

Skills and Concepts to Enhance (73% Probability*) 211 - 220	Skills and Concepts to Develop (50% Probability*) 221 - 230	Skills and Concepts to Introduce (27% Probability*) 231 - 240
<p>Expressions and Equations</p> <ul style="list-style-type: none"> • Uses rounding to estimate answers to 2-step problems involving money (using decimals) • Demonstrates an understanding of the associative property of multiplication • Demonstrates an understanding of the distributive property of multiplication by decomposing a term • Calculates the value of a power (e.g., $2^3 = 8$) • Uses a table of input/output values to represent patterns • Understands equivalence and extends the concept to number sentences involving variables (e.g., $8 + 2 = \square + 2$) • Uses algebraic reasoning to solve problems involving equality relationships • Uses simple linear equations to represent problem situations • Solves simple open sentences with missing factors (numbers over 100) • Solves open sentences using the distributive property • Solves open sentences with calculations on both sides of the sentence • Solves 2-step open sentences with missing factors • Solves 1-step linear equations • Applies algebraic methods to solve theoretical problems • Translates a 2-step problem to a symbolic expression or equation • Solves real-world problems using reasoning strategies • Uses powers to represent 10, 100, 1000, 10,000, and 100,000 	<p>Expressions and Equations</p> <ul style="list-style-type: none"> • Solves real-world problems involving rate of pay • Solves difficult real-world problems involving decimals (e.g., multiple multiplications, conversions) • Uses the distributive property • Calculates the value of a power (e.g., $2^3 = 8$) • Solves problems involving simple interest rates with the formula • Uses a table of input/output values to represent patterns • Uses basic operations on algebraic expressions (substituting for unknowns) • Recognizes commutative, associative, distributive, symmetric, transitive, and reflexive properties • Uses basic operations on algebraic expressions (expanding - monomial by a binomial) • Demonstrates an understanding of properties (e.g., commutative, associative, distributive, properties of 0) • Writes equivalent forms of algebraic expressions (e.g., $(x + 3)/2 = x/2 + 3/2$) • Represents relationships of quantities in the form of an expression • Uses basic operations on algebraic expressions (uses correct order of operations) • Expresses a simple linear equation from a contextual situation • Solves open sentences with calculations on both sides of the sentence • Solves 2-step open sentences with missing factors • Solves 1-step linear equations • Solves 2-step linear equations • Solves linear equations with decimals • Solves linear equations with integers • Writes equivalent forms of algebraic equations using addition and subtraction • Solves open sentences with decimals • Solves linear equations in a real-world context using a given formula • Applies algebraic methods to solve theoretical problems • Applies algebraic methods to solve real-world problems • Uses graphs to solve simple systems of linear equations • Applies systems-of-linear-equations methods to solve theoretical problems • Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step) • Solves real-world problems using reasoning strategies 	<p>Expressions and Equations</p> <ul style="list-style-type: none"> • Evaluates numerical expressions using the order of operations (whole numbers only) • Evaluates expressions using the order of operations, including exponents (whole numbers only) • Solves real-world problems involving rate of pay • Solves real-world problems involving rate of pay with time and a half • Solves difficult real-world problems involving decimals (e.g., multiple multiplications, conversions) • Evaluates numerical expressions using the order of operations (using integers) • Divides rational expressions in a/b form • Uses the distributive property • Calculates the power of a number (e.g., $8 = 2^3$) • Evaluates expressions containing powers (e.g., $3^2 \times 2^3$) • Applies rules for multiplying and dividing powers • Solves problems with scientific notation • Describes and uses a variable with whole numbers, multiplication, and division in a contextual situation • Uses expressions to represent situations that involve variable quantities with exponents • Uses basic operations on algebraic expressions (substituting for unknowns) • Uses basic operations on algebraic expressions (substituting for unknown exponents) • Recognizes commutative, associative, distributive, symmetric, transitive, and reflexive properties • Uses basic operations on algebraic expressions (combining like terms) • Uses basic operations on algebraic expressions (expanding - monomial by a binomial) • Writes equivalent forms of algebraic expressions (e.g., $(x + 3)/2 = x/2 + 3/2$) • Represents relationships of quantities in the form of an expression • Uses basic operations on algebraic expressions (uses correct order of operations) • Expresses a simple linear equation from a contextual situation • Solves 2-step open sentences with missing factors (variables on both sides of the sentence) • Solves 2-step linear equations • Solves linear equations with integers • Solves linear equations with fractions

