These SEs are identical.
8AM.9.D	graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems; and	AlgI.9.D		These SEs are identical.
8AM.9.E	write, using technology, exponential functions that provide a reasonable fit to data and make predictions for real-world problems.	AlgI.9.E		These SEs are identical.
8AM.10	Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to rewrite in equivalent forms and perform operations on polynomial expressions. The student is expected to:	AlgI.10		These KSs are identical.
8AM.10.A	add and subtract polynomials of degree one and degree two;	AlgI.10.A		These SEs are identical.
8AM.10.B	multiply polynomials of degree one and degree two;	AlgI.10.B		These SEs are identical.
8AM.10.C	determine the quotient of a polynomial of degree one and polynomial of degree two when divided by a polynomial of degree one and polynomial of degree two when the degree of the divisor does not exceed the degree of the dividend;	AlgI.10.C		These SEs are identical.
8AM.10.D	rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property;	AlgI.10.D		These SEs are identical.
8AM.10.E	factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two; and	AlgI.10.E		These SEs are identical.
8AM.10.F	decide if a binomial can be written as the difference of two squares and, if possible, use the structure of a difference of two squares to rewrite the binomial.	AlgI.10.F		These SEs are identical.
8AM.11	Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to rewrite algebraic expressions into equivalent forms. The student is expected to:	AlgI.11		These KSs are identical.
8AM.11.A	simplify numerical radical expressions involving square roots; and	AlgI.11.A		These SEs are identical.
8AM.11.B	simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents.	AlgI.11.B		These SEs are identical.
8AM.12	Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to write, solve, analyze, and evaluate equations, relations, and functions. The student is expected to:	AlgI.12		These KSs are identical.
8AM.12.A	identify functions using sets of ordered pairs and mappings;	8.5.G	identify functions using sets of ordered pairs, [~~*tables* ~~], mappings, and [~~*graphs* ~~];	Tables and graphs from 8.5.G are subsumed into 8AM.12.B.
8AM.12.B	decide whether relations represented verbally, tabularly, graphically, and symbolically define a function;	AlgI.12.A		These SEs are identical.
8AM.12.C	evaluate functions, expressed in function notation, given one or more elements in their domains;	AlgI.12.B		These SEs are identical.
8AM.12.D	identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes;	AlgI.12.C		These SEs are identical.
8AM.12.E	write a formula for the n^{th} term of arithmetic and geometric sequences, given the value of several of their terms; and	AlgI.12.D		These SEs are identical.
8AM.12.F	solve mathematic and scientific formulas, and other literal equations, for a specified variable.	AlgI.12.E		These SEs are identical.