Number Sentences, Equations, and Equivalence

Students	Learning Continuum Statements:
Students:	**RIT 151-160:** • Determines unknown parts in addition equations with whole numbers, sums within 20
Students:	**RIT 161-170:** • Determines start or change unknown in subtraction equations with whole numbers within 100 • Determines start or change unknown in subtraction equations with whole numbers within 20 • Determines unknown parts in addition equations with whole numbers, sums within 100 • Determines unknown parts in addition equations with whole numbers, sums within 20
Students:	**RIT 171-180:** • Determines start or change unknown in subtraction equations with whole numbers within 100 • Determines start or change unknown in subtraction equations with whole numbers within 20 • Determines unknown factors in multiplication equations with whole numbers and products within 100 • Determines unknown parts in addition equations with whole numbers, sums within 100 • Determines unknown parts in addition equations with whole numbers, sums within 20 • Identifies equivalent whole-number addition or subtraction expressions • Solves one-step linear equations with positive rational numbers
Students:	**RIT 181-190:** • Determines start or change unknown in addition equations with decimals • Determines start or change unknown in subtraction equations with whole numbers within 100 • Determines start or change unknown in subtraction equations with whole numbers within 20 • Determines unknown divisors in division equations with whole numbers and dividends within 100 • Determines unknown factors in multiplication equations with whole numbers and products within 100 • Determines unknown operational symbols in multi-step equations with whole numbers • Determines unknown parts in addition equations with whole numbers, sums greater than 100 • Determines unknown parts in addition equations with whole numbers, sums within 100 • Determines unknown parts in addition equations with whole numbers, sums within 20 • Identifies equivalent whole-number addition or subtraction expressions • Identifies true one-step addition and subtraction equations involving whole numbers • Solves one-step linear equations with positive rational numbers

Students:	RIT 191-200:

- Determines start or change unknown in subtraction equations with whole numbers greater than 100
- Determines unknown divisors in division equations with whole numbers and dividends within 100
- Determines unknown factors in multiplication equations with whole numbers and products within 100
- Determines unknown operational symbols in multi-step equations with whole numbers
- Determines unknown parts in addition equations with whole numbers, sums greater than 100
- Determines unknown parts in addition equations with whole numbers, sums within 100
- Determines unknown parts in multi-step equations with whole numbers
- Identifies equivalent whole-number addition or subtraction expressions
- Represents division equations with whole numbers as part-unknown multiplication equations
- Represents subtraction equations with whole numbers as part-unknown addition equations
- Solves one-step linear equations with positive rational numbers

Students:	RIT 201-210:

- Compares expressions using symbols
- Determines start or change unknown in subtraction equations with whole numbers greater than 100
- Determines unknown divisors in division equations with whole numbers and dividends within 100
- Determines unknown factors in multiplication equations with whole numbers and products greater than 100
- Determines unknown factors in multiplication equations with whole numbers and products within 100
- Determines unknown operational symbols in multi-step equations with whole numbers
- Determines unknown parts in multi-step equations with whole numbers
- Identifies true multi-step addition and subtraction equations with whole numbers
- Represents division equations with whole numbers as part-unknown multiplication equations
- Represents subtraction equations with whole numbers as part-unknown addition equations
- Solves one-step linear equations with negative rational numbers
- Solves one-step linear equations with positive rational numbers
- Solves problems involving equations represented on a balanced scale
- Translates between verbal and algebraic equations

Students:	RIT 211-220:

- Determines start or change unknown in subtraction equations with whole numbers greater than 100
- Determines the value of a symbol given two or more equations composed of multiple symbols
- Determines unknown factors in multiplication equations with whole numbers and products greater than 100
- Determines unknown parts in addition equations with fractions, like denominators
- Determines unknown parts in multi-step equations with whole numbers

