

# DesCartes (Combined)

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**Subject: Mathematics**  
**Goal: Algebraic Concepts**



Subject: Mathematics  
 Goal Strand: Algebraic Concepts  
 RIT Score Range: Below 171

Skills and Concepts to Develop Below 171	Skills and Concepts to Introduce 171 - 180
<b>Patterns, Relations, Functions</b>	<b>Patterns, Relations, Functions</b>
<ul style="list-style-type: none"> <li>• Extends repeating patterns - geometric shapes</li> <li>• Completes a growing arithmetic pattern by naming missing members</li> </ul>	<ul style="list-style-type: none"> <li>• Extends repeating patterns - geometric shapes</li> <li>• Extends a growing arithmetic pattern, defined by numbers</li> <li>• Completes a growing arithmetic pattern by naming missing members</li> </ul>
<b>Numbers, Symbols, Words, Tables, Graphs</b>	<b>Numbers, Symbols, Words, Tables, Graphs</b>
<ul style="list-style-type: none"> <li>• Solves basic-facts open sentences - addition and subtraction</li> </ul>	<ul style="list-style-type: none"> <li>• Solves basic-facts open sentences - addition and subtraction</li> <li>• Solves linear equations with basic facts - 1-step addition using a letter for the variable*</li> </ul>
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
<i>New Vocabulary:</i> addend	<i>New Vocabulary:</i> whole number
<i>New Signs and Symbols:</i> + addition, = is equal to, – subtraction, □ variable	<i>New Signs and Symbols:</i> none

**Subject: Mathematics**  
**Goal Strand: Algebraic Concepts**  
**RIT Score Range: 171 - 180**

Skills and Concepts to Enhance Below 171	Skills and Concepts to Develop 171 - 180	Skills and Concepts to Introduce 181 - 190
<b>Patterns, Relations, Functions</b> <ul style="list-style-type: none"> <li>• Extends repeating patterns - geometric shapes</li> <li>• Completes a growing arithmetic pattern by naming missing members</li> </ul>	<b>Patterns, Relations, Functions</b> <ul style="list-style-type: none"> <li>• Extends repeating patterns - geometric shapes</li> <li>• Extends a growing arithmetic pattern, defined by numbers</li> <li>• Completes a growing arithmetic pattern by naming missing members</li> </ul>	<b>Patterns, Relations, Functions</b> <ul style="list-style-type: none"> <li>• Extends a growing arithmetic pattern, defined by numbers</li> <li>• Completes a growing arithmetic pattern using models by identifying the missing members*</li> <li>• Completes arithmetic growth patterns in number tables by identifying the missing elements</li> <li>• Extends a decreasing arithmetic patterns*</li> <li>• Applies the rule to determine which set of letters is not like the other sets - other patterns*</li> </ul>
<b>Numbers, Symbols, Words, Tables, Graphs</b> <ul style="list-style-type: none"> <li>• Solves basic-facts open sentences - addition and subtraction</li> </ul>	<b>Numbers, Symbols, Words, Tables, Graphs</b> <ul style="list-style-type: none"> <li>• Solves basic-facts open sentences - addition and subtraction</li> <li>• Solves linear equations with basic facts - 1-step addition using a letter for the variable*</li> </ul>	<b>Numbers, Symbols, Words, Tables, Graphs</b> <ul style="list-style-type: none"> <li>• Solves basic facts addition and subtraction open sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves linear equations with basic facts - 1-step addition using a letter for the variable*</li> <li>• Solves 1-step open sentences with missing addends (numbers 100 and under)</li> </ul>
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
<i>New Vocabulary:</i> addend	<i>New Vocabulary:</i> whole number	<i>New Vocabulary:</i> none
<i>New Signs and Symbols:</i> + addition, = is equal to, – subtraction, □ variable	<i>New Signs and Symbols:</i> none	<i>New Signs and Symbols:</i> none

