

## Math: Algebra, Functions, Expressions & Equations: Solve Problems and Use Equations & Inequalities

### Students: DesCartes Statements:

#### Students:

##### RIT Above 260:

- Uses the compound interest equation to solve problems
- Rewrites a complex formula to solve for a specific variable
- Solves quadratic equations using the quadratic formula
- Solves quadratic equations by completing the square
- Solves logarithmic equations
- Solves real-world systems of linear equations
- Solves polynomial inequalities

#### Students:

##### RIT 251-260:

- Uses reasoning strategies to solve problems
- Solves linear equations using rational numbers
- Applies algebraic methods to solve complex real-world and theoretical problems
- Solves problems involving consecutive numbers
- Rewrites a complex formula to solve for a specific variable
- Writes linear equations, given two points on a line
- Solves quadratic equations by factoring
- Solves quadratic equations by completing the square
- Uses polynomial equations to solve complex theoretical problems (e.g., using distributive property, variables on both sides)
- Uses polynomial equations to solve area and perimeter problems
- Solves logarithmic equations
- Uses the Multiplication Property of Equality as a first step in solving systems of linear equations
- Uses substitution as a first step in solving systems of linear equations
- Uses algebraic methods to solve systems of linear equations
- Uses graphs to solve systems of linear equations in real-world situations
- Solves real-world systems of linear equations
- Solves single variable linear inequalities with variable in both members using number lines

#### Students:

##### RIT 241-250:

- Uses reasoning strategies to solve problems
- Solves problems involving simple interest rates without the formula
- Uses linear equations to represent situations involving variable quantities
- Solves 2-step open sentences with missing factors (variables on both sides of the sentence)
- Solves linear equations with fractions
- Solves linear equations using rational numbers
- Solves open sentences with fractions
- Applies algebraic methods to solve real-world problems
- Applies algebraic methods to solve a variety of real-world and theoretical problems
- Solves problems involving consecutive numbers
- Writes linear equations when given ordered pairs
- Uses polynomial equations to solve complex real-world problems (e.g., using distributive property, variables on both sides)
- Uses the Multiplication Property of Equality as a first step in solving systems of linear equations
- Uses algebraic methods to solve systems of linear equations
- Uses graphs to solve systems of linear equations in real-world situations
- Solves linear inequalities using graphs

#### Students:

##### RIT 231-240:

- Solves real-world problems involving addition and subtraction of fractions where converting both denominators is necessary
- Solves 2- or more step real-world problems involving fractions with multiplication and division
- Solves problems involving fractions (e.g., multiple operations, conversions)
- 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)
- 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 decimals
- Solves linear equations with integers

- Solves linear equations with fractions
- Solves linear equations using rational numbers
- Applies algebraic methods to solve real-world problems
- Uses polynomial equations to solve complex real-world problems (e.g., using distributive property, variables on both sides)
- Expresses a simple linear inequality from a contextual situation
- Solves simple linear inequalities using graphs
- Solves simple inequalities with rational number solutions
- Solves problems involving simple functions

**Students:**

**RIT 221-230:**

- Solves real-world problems using reasoning strategies
- Uses rounding to estimate answers to real-world problems involving numbers 1000 or greater using multiplication and division (whole numbers only)
- Solves complex word problems involving whole number division with remainder (e.g., 2-step, 2-digit divisor)
- Solves real-world multiple-step problems involving whole numbers
- Solves real-world problems involving addition and subtraction of fractions where converting one denominator is necessary
- Solves 1-step real-world problems involving fractions with multiplication and division
- Solves 2- or more step real-world problems involving fractions with multiplication and division
- Solves problems involving fractions (e.g., multiple operations, conversions)
- Solves real-world problems involving rate of pay
- Computes with dollars and cents over \$5.00 and converts to decimals (multiplication/division)
- Computes the value of multiple bills and coins (multiplication/division)
- Solves difficult real-world problems involving decimals (e.g., multiple multiplications, conversions)
- Solves real-world problems involving addition and subtraction of integers
- 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 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
- Applies systems-of-linear-equations methods to solve theoretical problems
- Solves simple one-step inequality open sentences
- Solves problems involving simple functions