Explanatory Notes

* At the range mid-point, this is the probability students would correctly answer items measuring these concepts and skills. Both data from test items and review by NWEA curriculum specialists are used to place Learning Continuum statements into appropriate RIT ranges. Blank cells indicate data are limited or unavailable for this range or document version.

Skills and Concepts to Enhance (73% Probability*) 211 - 220	Skills and Concepts to Develop (50% Probability*) 221 - 230	Skills and Concepts to Introduce (27% Probability*) 231 - 240
Expressions and Equations	Expressions and Equations <ul style="list-style-type: none"> • Uses powers to represent 10, 100, 1000, 10,000, and 100,000 • Writes a number expressed in scientific notation in standard form 	Expressions and Equations <ul style="list-style-type: none"> • Solves linear equations using rational numbers • Applies algebraic methods to solve real-world problems • Determines slope from a linear equation • Uses polynomial equations to solve complex real-world problems (e.g., using distributive property, variables on both sides) • Uses graphs to solve simple systems of linear equations • Solves simple one-step inequality open sentences • Expresses a simple linear inequality from a contextual situation • Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step) • Solves simple linear inequalities using graphs • Solves problems involving capacity in the metric system and converts to larger or smaller units • Converts from Celsius to Fahrenheit, given conversion ratios • Determines the prime factorization of a number • Writes a whole number in scientific notation
Use Functions to Model Relationships <ul style="list-style-type: none"> • Completes a function table given a simple rule (e.g., $x + 2$) • Solves problems involving simple functions • Looks for a growing pattern to solve a problem • Interprets data in line graphs (e.g., change over time) 	Use Functions to Model Relationships <ul style="list-style-type: none"> • Extends a growing pattern of triangular numbers, defined by objects or diagrams • Represents geometric sequences using written descriptions in recursive terms (present term, next term) • Solves problems involving simple functions • Looks for a growing pattern to solve a problem 	Use Functions to Model Relationships <ul style="list-style-type: none"> • Recognizes and extends arithmetic sequences (predicts nth term) • Represents geometric sequences using written descriptions in recursive terms (present term, next term) • Recognizes and extends the Fibonacci sequence • Writes linear equations when given ordered pairs • Writes the equation of a horizontal or vertical line when given the graph of the line • Represents real-world functions using an equation • Uses mapping diagrams to represent functions • Uses tables to determine function equations • Identifies the graph type, given equations of linear and nonlinear functions • Solves problems involving simple functions • Solves problems involving complex functions • Interprets data given in line graphs to solve problems
<i>New Vocabulary:</i> None	<i>New Vocabulary:</i> algebra, net, reflexive, short, transitive	<i>New Vocabulary:</i> algebraic sentence, depreciate, equation of a line, is less than, regression equation, time-and-a-half
<i>New Signs and Symbols:</i> () parenthesis around an integer, a.m., ¢ cent sign, °F degrees Fahrenheit, \$ dollar sign, lb pound, mph miles per hour	<i>New Signs and Symbols:</i> < less than, m meter/metre, repeating decimal overbar, Δ triangle	<i>New Signs and Symbols:</i> ≤, ≥, () ordered pair, f(x) the value of the function f at x, > greater than, > greater than, ≥ greater than or equal to, km kilometer/kilometre, ≤ less than or equal to, • multiplication symbol (dot), - subtraction

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