**Subject: Mathematics**  
**Goal Strand: Algebraic Concepts**  
**RIT Score Range: 181 - 190**

Skills and Concepts to Enhance 171 - 180	Skills and Concepts to Develop 181 - 190	Skills and Concepts to Introduce 191 - 200
<b>Patterns, Relations, Functions</b> <ul style="list-style-type: none"> <li>• Extends repeating patterns - geometric shapes</li> <li>• Extends a growing arithmetic pattern, defined by numbers</li> <li>• Completes a growing arithmetic pattern by naming missing members</li> </ul>	<b>Patterns, Relations, Functions</b> <ul style="list-style-type: none"> <li>• Extends a growing arithmetic pattern, defined by numbers</li> <li>• Completes a growing arithmetic pattern using models by identifying the missing members*</li> <li>• Completes arithmetic growth patterns in number tables by identifying the missing elements</li> <li>• Extends a decreasing arithmetic patterns*</li> <li>• Applies the rule to determine which set of letters is not like the other sets - other patterns*</li> </ul>	<b>Patterns, Relations, Functions</b> <ul style="list-style-type: none"> <li>• Extends a growing arithmetic pattern, defined by objects or diagrams*</li> <li>• Completes a growing arithmetic pattern using models by identifying the missing members*</li> <li>• Extends a decreasing arithmetic patterns*</li> <li>• Extends patterns formed by letters*</li> </ul>
<b>Numbers, Symbols, Words, Tables, Graphs</b> <ul style="list-style-type: none"> <li>• Solves basic-facts open sentences - addition and subtraction</li> <li>• Solves linear equations with basic facts - 1-step addition using a letter for the variable*</li> </ul>	<b>Numbers, Symbols, Words, Tables, Graphs</b> <ul style="list-style-type: none"> <li>• Solves basic facts addition and subtraction open sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves linear equations with basic facts - 1-step addition using a letter for the variable*</li> <li>• Solves 1-step open sentences with missing addends (numbers 100 and under)</li> </ul>	<b>Numbers, Symbols, Words, Tables, Graphs</b> <ul style="list-style-type: none"> <li>• Uses algebraic reasoning to solve problems involving equality relationships*</li> <li>• Solves basic facts addition and subtraction open sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves complex open linear sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves 1-step open sentences with missing addends (numbers 100 and under)</li> <li>• Solves 1-step open sentences with missing addends (numbers over 100)</li> <li>• Solves simple open sentences with missing factors (numbers 100 and under)*</li> <li>• Solves 2-step open sentences with missing addends*</li> </ul>
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
		<ul style="list-style-type: none"> <li>• Solves simple problems involving miles/kilometers per hour</li> </ul>
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
<i>New Vocabulary:</i> whole number <i>New Signs and Symbols:</i> none	<i>New Vocabulary:</i> none <i>New Signs and Symbols:</i> none	<i>New Vocabulary:</i> miles per hour, speed <i>New Signs and Symbols:</i> ÷ division, mph miles per hour, × multiplication

**Subject: Mathematics**  
**Goal Strand: Algebraic Concepts**  
**RIT Score Range: 191 - 200**

Skills and Concepts to Enhance 181 - 190	Skills and Concepts to Develop 191 - 200	Skills and Concepts to Introduce 201 - 210
<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a growing arithmetic pattern, defined by numbers</li> <li>• Completes a growing arithmetic pattern using models by identifying the missing members*</li> <li>• Completes arithmetic growth patterns in number tables by identifying the missing elements</li> <li>• Extends a decreasing arithmetic patterns*</li> <li>• Applies the rule to determine which set of letters is not like the other sets - other patterns*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a growing arithmetic pattern, defined by objects or diagrams*</li> <li>• Completes a growing arithmetic pattern using models by identifying the missing members*</li> <li>• Extends a decreasing arithmetic patterns*</li> <li>• Extends patterns formed by letters*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a growing arithmetic pattern, defined by objects or diagrams*</li> <li>• Extends a pattern formed by two arithmetic growing patterns - odd and even terms (such as 1,5,4,8,7,...)</li> <li>• Extends a growing pattern of numbers - explicit quadratic rule - recursive rule is to add x more each time (such as 1,2,4,7,...)*</li> <li>• Extends a pattern formed by rotating a geometric figure</li> </ul>
<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Solves basic facts addition and subtraction open sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves linear equations with basic facts - 1-step addition using a letter for the variable*</li> <li>• Solves 1-step open sentences with missing addends (numbers 100 and under)</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Uses algebraic reasoning to solve problems involving equality relationships*</li> <li>• Solves basic facts addition and subtraction open sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves complex open linear sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves 1-step open sentences with missing addends (numbers 100 and under)</li> <li>• Solves 1-step open sentences with missing addends (numbers over 100)</li> <li>• Solves simple open sentences with missing factors (numbers 100 and under)*</li> <li>• Solves 2-step open sentences with missing addends*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Identifies the missing symbol to compare 2 expressions (e.g., &lt; or &gt;)</li> <li>• Uses algebraic reasoning to solve problems involving equality relationships*</li> <li>• Uses basic operations on algebraic expressions (uses correct order of operations)*</li> <li>• Uses simple linear equations to represent problem situations</li> <li>• Describes a realistic situation using information given in a linear equation*</li> <li>• Solves complex open linear sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves 1-step open sentences with missing addends (numbers over 100)</li> <li>• Solves simple open sentences with missing factors (numbers 100 and under)*</li> <li>• Solves 2-step open sentences with missing addends*</li> <li>• Solves open sentences with basic-facts calculations on both sides of the sentence</li> <li>• Uses mapping diagrams to represent functions*</li> </ul>
<p><b>Analyze Change in Various Contexts</b></p>	<p><b>Analyze Change in Various Contexts</b></p> <ul style="list-style-type: none"> <li>• Solves simple problems involving miles/kilometers per hour</li> </ul>	<p><b>Analyze Change in Various Contexts</b></p> <ul style="list-style-type: none"> <li>• Solves simple problems involving miles per gallon</li> <li>• Solves simple problems involving miles/kilometers per hour</li> <li>• Determines unit price*</li> </ul>

