

**Mathematics Vertical Alignment
Grade 7 and Grade 8**

Grade 7		Grade 8	
7.11	<i>Expressions, equations, and relationships. The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to:</i>	8.8	<i>Expressions, equations, and relationships. The student applies mathematical process standards to use one-variable equations or inequalities in problem situations. The student is expected to:</i>
7.11A	<p>Model and solve one-variable, two-step equations and inequalities.</p> <p><i>Readiness Standard</i></p> <p>Model, Solve</p> <p>ONE-VARIABLE, TWO-STEP EQUATIONS AND INEQUALITIES</p> <p>Including, but not limited to:</p> <ul style="list-style-type: none"> • Equation – a mathematical statement composed of algebraic and/or numeric expressions set equal to each other • Inequality – a mathematical statement composed of algebraic and/or numeric expressions set apart by an inequality symbol • Variable – a letter or symbol that represents a number <ul style="list-style-type: none"> • One variable on one side of the equation or inequality • Coefficient – a number that is multiplied by a variable(s) <ul style="list-style-type: none"> • Integers • Decimals • Fractions • Constant – a fixed value that does not appear with a variable(s) <ul style="list-style-type: none"> • Integers • Decimals • Fractions • Two-step equations and inequalities <ul style="list-style-type: none"> • A “step” only refers to an action involving both sides of the equation or inequality (combining like terms on a single side of the equation or inequality does not constitute a step). • Solution set – a set of all values of the variable(s) that satisfy the equation or inequality <ul style="list-style-type: none"> • Constraints or conditions • Distinguishing between equations and inequalities 	8.8C	<p>Model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants.</p> <p><i>Readiness Standard</i></p> <p>Model, Solve</p> <p>ONE-VARIABLE EQUATIONS WITH VARIABLES ON BOTH SIDES OF THE EQUAL SIGN THAT REPRESENT MATHEMATICAL AND REAL-WORLD PROBLEMS USING RATIONAL NUMBER COEFFICIENTS AND CONSTANTS</p> <p>Including, but not limited to:</p> <ul style="list-style-type: none"> • Equation – a mathematical statement composed of algebraic and/or numeric expressions set equal to each other • Variable – a letter or symbol that represents a number <ul style="list-style-type: none"> • One variable on both sides of the equation • Coefficient – a number that is multiplied by a variable(s) <ul style="list-style-type: none"> • Integers • Decimals (positive or negative) • Fractions (positive or negative) • Constant – a fixed value that does not appear with a variable(s) <ul style="list-style-type: none"> • Integers • Decimals (positive or negative) • Fractions (positive or negative) • Characteristics of equations <ul style="list-style-type: none"> • Equates two expressions • Equality of the variable • One solution • Equality words and symbol <ul style="list-style-type: none"> • Equal to, =