- Determines unknown parts in multi-step equations with whole numbers and parentheses
- Determines whether a linear equation or inequality is true for a given value of the variable
- Identifies true multi-step addition and subtraction equations with whole numbers
- Represents division equations with whole numbers as part-unknown multiplication equations
- Represents subtraction equations with whole numbers as part-unknown addition equations
- Solves one-step linear equations with negative rational numbers
- Solves one-step linear equations with positive rational numbers
- Solves problems involving equations represented on a balanced scale
- Solves quadratic equations in the form $x^2 = c$
- Solves two-step linear equations with positive rational numbers
- Understands the meaning of the not equal sign
- Writes a one-step linear equation in one variable to represent a real-world or mathematical context
- Writes and solves a two-step linear equation in one variable involving a real-world or mathematical context

Students: **RIT 221-230:**

- Determines the value of a symbol given two or more equations composed of multiple symbols
- Determines unknown factors in multiplication equations with fractions
- Determines unknown parts in multi-step equations with whole numbers
- Determines whether a linear equation or inequality is true for a given value of the variable
- Solves absolute value equations
- Solves cubic equations by taking cube roots
- Solves multi-step linear equations with positive and negative rational numbers
- Solves one-step linear equations with negative rational numbers
- Solves one-step linear equations with positive rational numbers
- Solves problems involving equations represented on a balanced scale
- Solves quadratic equations in one variable using factoring, the quadratic formula, or other appropriate method
- Solves quadratic equations in the form $x^2 = c$
- Solves two-step linear equations with negative rational numbers
- Solves two-step linear equations with positive rational numbers
- Understands the meaning of the not equal sign
- Writes a one-step linear equation in one variable to represent a real-world or mathematical context
- Writes and solves a two-step linear equation in one variable involving a real-world or mathematical context

Students: **RIT 231-240:**

- Applies the multiplicative property of equality when solving an equation
- Determines unknown dividends or divisors in division equations with fractions
- Determines unknown factors in multiplication equations with fractions
- Determines whether a linear equation or inequality is true for a given value of the variable
- Evaluates formulas or linear equations at given values for the variables
- Solves absolute value equations
- Solves cubic equations by taking cube roots
- Solves multi-step linear equations with positive and negative rational numbers

- Solves one-step linear equations with negative rational numbers
- Solves one-step linear equations with positive rational numbers
- Solves quadratic equations in one variable using factoring, the quadratic formula, or other appropriate method
- Solves quadratic equations in the form $x^2 = c$
- Solves radical equations that lead to linear equations
- Solves two-step linear equations with negative rational numbers
- Solves two-step linear equations with positive rational numbers
- Writes a multi-step linear equation in one variable to represent a real-world or mathematical context
- Writes a two-step linear equation in one variable to represent a real-world or mathematical context
- Writes and solves a multi-step quadratic equation in one variable involving a real-world or mathematical context
- Writes and solves a one-step quadratic equation in the form $x^2 = c$ involving a real-world or mathematical context
- Writes and solves a two-step linear equation in one variable involving a real-world or mathematical context
- Writes the equation of a vertical line given a graph

Students:	**RIT 241-250:**

- Applies the simple interest formula to solve for the interest rate, principal, or time invested
- Determines the number of solutions of a linear equation in one variable by transforming the equation into an equivalent one to reach a decision
- Determines unknown dividends or divisors in division equations with fractions
- Determines unknown factors in multiplication equations with fractions
- Determines unknown parts in addition equations with fractions, unlike denominators
- Determines whether an absolute value equation or inequality is true for a given value of the variable
- Evaluates formulas or linear equations at given values for the variables
- Identifies an ordered pair that is a solution to a two-variable equation
- Solves absolute value equations
- Solves literal equations for linear variables
- Solves multi-step linear equations with positive and negative rational numbers
- Solves one-step linear equations with positive rational numbers
- Solves quadratic equations in one variable using factoring, the quadratic formula, or other appropriate method
- Solves quadratic equations in the form $x^2 = c$
- Solves radical equations that lead to a quadratic equation
- Solves radical equations that lead to linear equations
- Solves rational equations
- Solves two-step linear equations with negative rational numbers
- Solves two-step linear equations with positive rational numbers
- Understands the slope of a vertical line is undefined
- Writes a multi-step linear equation in one variable to represent a real-world or mathematical context
- Writes a quadratic equation in one variable to represent a real-world or mathematical context
- Writes and solves a multi-step linear equation in one variable involving a real-world or mathematical context