<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
<i>New Vocabulary:</i> none	<i>New Vocabulary:</i> miles per hour, speed	<i>New Vocabulary:</i> miles per gallon, minimum, ordered pair
<i>New Signs and Symbols:</i> none	<i>New Signs and Symbols:</i> ÷ division, mph miles per hour, × multiplication	<i>New Signs and Symbols:</i> ( ) order of operations, ( ) ordered pair, ¢ cent sign, \$ dollar sign, > greater than, < less than, □ missing operation, mpg miles per gallon, – negative number, ∅ null or empty set, +, = is equal to

**Subject: Mathematics**  
**Goal Strand: Algebraic Concepts**  
**RIT Score Range: 201 - 210**

Skills and Concepts to Enhance 191 - 200	Skills and Concepts to Develop 201 - 210	Skills and Concepts to Introduce 211 - 220
<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a growing arithmetic pattern, defined by objects or diagrams*</li> <li>• Completes a growing arithmetic pattern using models by identifying the missing members*</li> <li>• Extends a decreasing arithmetic patterns*</li> <li>• Extends patterns formed by letters*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a growing arithmetic pattern, defined by objects or diagrams*</li> <li>• Extends a pattern formed by two arithmetic growing patterns - odd and even terms (such as 1,5,4,8,7,...)</li> <li>• Extends a growing pattern of numbers - explicit quadratic rule - recursive rule is to add x more each time (such as 1,2,4,7,...)*</li> <li>• Extends a pattern formed by rotating a geometric figure</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a repeating pattern of geometric shapes in a grid*</li> <li>• Extends a pattern formed by two arithmetic growing patterns - odd and even terms (such as 1,5,4,8,7,...)</li> <li>• Extends, or completes, growing patterns defined by equations or number facts</li> <li>• Extends a growing pattern of numbers - explicit quadratic rule - recursive rule is to add x more each time (such as 1,2,4,7,...)*</li> <li>• Identifies rules and applies them to new patterns</li> <li>• Determines the rule and completes a simple function machine output*</li> <li>• Solves problems involving simple functions*</li> </ul>
<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Uses algebraic reasoning to solve problems involving equality relationships*</li> <li>• Solves basic facts addition and subtraction open sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves complex open linear sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves 1-step open sentences with missing addends (numbers 100 and under)</li> <li>• Solves 1-step open sentences with missing addends (numbers over 100)</li> <li>• Solves simple open sentences with missing factors (numbers 100 and under)*</li> <li>• Solves 2-step open sentences with missing addends*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Identifies the missing symbol to compare 2 expressions (e.g., &lt; or &gt;)</li> <li>• Uses algebraic reasoning to solve problems involving equality relationships*</li> <li>• Uses basic operations on algebraic expressions (uses correct order of operations)*</li> <li>• Uses simple linear equations to represent problem situations</li> <li>• Describes a realistic situation using information given in a linear equation*</li> <li>• Solves complex open linear sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves 1-step open sentences with missing addends (numbers over 100)</li> <li>• Solves simple open sentences with missing factors (numbers 100 and under)*</li> <li>• Solves 2-step open sentences with missing addends*</li> <li>• Solves open sentences with basic-facts calculations on both sides of the sentence</li> <li>• Uses mapping diagrams to represent functions*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Predicts the relative size of the answer when adding whole numbers*</li> <li>• Predicts the relative size of the answer when subtracting whole numbers*</li> <li>• Uses algebraic reasoning to solve problems involving equality relationships*</li> <li>• Uses basic operations on algebraic expressions (uses correct order of operations)*</li> <li>• Uses simple linear equations to represent problem situations</li> <li>• Solves simple open sentences with missing factors (numbers over 100)</li> <li>• Solves open sentences using the distributive property</li> <li>• Solves open sentences with calculations on both sides of the sentence</li> <li>• Solves 2-step open sentences with missing factors</li> <li>• Solves 1-step linear equations</li> <li>• Applies algebraic methods to solve theoretical problems</li> <li>• Uses mapping diagrams to represent functions*</li> </ul>

