

**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><b>Model and solve one-variable, two-step equations and inequalities.</b></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"> <li>• Equation – a mathematical statement composed of algebraic and/or numeric expressions set equal to each other</li> <li>• Inequality – a mathematical statement composed of algebraic and/or numeric expressions set apart by an inequality symbol</li> <li>• Variable – a letter or symbol that represents a number               <ul style="list-style-type: none"> <li>• One variable on one side of the equation or inequality</li> </ul> </li> <li>• Coefficient – a number that is multiplied by a variable(s)               <ul style="list-style-type: none"> <li>• Integers</li> <li>• Decimals</li> <li>• Fractions</li> </ul> </li> <li>• Constant – a fixed value that does not appear with a variable(s)               <ul style="list-style-type: none"> <li>• Integers</li> <li>• Decimals</li> <li>• Fractions</li> </ul> </li> <li>• Two-step equations and inequalities               <ul style="list-style-type: none"> <li>• 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).</li> </ul> </li> <li>• Solution set – a set of all values of the variable(s) that satisfy the equation or inequality               <ul style="list-style-type: none"> <li>• Constraints or conditions</li> </ul> </li> <li>• Distinguishing between equations and inequalities</li> </ul>	8.8C	<p><b>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.</b></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"> <li>• Equation – a mathematical statement composed of algebraic and/or numeric expressions set equal to each other</li> <li>• Variable – a letter or symbol that represents a number               <ul style="list-style-type: none"> <li>• One variable on both sides of the equation</li> </ul> </li> <li>• Coefficient – a number that is multiplied by a variable(s)               <ul style="list-style-type: none"> <li>• Integers</li> <li>• Decimals (positive or negative)</li> <li>• Fractions (positive or negative)</li> </ul> </li> <li>• Constant – a fixed value that does not appear with a variable(s)               <ul style="list-style-type: none"> <li>• Integers</li> <li>• Decimals (positive or negative)</li> <li>• Fractions (positive or negative)</li> </ul> </li> <li>• Characteristics of equations               <ul style="list-style-type: none"> <li>• Equates two expressions</li> <li>• Equality of the variable</li> <li>• One solution</li> </ul> </li> <li>• Equality words and symbol               <ul style="list-style-type: none"> <li>• Equal to, =</li> </ul> </li> </ul>

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

<ul style="list-style-type: none"> <li>• Characteristics of equations             <ul style="list-style-type: none"> <li>• Equates two expressions</li> <li>• Equality of the variable</li> <li>• One solution</li> </ul> </li> <li>• Characteristics of inequalities             <ul style="list-style-type: none"> <li>• Shows the relationship between two expressions in terms of <math>&gt;</math>, <math>&lt;</math>, <math>\geq</math>, <math>\leq</math>, or <math>\neq</math></li> <li>• Inequality of the variable</li> <li>• One or more solutions</li> </ul> </li> <li>• Equality and inequality words and symbols             <ul style="list-style-type: none"> <li>• Equal to, =</li> <li>• Greater than, <math>&gt;</math></li> <li>• Greater than or equal to, <math>\geq</math></li> <li>• Less than, <math>&lt;</math></li> <li>• Less than or equal to, <math>\leq</math></li> <li>• Not equal to, <math>\neq</math></li> </ul> </li> <li>• Relationship of order of operations within an equation or inequality             <ul style="list-style-type: none"> <li>• Order of operations – the rules of which calculations are performed first when simplifying an expression                 <ul style="list-style-type: none"> <li>• Parentheses/brackets: simplify expressions inside parentheses or brackets in order from left to right</li> <li>• Exponents: rewrite in standard numerical form and simplify from left to right                     <ul style="list-style-type: none"> <li>• Limited to positive whole number exponents</li> </ul> </li> <li>• Multiplication/division: simplify expressions involving multiplication and/or division in order from left to right</li> <li>• Addition/subtraction: simplify expressions involving addition and/or subtraction in order from left to right</li> </ul> </li> <li>• Model and solve one-variable, two-step equations (concrete, pictorial, algebraic)</li> <li>• Model and solve one-variable, two-step inequalities (concrete, pictorial, algebraic)</li> <li>• Solutions to one-variable, two-step equations from a problem situation</li> <li>• Solutions to one-variable, two-step inequalities from a problem situation</li> </ul> </li> </ul> <p>Note(s):</p>	<ul style="list-style-type: none"> <li>• Relationship of order of operations within an equation             <ul style="list-style-type: none"> <li>• Order of operations – the rules of which calculations are performed first when simplifying an expression                 <ul style="list-style-type: none"> <li>• Parentheses/brackets: simplify expressions inside parentheses or brackets in order from left to right</li> <li>• Exponents: rewrite in standard numerical form and simplify from left to right</li> <li>• Multiplication/division: simplify expressions involving multiplication and/or division in order from left to right</li> <li>• Addition/subtraction: simplify expressions involving addition and/or subtraction in order from left to right</li> </ul> </li> <li>• Models to solve one-variable equations with variables on both sides of the equal sign (concrete, pictorial, algebraic)</li> <li>• Solutions to one-variable equations with variables on both sides of the equal sign from mathematical and real-world problem situations</li> <li>• Possible solutions                 <ul style="list-style-type: none"> <li>• One real solution</li> <li>• No solution</li> <li>• Infinite solutions (all real solutions)</li> </ul> </li> </ul> </li> </ul> <p>Note(s):</p> <ul style="list-style-type: none"> <li>• Grade Level(s):             <ul style="list-style-type: none"> <li>• Grade 7 modeled and solved one-variable, two-step equations and inequalities.</li> <li>• 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.</li> <li>• Various mathematical process standards will be applied to this student expectation as appropriate.</li> </ul> </li> <li>• TxRCFP:             <ul style="list-style-type: none"> <li>• Using expressions and equations to describe relationships, including the Pythagorean Theorem</li> </ul> </li> <li>• TxCCRS:             <ul style="list-style-type: none"> <li>• II.A. Algebraic Reasoning – Identifying expressions and equations                 <ul style="list-style-type: none"> <li>• II.A.1. Explain the difference between expressions and equations.</li> </ul> </li> </ul> </li> </ul>
---	--