**Students:**

**RIT 211-220:**

- Solves real-world problems using reasoning strategies
- Uses number sense strategies to solve problems (multiplication/division)
- Uses rounding to estimate answers to real-world problems involving numbers 1000 or greater using multiplication and division (whole numbers only)
- Uses rounding to estimate answers to difficult multiplication and division problems (whole numbers only)
- Uses rounding to estimate answers to 2-step problems involving money (using decimals)
- Solves whole number word problems with division over  $10 \times 10$
- Solves complex word problems involving whole number division with remainder (e.g., 2-step, 2-digit divisor)
- Solves real-world problems involving 2-step multiple operations, whole numbers only
- Solves real-world multiple-step problems involving whole numbers
- Solves real-world problems involving addition and subtraction of fractions where converting one denominator is necessary
- Solves 1-step real-world problems involving fractions with multiplication and division
- Computes the value of multiple bills and coins (addition/subtraction only)
- Analyzes and computes 1 operation on real-world problems involving money over \$5.00 (addition/subtraction only)
- Solves real-world problems involving decimals (not money) using multiplication
- Analyzes and computes 1 operation on real-world problems involving money over \$5.00 (multiplication/division)
- Computes with dollars and cents over \$5.00 and converts to decimals (multiplication/division)
- Computes addition and subtraction on multiple-step real-world problems involving money

- Computes addition, subtraction, multiplication, and division on multiple-step, real-world problems involving money
- Solves real-world problems involving addition and subtraction of integers
- 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
- Solves problems involving simple functions

**Students:**

**RIT 201-210:**

- Determines the operation needed to solve a real-world problem
- Solves real-world problems using reasoning strategies
- Uses rounding to estimate answers to 2-step problems involving money (using decimals)
- Solves real-world whole number problems involving subtraction with numbers 100 and under (analysis)
- Solves whole number subtraction word problems with numbers over 1000
- Solves word problems involving whole number multiplication with numbers greater than  $10 \times 10$
- Solves word problems with whole number division facts with dividend and divisors less than 11
- Solves simple word problems involving whole number division with remainder (e.g., 1-step, 1-digit divisor)
- Solves whole number word problems with division over  $10 \times 10$
- Solves real-world problems involving 2-step multiple operations, whole numbers only
- Solves real-world 1-step problems involving addition and subtraction of fractions with like denominators
- Computes the value of multiple bills and coins (addition/subtraction only)
- Computes with dollars and cents up to and including \$5.00 and converts to decimals (multiplication/division)
- Computes addition and subtraction on multiple-step real-world problems involving money
- Computes money problems with multiple operations (addition/subtraction only)
- Computes addition, subtraction, multiplication, and division on multiple-step, real-world problems involving money
- Solves real-world problems involving addition and subtraction of integers
- Uses algebraic reasoning to solve problems involving equality relationships
- Uses simple linear equations to represent problem situations
- Solves 1-step open sentences with missing addends (numbers over 100)
- Solves simple open sentences with missing factors (numbers 100 and under)
- Solves 2-step open sentences with missing addends
- Solves open sentences with basic-facts calculations on both sides of the sentence

**Students:**

**RIT 191-200:**

- Determines the operation needed from a simple problem
- Determines the operation needed to solve a real-world problem
- Solves real-world whole number addition problems with sums to 20 (result unknown) - with extraneous information given
- Solves whole number addition word problems with sums over 1000
- Solves real-world whole number problems involving subtraction with numbers 100 and under
- Solves real-world whole number problems involving subtraction with numbers under 1000
- Solves whole number subtraction word problems with numbers over 1000
- Solves word problems involving basic whole number multiplication facts to  $10 \times 10$
- Solves word problems involving whole number multiplication with numbers greater than  $10 \times 10$
- Solves word problems with whole number division facts with dividend and divisors less than 11
- Solves simple word problems involving whole number division with remainder (e.g., 1-step, 1-digit divisor)
- Solves real-world 1-step problems involving addition and subtraction of fractions with like denominators
- Solves real-world 1-step problems involving multiplication or division of a whole number by a fraction
- Identifies the value of a collection of coins to \$1.00 (without picture of coins)
- Adds money with regrouping
- Identifies the value of a collection of coins and bills to \$10.00 by "counting on" (without picture of money)
- Finds equivalent combinations of coins with the same value
- Makes change to \$1.00 by "counting on" or subtracting
- Solves real-world problems involving decimals (not money) using addition and subtraction
- Computes with dollars and cents up to and including \$5.00 and converts to decimals (addition/subtraction only)
- Computes 1 operation on real-world problems involving money over \$5.00 (addition/subtraction only)