Analyze Change in Various Contexts	Analyze Change in Various Contexts	Analyze Change in Various Contexts
<ul style="list-style-type: none"> <li>Solves simple problems involving miles/kilometers per hour</li> </ul>	<ul style="list-style-type: none"> <li>Solves simple problems involving miles per gallon</li> <li>Solves simple problems involving miles/kilometers per hour</li> <li>Determines unit price*</li> </ul>	<ul style="list-style-type: none"> <li>Solves simple problems involving miles per gallon</li> <li>Determines unit price*</li> </ul>
Models and Quantitative Relationships	Models and Quantitative Relationships	Models and Quantitative Relationships
<i>New Vocabulary:</i> miles per hour, speed	<i>New Vocabulary:</i> miles per gallon, minimum, ordered pair	<i>New Vocabulary:</i> triple
<i>New Signs and Symbols:</i> $\div$ division, mph miles per hour, $\times$ multiplication	<i>New Signs and Symbols:</i> $()$ order of operations, $()$ ordered pair, ¢ cent sign, \$ dollar sign, $>$ greater than, $<$ less than, $\square$ missing operation, mpg miles per gallon, - negative number, $\emptyset$ null or empty set, $+$ , $=$ is equal to	<i>New Signs and Symbols:</i> a.m., \$ dollar sign, °F degrees Fahrenheit, ? next in sequence

**Subject: Mathematics**  
**Goal Strand: Algebraic Concepts**  
**RIT Score Range: 211 - 220**

Skills and Concepts to Enhance 201 - 210	Skills and Concepts to Develop 211 - 220	Skills and Concepts to Introduce 221 - 230
<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a growing arithmetic pattern, defined by objects or diagrams*</li> <li>• Extends a pattern formed by two arithmetic growing patterns - odd and even terms (such as 1,5,4,8,7,...)</li> <li>• Extends a growing pattern of numbers - explicit quadratic rule - recursive rule is to add <math>x</math> more each time (such as 1,2,4,7,...)*</li> <li>• Extends a pattern formed by rotating a geometric figure</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a repeating pattern of geometric shapes in a grid*</li> <li>• Extends a pattern formed by two arithmetic growing patterns - odd and even terms (such as 1,5,4,8,7,...)</li> <li>• Extends, or completes, growing patterns defined by equations or number facts</li> <li>• Extends a growing pattern of numbers - explicit quadratic rule - recursive rule is to add <math>x</math> more each time (such as 1,2,4,7,...)*</li> <li>• Identifies rules and applies them to new patterns</li> <li>• Determines the rule and completes a simple function machine output*</li> <li>• Solves problems involving simple functions*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a growing pattern of triangular numbers, defined by objects or diagrams</li> <li>• Represents geometric sequences using written descriptions in recursive terms (present term, next term)*</li> <li>• Solves problems involving simple functions*</li> </ul>
<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Identifies the missing symbol to compare 2 expressions (e.g., <math>&lt;</math> or <math>&gt;</math>)</li> <li>• Uses algebraic reasoning to solve problems involving equality relationships*</li> <li>• Uses basic operations on algebraic expressions (uses correct order of operations)*</li> <li>• Uses simple linear equations to represent problem situations</li> <li>• Describes a realistic situation using information given in a linear equation*</li> <li>• Solves complex open linear sentences using diagrams and models (e.g., using balances)*</li> <li>• Solves 1-step open sentences with missing addends (numbers over 100)</li> <li>• Solves simple open sentences with missing factors (numbers 100 and under)*</li> <li>• Solves 2-step open sentences with missing addends*</li> <li>• Solves open sentences with basic-facts calculations on both sides of the sentence</li> <li>• Uses mapping diagrams to represent functions*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Predicts the relative size of the answer when adding whole numbers*</li> <li>• Predicts the relative size of the answer when subtracting whole numbers*</li> <li>• Uses algebraic reasoning to solve problems involving equality relationships*</li> <li>• Uses basic operations on algebraic expressions (uses correct order of operations)*</li> <li>• Uses simple linear equations to represent problem situations</li> <li>• Solves simple open sentences with missing factors (numbers over 100)</li> <li>• Solves open sentences using the distributive property</li> <li>• Solves open sentences with calculations on both sides of the sentence</li> <li>• Solves 2-step open sentences with missing factors</li> <li>• Solves 1-step linear equations</li> <li>• Applies algebraic methods to solve theoretical problems</li> <li>• Uses mapping diagrams to represent functions*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Predicts the relative size of the answer when adding whole numbers*</li> <li>• Predicts the relative size of the answer when subtracting whole numbers*</li> <li>• Describes and uses a variable with whole numbers, multiplication, and division in a contextual situation*</li> <li>• Uses basic operations on algebraic expressions (substituting for unknowns)</li> <li>• Recognizes commutative, associative, distributive, symmetric, transitive, and reflexive properties*</li> <li>• Uses basic operations on algebraic expressions (expanding - monomial by a binomial)*</li> <li>• Demonstrates an understanding of properties (e.g., commutative, associative, distributive, properties of 0)</li> <li>• Writes equivalent forms of algebraic expressions (e.g., <math>(x + 3)/2 = x/2 + 3/2</math>)*</li> <li>• Represents relationships of quantities in the form of an expression</li> <li>• Uses basic operations on algebraic expressions (uses correct order of operations)*</li> <li>• Expresses a simple linear equation from a contextual</li> </ul>