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<ul style="list-style-type: none"> • Characteristics of equations <ul style="list-style-type: none"> • Equates two expressions • Equality of the variable • One solution • Characteristics of inequalities <ul style="list-style-type: none"> • Shows the relationship between two expressions in terms of $>$, $<$, \geq, \leq, or \neq • Inequality of the variable • One or more solutions • Equality and inequality words and symbols <ul style="list-style-type: none"> • Equal to, = • Greater than, $>$ • Greater than or equal to, \geq • Less than, $<$ • Less than or equal to, \leq • Not equal to, \neq • Relationship of order of operations within an equation or inequality <ul style="list-style-type: none"> • Order of operations – the rules of which calculations are performed first when simplifying an expression <ul style="list-style-type: none"> • Parentheses/brackets: simplify expressions inside parentheses or brackets in order from left to right • Exponents: rewrite in standard numerical form and simplify from left to right <ul style="list-style-type: none"> • Limited to positive whole number exponents • Multiplication/division: simplify expressions involving multiplication and/or division in order from left to right • Addition/subtraction: simplify expressions involving addition and/or subtraction in order from left to right • Model and solve one-variable, two-step equations (concrete, pictorial, algebraic) • Model and solve one-variable, two-step inequalities (concrete, pictorial, algebraic) • Solutions to one-variable, two-step equations from a problem situation • Solutions to one-variable, two-step inequalities from a problem situation <p>Note(s):</p>	<ul style="list-style-type: none"> • Relationship of order of operations within an equation <ul style="list-style-type: none"> • Order of operations – the rules of which calculations are performed first when simplifying an expression <ul style="list-style-type: none"> • Parentheses/brackets: simplify expressions inside parentheses or brackets in order from left to right • Exponents: rewrite in standard numerical form and simplify from left to right • Multiplication/division: simplify expressions involving multiplication and/or division in order from left to right • Addition/subtraction: simplify expressions involving addition and/or subtraction in order from left to right • Models to solve one-variable equations with variables on both sides of the equal sign (concrete, pictorial, algebraic) • Solutions to one-variable equations with variables on both sides of the equal sign from mathematical and real-world problem situations • Possible solutions <ul style="list-style-type: none"> • One real solution • No solution • Infinite solutions (all real solutions) <p>Note(s):</p> <ul style="list-style-type: none"> • Grade Level(s): <ul style="list-style-type: none"> • Grade 7 modeled and solved one-variable, two-step equations and inequalities. • Algebra I will 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. • Various mathematical process standards will be applied to this student expectation as appropriate. • TxRCFP: <ul style="list-style-type: none"> • Using expressions and equations to describe relationships, including the Pythagorean Theorem • TxCCRS: <ul style="list-style-type: none"> • II.A. Algebraic Reasoning – Identifying expressions and equations <ul style="list-style-type: none"> • II.A.1. Explain the difference between expressions and equations.
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<ul style="list-style-type: none"> • Grade Level(s): <ul style="list-style-type: none"> • Grade 6 modeled and solved one-variable, one-step equations and inequalities that represented problems, including geometric concepts. • Grade 8 will model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants. • Various mathematical process standards will be applied to this student expectation as appropriate. • TxRCFP: <ul style="list-style-type: none"> • Using expressions and equations to describe relationships in a variety of contexts, including geometric problems • TxCCRS: <ul style="list-style-type: none"> • I.A. Numeric Reasoning – Number representations and operations <ul style="list-style-type: none"> • I.A.2. Perform computations with rational and irrational numbers. • II.C. Algebraic Reasoning – Solving equations, inequalities, and systems of equations and inequalities <ul style="list-style-type: none"> • II.C.2. Explain the difference between the solution set of an equation and the solution set of an inequality. • VII.A. Problem Solving and Reasoning – Mathematical problem solving <ul style="list-style-type: none"> • VII.A.3. Determine a solution. • VIII.A. Communication and Representation – Language, terms, and symbols of mathematics <ul style="list-style-type: none"> • VIII.A.1. Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem. • VIII.B. Communication and Representation – Interpretation of mathematical work <ul style="list-style-type: none"> • VIII.B.1. Model and interpret mathematical ideas and concepts using multiple representations. 	<ul style="list-style-type: none"> • II.C. Algebraic Reasoning – Solving equations, inequalities, and systems of equations and inequalities <ul style="list-style-type: none"> • II.C.3. Recognize and use algebraic properties, concepts, and algorithms to solve equations, inequalities, and systems of linear equations and inequalities. • II.D. Algebraic Reasoning – Representing relationships <ul style="list-style-type: none"> • II.D.2. Convert among multiple representations of equations, inequalities, and relationships. • VII.A. Problem Solving and Reasoning – Mathematical problem solving <ul style="list-style-type: none"> • VII.A.3. Determine a solution. • VII.D. Problem Solving and Reasoning – Real-world problem solving <ul style="list-style-type: none"> • VII.D.1. Interpret results of the mathematical problem in terms of the original real-world situation. • VIII.A. Communication and Representation – Language, terms, and symbols of mathematics <ul style="list-style-type: none"> • VIII.A.1. Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem. • VIII.A.3. Use mathematical language for reasoning, problem solving, making connections, and generalizing. • VIII.C. Communication and Representation – Presentation and representation of mathematical work <ul style="list-style-type: none"> • VIII.C.1. Communicate mathematical ideas, reasoning, and their implications using symbols, diagrams, models, graphs, and words. • IX.B. Connections – Connections of mathematics to nature, real-world situations, and everyday life <ul style="list-style-type: none"> • IX.B.1. Use multiple representations to demonstrate links between mathematical and real-world situations. • IX.B.2. Understand and use appropriate mathematical models in the natural, physical, and social sciences.
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