- Writes and solves a multi-step quadratic equation in one variable involving a real-world or mathematical context
- Writes and solves a one-step quadratic equation in the form x² = c involving a real-world or mathematical context
- Writes and solves a two-step linear equation in one variable involving a real-world or mathematical context

Students:	RIT 251-260:
	- Determines the nature of the solutions of a quadratic equation - Determines the number of solutions of a linear equation in one variable by transforming the equation into an equivalent one to reach a decision - Determines unknown dividends or divisors in division equations with fractions - Determines whether an absolute value equation or inequality is true for a given value of the variable - Identifies an ordered pair that is a solution to a two-variable equation - Solves absolute value equations - Solves exponential equations by rewriting each side of the equation using the same base - Solves literal equations for linear variables - Solves literal equations for nonlinear variables - Solves multi-step linear equations with positive and negative rational numbers - Solves polynomial equations - Solves quadratic equations in one variable using factoring, the quadratic formula, or other appropriate method - Solves quadratic equations with complex solutions - Solves radical equations that lead to a quadratic equation - Solves radical equations that lead to linear equations - Solves rational equations - Writes a multi-step linear equation in one variable to represent a real-world or mathematical context - Writes a quadratic equation in one variable to represent a real-world or mathematical context - Writes an absolute value equation in one variable to represent a real-world or mathematical context - Writes and solves a multi-step linear equation in one variable involving a real-world or mathematical context - Writes and solves a multi-step quadratic equation in one variable involving a real-world or mathematical context - Writes and solves a one-step quadratic equation in the form x² = c involving a real-world or mathematical context
Students:	RIT 261-270:
	- Determines the nature of the solutions of a quadratic equation - Identifies an ordered pair that is a solution to a two-variable equation - Represents solutions to exponential equations using logarithms - Solves absolute value equations - Solves literal equations for linear variables - Solves literal equations for nonlinear variables - Solves quadratic equations in one variable by completing the square

- Solves quadratic equations in one variable using factoring, the quadratic formula, or other appropriate method
- Solves quadratic equations with complex solutions
- Solves radical equations that lead to a quadratic equation
- Solves radical equations that lead to linear equations
- Solves rational equations
- Writes a quadratic equation in one variable to represent a real-world or mathematical context
- Writes and solves a multi-step linear equation in one variable involving a real-world or mathematical context
- Writes and solves a multi-step quadratic equation in one variable involving a real-world or mathematical context
- Writes and solves a rational equation in one variable involving a real-world or mathematical context
- Writes and solves an exponential equation in one variable involving a real-world or mathematical context

Students: RIT 271-280:

- Represents solutions to exponential equations using logarithms
- Solves literal equations for nonlinear variables
- Solves quadratic equations in one variable using factoring, the quadratic formula, or other appropriate method
- Solves rational equations
- Understands the relationship between the discriminant and the nature of solutions
- Writes a quadratic equation in one variable to represent a real-world or mathematical context
- Writes an exponential equation in one variable to represent a real-world or mathematical context
- Writes and solves a multi-step linear equation in one variable involving a real-world or mathematical context
- Writes and solves a rational equation in one variable involving a real-world or mathematical context

Students: RIT 281-290:

- Determines the quadratic equation that is used to solve a given radical equation
- Represents solutions to exponential equations using logarithms
- Solves literal equations for nonlinear variables
- Solves logarithmic equations
- Writes and solves a rational equation in one variable involving a real-world or mathematical context

Students: RIT 291-300:

- Represents solutions to exponential equations using logarithms
- Solves literal equations for nonlinear variables
- Writes and solves a rational equation in one variable involving a real-world or mathematical context