		<p>situation</p> <ul style="list-style-type: none"> <li>• Solves open sentences with calculations on both sides of the sentence</li> <li>• Solves 2-step open sentences with missing factors</li> <li>• Solves 1-step linear equations</li> <li>• Solves 2-step linear equations*</li> <li>• Solves linear equations with decimals*</li> <li>• Solves linear equations with integers</li> <li>• Solves linear equations using substitution</li> <li>• Writes equivalent forms of algebraic equations using addition and subtraction</li> <li>• Solves open sentences with decimals</li> <li>• Solves linear equations in a real-world context using a given formula*</li> <li>• Solves open sentences with integers*</li> <li>• Applies algebraic methods to solve theoretical problems</li> <li>• Applies algebraic methods to solve real-world problems*</li> <li>• Applies systems-of-linear-equations methods to solve theoretical problems</li> <li>• Solves simple one-step inequality open sentences*</li> <li>• Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step)*</li> <li>• Uses mapping diagrams to represent functions*</li> <li>• Completes a function table according to a rule*</li> <li>• Investigates and describes functional relationships of geometric figures (e.g., area is a function of the radius)*</li> </ul>
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
<ul style="list-style-type: none"> <li>• Solves simple problems involving miles per gallon</li> <li>• Solves simple problems involving miles/kilometers per hour</li> <li>• Determines unit price*</li> </ul>	<ul style="list-style-type: none"> <li>• Solves simple problems involving miles per gallon</li> <li>• Determines unit price*</li> </ul>	<ul style="list-style-type: none"> <li>• Solves complex problems involving miles per gallon</li> <li>• Solves complex problems involving miles/kilometers per hour*</li> </ul>
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
<i>New Vocabulary:</i> miles per gallon, minimum, ordered pair	<i>New Vocabulary:</i> triple	<i>New Vocabulary:</i> algebra, algebraic equation, associative, distributive, reflexive, substitution, transitive
<i>New Signs and Symbols:</i> ( ) order of operations, ( ) ordered pair, ¢ cent sign, \$ dollar sign, > greater than, < less than, □ missing operation, mpg miles per gallon, - negative number, ∅ null or empty set, +, = is equal to	<i>New Signs and Symbols:</i> a.m., \$ dollar sign, °F degrees Fahrenheit, ? next in sequence	<i>New Signs and Symbols:</i> ( ) parenthesis around an integer, ∩ intersection, + positive number, repeating decimal overbar, Δ triangle