### Mathematics Vertical Alignment Grade 7 and Grade 8

<ul style="list-style-type: none"> <li>• Grade Level(s):             <ul style="list-style-type: none"> <li>• Grade 6 modeled and solved one-variable, one-step equations and inequalities that represented problems, including geometric concepts.</li> <li>• 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.</li> <li>• Various mathematical process standards will be applied to this student expectation as appropriate.</li> </ul> </li> <li>• TxRCFP:             <ul style="list-style-type: none"> <li>• Using expressions and equations to describe relationships in a variety of contexts, including geometric problems</li> </ul> </li> <li>• TxCCRS:             <ul style="list-style-type: none"> <li>• I.A. Numeric Reasoning – Number representations and operations                 <ul style="list-style-type: none"> <li>• I.A.2. Perform computations with rational and irrational numbers.</li> </ul> </li> <li>• II.C. Algebraic Reasoning – Solving equations, inequalities, and systems of equations and inequalities                 <ul style="list-style-type: none"> <li>• II.C.2. Explain the difference between the solution set of an equation and the solution set of an inequality.</li> </ul> </li> <li>• VII.A. Problem Solving and Reasoning – Mathematical problem solving                 <ul style="list-style-type: none"> <li>• VII.A.3. Determine a solution.</li> </ul> </li> <li>• VIII.A. Communication and Representation – Language, terms, and symbols of mathematics                 <ul style="list-style-type: none"> <li>• VIII.A.1. Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem.</li> </ul> </li> <li>• VIII.B. Communication and Representation – Interpretation of mathematical work                 <ul style="list-style-type: none"> <li>• VIII.B.1. Model and interpret mathematical ideas and concepts using multiple representations.</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• II.C. Algebraic Reasoning – Solving equations, inequalities, and systems of equations and inequalities             <ul style="list-style-type: none"> <li>• II.C.3. Recognize and use algebraic properties, concepts, and algorithms to solve equations, inequalities, and systems of linear equations and inequalities.</li> </ul> </li> <li>• II.D. Algebraic Reasoning – Representing relationships             <ul style="list-style-type: none"> <li>• II.D.2. Convert among multiple representations of equations, inequalities, and relationships.</li> </ul> </li> <li>• VII.A. Problem Solving and Reasoning – Mathematical problem solving             <ul style="list-style-type: none"> <li>• VII.A.3. Determine a solution.</li> </ul> </li> <li>• VII.D. Problem Solving and Reasoning – Real-world problem solving             <ul style="list-style-type: none"> <li>• VII.D.1. Interpret results of the mathematical problem in terms of the original real-world situation.</li> </ul> </li> <li>• VIII.A. Communication and Representation – Language, terms, and symbols of mathematics             <ul style="list-style-type: none"> <li>• VIII.A.1. Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem.</li> <li>• VIII.A.3. Use mathematical language for reasoning, problem solving, making connections, and generalizing.</li> </ul> </li> <li>• VIII.C. Communication and Representation – Presentation and representation of mathematical work             <ul style="list-style-type: none"> <li>• VIII.C.1. Communicate mathematical ideas, reasoning, and their implications using symbols, diagrams, models, graphs, and words.</li> </ul> </li> <li>• IX.B. Connections – Connections of mathematics to nature, real-world situations, and everyday life             <ul style="list-style-type: none"> <li>• IX.B.1. Use multiple representations to demonstrate links between mathematical and real-world situations.</li> <li>• IX.B.2. Understand and use appropriate mathematical models in the natural, physical, and social sciences.</li> </ul> </li> </ul>
--	---