- Computes half price (multiplication/division)
- Computes with dollars and cents up to and including \$5.00 and converts to decimals (multiplication/division)
- Computes 1 operation on real-world problems involving money over \$5.00 (multiplication/division)
- Uses algebraic reasoning to solve problems involving equality relationships
- Solves basic facts addition and subtraction open sentences using diagrams and models (e.g., using balances)
- Solves 1-step open sentences with missing addends (numbers 100 and under)
- Solves 1-step open sentences with missing addends (numbers over 100)
- Solves simple open sentences with missing factors (numbers 100 and under)
- Solves 2-step open sentences with missing addends

**Students:**

**RIT 181-190:**

- Determines the operation needed from a simple problem
- Writes a number sentence for a simple problem solving situation
- Uses rounding to estimate answers to real-world problems involving addition of numbers less than 100 (whole numbers only)
- Solves real-world whole number addition problems with sums to 20 (result unknown) - with extraneous information given
- Solves real-world whole number addition problems with sums to 20 (start unknown)
- Solves real-world whole number addition problems with sums to 100 (result unknown)
- Solves real-world whole number addition problems with sums to 1000
- Solves real-world whole number problems involving subtraction with numbers under 20
- Solves real-world whole number problems involving subtraction with numbers 100 and under
- Solves real-world whole number problems involving subtraction with numbers under 1000
- Solves word problems involving basic whole number multiplication facts to  $10 \times 10$
- Solves real-world whole number problems involving addition and subtraction
- Identifies the value of a collection of coins to \$1.00 (without picture of coins)
- Adds money with regrouping
- Identifies the value of a collection of coins and bills to \$10.00 by "counting on" (with picture of money)
- Finds equivalent combinations of coins with the same value
- Combines a collection of coins and identifies the correct notation
- Makes change to \$1.00 by "counting on" or subtracting
- Computes with dollars and cents up to and including \$5.00 and converts to decimals (addition/subtraction only)
- Computes 1 operation on addition or subtraction real-world problems involving money up to \$5.00
- Solves basic facts addition and subtraction open sentences using diagrams and models (e.g., using balances)
- Solves linear equations with basic facts - 1-step addition using a letter for the variable
- Solves 1-step open sentences with missing addends (numbers 100 and under)

**Students:**

**RIT 171-180:**

- Determines the operation needed from a simple problem
- Writes a number sentence for a simple problem solving situation
- Solves real-world whole number addition problems with sums to 20 (result unknown)
- Solves real-world whole number addition problems with sums to 20 (start unknown)
- Solves real-world whole number addition problems with sums to 20 (change unknown)
- Solves real-world whole number addition problems with sums to 100 (result unknown)
- Solves real-world whole number addition problems with sums to 1000
- Solves real-world whole number problems involving subtraction with numbers under 20
- Adds money vertically with no regrouping
- Identifies the value of a collection of coins to \$1.00 (with pictures of coins)
- Identifies the value of a collection of coins and bills to \$10.00 by "counting on" (with picture of money)
- Solves basic-facts open sentences - addition and subtraction
- Solves linear equations with basic facts - 1-step addition using a letter for the variable

**Students:**

**RIT Below 171:**

- Solves real-world whole number addition problems with sums to 20 (result unknown)
- Adds money vertically with no regrouping
- Solves basic-facts open sentences - addition and subtraction