**Subject: Mathematics**

**Goal Strand: Algebraic Concepts**

**RIT Score Range: 221 - 230**

Skills and Concepts to Enhance 211 - 220	Skills and Concepts to Develop 221 - 230	Skills and Concepts to Introduce 231 - 240
<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a repeating pattern of geometric shapes in a grid*</li> <li>• Extends a pattern formed by two arithmetic growing patterns - odd and even terms (such as 1,5,4,8,7,...)</li> <li>• Extends, or completes, growing patterns defined by equations or number facts</li> <li>• Extends a growing pattern of numbers - explicit quadratic rule - recursive rule is to add x more each time (such as 1,2,4,7,...)*</li> <li>• Identifies rules and applies them to new patterns</li> <li>• Determines the rule and completes a simple function machine output*</li> <li>• Solves problems involving simple functions*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a growing pattern of triangular numbers, defined by objects or diagrams</li> <li>• Represents geometric sequences using written descriptions in recursive terms (present term, next term)*</li> <li>• Solves problems involving simple functions*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Recognizes and extends arithmetic sequences (predicts nth term)</li> <li>• Recognizes and extends the Fibonacci sequence*</li> <li>• Solves problems involving simple functions*</li> <li>• Solves problems involving complex functions</li> </ul>
<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Predicts the relative size of the answer when adding whole numbers*</li> <li>• Predicts the relative size of the answer when subtracting whole numbers*</li> <li>• Uses algebraic reasoning to solve problems involving equality relationships*</li> <li>• Uses basic operations on algebraic expressions (uses correct order of operations)*</li> <li>• Uses simple linear equations to represent problem situations</li> <li>• Solves simple open sentences with missing factors (numbers over 100)</li> <li>• Solves open sentences using the distributive property</li> <li>• Solves open sentences with calculations on both sides of the sentence</li> <li>• Solves 2-step open sentences with missing factors</li> <li>• Solves 1-step linear equations</li> <li>• Applies algebraic methods to solve theoretical problems</li> <li>• Uses mapping diagrams to represent functions*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Predicts the relative size of the answer when adding whole numbers*</li> <li>• Predicts the relative size of the answer when subtracting whole numbers*</li> <li>• Describes and uses a variable with whole numbers, multiplication, and division in a contextual situation*</li> <li>• Uses basic operations on algebraic expressions (substituting for unknowns)</li> <li>• Recognizes commutative, associative, distributive, symmetric, transitive, and reflexive properties*</li> <li>• Uses basic operations on algebraic expressions (expanding - monomial by a binomial)*</li> <li>• Demonstrates an understanding of properties (e.g., commutative, associative, distributive, properties of 0)</li> <li>• Writes equivalent forms of algebraic expressions (e.g., <math>(x + 3)/2 = x/2 + 3/2</math>)*</li> <li>• Represents relationships of quantities in the form of an expression</li> <li>• Uses basic operations on algebraic expressions (uses correct order of operations)*</li> <li>• Expresses a simple linear equation from a contextual</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Uses expressions to represent situations that involve variable quantities with exponents*</li> <li>• Uses basic operations on algebraic expressions (substituting for unknowns)</li> <li>• Uses basic operations on algebraic expressions (substituting for unknown exponents)</li> <li>• Recognizes commutative, associative, distributive, symmetric, transitive, and reflexive properties*</li> <li>• Uses basic operations on algebraic expressions (combining like terms)</li> <li>• Uses basic operations on algebraic expressions (expanding - monomial by a binomial)*</li> <li>• Writes equivalent forms of algebraic expressions (e.g., <math>(x + 3)/2 = x/2 + 3/2</math>)*</li> <li>• Represents relationships of quantities in the form of an expression</li> <li>• Expresses a simple linear equation from a contextual situation</li> <li>• Solves 2-step open sentences with missing factors (variables on both sides of the sentence)*</li> <li>• Solves 2-step linear equations*</li> </ul>

	<p>situation</p> <ul style="list-style-type: none"> <li>• Solves open sentences with calculations on both sides of the sentence</li> <li>• Solves 2-step open sentences with missing factors</li> <li>• Solves 1-step linear equations</li> <li>• Solves 2-step linear equations*</li> <li>• Solves linear equations with decimals*</li> <li>• Solves linear equations with integers</li> <li>• Solves linear equations using substitution</li> <li>• Writes equivalent forms of algebraic equations using addition and subtraction</li> <li>• Solves open sentences with decimals</li> <li>• Solves linear equations in a real-world context using a given formula*</li> <li>• Solves open sentences with integers*</li> <li>• Applies algebraic methods to solve theoretical problems</li> <li>• Applies algebraic methods to solve real-world problems*</li> <li>• Applies systems-of-linear-equations methods to solve theoretical problems</li> <li>• Solves simple one-step inequality open sentences*</li> <li>• Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step)*</li> <li>• Uses mapping diagrams to represent functions*</li> <li>• Completes a function table according to a rule*</li> <li>• Investigates and describes functional relationships of geometric figures (e.g., area is a function of the radius)*</li> </ul>	<ul style="list-style-type: none"> <li>• Solves linear equations with decimals*</li> <li>• Solves linear equations with integers</li> <li>• Solves linear equations with fractions</li> <li>• Solves open sentences with integers*</li> <li>• Solves linear equations using rational numbers*</li> <li>• Applies algebraic methods to solve real-world problems*</li> <li>• Writes the equation of a horizontal or vertical line when given the graph of the line*</li> <li>• Determines the graph of a horizontal or vertical line when given the equation*</li> <li>• Determines slope from a linear equation*</li> <li>• Using the slope of an equation, identifies parallel and perpendicular lines*</li> <li>• Expresses a simple linear inequality from a contextual situation</li> <li>• Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step)*</li> <li>• Solves simple linear inequalities using graphs*</li> <li>• Represents real-world functions using an equation</li> <li>• Uses tables to determine function equations</li> <li>• Completes a function table according to a rule*</li> <li>• Models real life functions using function notation*</li> </ul>
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
<ul style="list-style-type: none"> <li>• Solves simple problems involving miles per gallon</li> <li>• Determines unit price*</li> </ul>	<ul style="list-style-type: none"> <li>• Solves complex problems involving miles per gallon</li> <li>• Solves complex problems involving miles/kilometers per hour*</li> </ul>	<ul style="list-style-type: none"> <li>• Solves complex problems involving miles per gallon</li> <li>• Solves problems comparing unit prices</li> </ul>
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
		<ul style="list-style-type: none"> <li>• Identifies the graph type, given equations of linear and nonlinear functions*</li> </ul>
<i>New Vocabulary:</i> triple	<i>New Vocabulary:</i> algebra, algebraic equation, associative, distributive, reflexive, substitution, transitive	<i>New Vocabulary:</i> algebraic sentence, arithmetic progression, depreciate, equation of a line, linear graph, mathematical sentence, regression equation
<i>New Signs and Symbols:</i> a.m., \$ dollar sign, °F degrees Fahrenheit, ? next in sequence	<i>New Signs and Symbols:</i> ( ) parenthesis around an integer, $\cap$ intersection, + positive number, repeating decimal overbar, $\Delta$ triangle	<i>New Signs and Symbols:</i> •, $f(x)$ the value of the function $f$ at $x$ , $\geq$ greater than or equal to, $\leq$ less than or equal to, – subtraction, $<$ less than

**Subject: Mathematics**

**Goal Strand: Algebraic Concepts**

**RIT Score Range: 231 - 240**

Skills and Concepts to Enhance 221 - 230	Skills and Concepts to Develop 231 - 240	Skills and Concepts to Introduce 241 - 250
<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Extends a growing pattern of triangular numbers, defined by objects or diagrams</li> <li>• Represents geometric sequences using written descriptions in recursive terms (present term, next term)*</li> <li>• Solves problems involving simple functions*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Recognizes and extends arithmetic sequences (predicts nth term)</li> <li>• Recognizes and extends the Fibonacci sequence*</li> <li>• Solves problems involving simple functions*</li> <li>• Solves problems involving complex functions</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Represents growing arithmetic patterns using algebraic expressions or equations*</li> <li>• Uses an algebraic expression to represent a triangular number pattern*</li> <li>• Determines the x- and/or y-intercept of an equation of a function*</li> <li>• Performs operations on functions</li> <li>• Solves problems involving complex functions</li> <li>• Determines the domain and range of a function*</li> </ul>
<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Predicts the relative size of the answer when adding whole numbers*</li> <li>• Predicts the relative size of the answer when subtracting whole numbers*</li> <li>• Describes and uses a variable with whole numbers, multiplication, and division in a contextual situation*</li> <li>• Uses basic operations on algebraic expressions (substituting for unknowns)</li> <li>• Recognizes commutative, associative, distributive, symmetric, transitive, and reflexive properties*</li> <li>• Uses basic operations on algebraic expressions (expanding - monomial by a binomial)*</li> <li>• Demonstrates an understanding of properties (e.g., commutative, associative, distributive, properties of 0)</li> <li>• Writes equivalent forms of algebraic expressions (e.g., <math>(x + 3)/2 = x/2 + 3/2</math>)*</li> <li>• Represents relationships of quantities in the form of an expression</li> <li>• Uses basic operations on algebraic expressions (uses correct order of operations)*</li> <li>• Expresses a simple linear equation from a contextual situation</li> <li>• Solves open sentences with calculations on both sides of the sentence</li> <li>• Solves 2-step open sentences with missing factors</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Uses expressions to represent situations that involve variable quantities with exponents*</li> <li>• Uses basic operations on algebraic expressions (substituting for unknowns)</li> <li>• Uses basic operations on algebraic expressions (substituting for unknown exponents)</li> <li>• Recognizes commutative, associative, distributive, symmetric, transitive, and reflexive properties*</li> <li>• Uses basic operations on algebraic expressions (combining like terms)</li> <li>• Uses basic operations on algebraic expressions (expanding - monomial by a binomial)*</li> <li>• Writes equivalent forms of algebraic expressions (e.g., <math>(x + 3)/2 = x/2 + 3/2</math>)*</li> <li>• Represents relationships of quantities in the form of an expression</li> <li>• Expresses a simple linear equation from a contextual situation</li> <li>• Solves 2-step open sentences with missing factors (variables on both sides of the sentence)*</li> <li>• Solves 2-step linear equations*</li> <li>• Solves linear equations with decimals*</li> <li>• Solves linear equations with integers</li> <li>• Solves linear equations with fractions</li> <li>• Solves open sentences with integers*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Uses expressions to represent situations that involve variable quantities with exponents*</li> <li>• Determines the expression for the area of a figure represented by algebra tiles</li> <li>• Evaluates expressions by substituting with rational numbers</li> <li>• Evaluates absolute-value algebraic expressions using substitution strategies*</li> <li>• Simplifies polynomial expressions</li> <li>• Multiplies binomials</li> <li>• Factors trinomials in the form <math>x^2 + bx + c</math></li> <li>• Factors polynomials using difference of squares*</li> <li>• Uses linear equations to represent situations involving variable quantities</li> <li>• Solves 2-step open sentences with missing factors (variables on both sides of the sentence)*</li> <li>• Solves linear equations with fractions</li> <li>• Solves linear equations using rational numbers*</li> <li>• Solves open sentences with fractions</li> <li>• Applies algebraic methods to solve real-world problems*</li> <li>• Applies algebraic methods to solve a variety of real-world and theoretical problems</li> <li>• Solves problems involving consecutive numbers*</li> <li>• Writes linear equations when given ordered pairs*</li> </ul>

<ul style="list-style-type: none"> <li>Solves 1-step linear equations</li> <li>Solves 2-step linear equations*</li> <li>Solves linear equations with decimals*</li> <li>Solves linear equations with integers</li> <li>Solves linear equations using substitution</li> <li>Writes equivalent forms of algebraic equations using addition and subtraction</li> <li>Solves open sentences with decimals</li> <li>Solves linear equations in a real-world context using a given formula*</li> <li>Solves open sentences with integers*</li> <li>Applies algebraic methods to solve theoretical problems</li> <li>Applies algebraic methods to solve real-world problems*</li> <li>Applies systems-of-linear-equations methods to solve theoretical problems</li> <li>Solves simple one-step inequality open sentences*</li> <li>Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step)*</li> <li>Uses mapping diagrams to represent functions*</li> <li>Completes a function table according to a rule*</li> <li>Investigates and describes functional relationships of geometric figures (e.g., area is a function of the radius)*</li> </ul>	<ul style="list-style-type: none"> <li>Solves linear equations using rational numbers*</li> <li>Applies algebraic methods to solve real-world problems*</li> <li>Writes the equation of a horizontal or vertical line when given the graph of the line*</li> <li>Determines the graph of a horizontal or vertical line when given the equation*</li> <li>Determines slope from a linear equation*</li> <li>Using the slope of an equation, identifies parallel and perpendicular lines*</li> <li>Expresses a simple linear inequality from a contextual situation</li> <li>Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step)*</li> <li>Solves simple linear inequalities using graphs*</li> <li>Represents real-world functions using an equation</li> <li>Uses tables to determine function equations</li> <li>Completes a function table according to a rule*</li> <li>Models real life functions using function notation*</li> </ul>	<ul style="list-style-type: none"> <li>Determines slope from a linear equation*</li> <li>Using the slope of an equation, identifies parallel and perpendicular lines*</li> <li>Recognizes the slope of horizontal and vertical lines*</li> <li>Uses the Multiplication Property of Equality as a first step in solving systems of linear equations*</li> <li>Uses algebraic methods to solve systems of linear equations</li> <li>Uses graphs to solve systems of linear equations in real-world situations*</li> <li>Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step)*</li> <li>Solves linear inequalities using graphs</li> <li>Uses tables to determine function equations</li> <li>Completes a function table according to a rule (rational numbers)*</li> <li>Represents a real-world function using a complex equation (e.g., variables on both sides, distributive, rational)</li> <li>Models real life functions using function notation*</li> </ul>
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
<ul style="list-style-type: none"> <li>Solves complex problems involving miles per gallon</li> <li>Solves complex problems involving miles/kilometers per hour*</li> </ul>	<ul style="list-style-type: none"> <li>Solves complex problems involving miles per gallon</li> <li>Solves problems comparing unit prices</li> </ul>	<ul style="list-style-type: none"> <li>Solves problems involving rate conversions (e.g., mi/hr to ft/sec)*</li> <li>Identifies and describes situations with varying rates of change*</li> </ul>
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
	<ul style="list-style-type: none"> <li>Identifies the graph type, given equations of linear and nonlinear functions*</li> </ul>	<ul style="list-style-type: none"> <li>Describes a relationship or a real-world situation represented by a quadratic equation*</li> <li>Uses ordered pairs to graph a parabola*</li> </ul>
<i>New Vocabulary:</i> algebra, algebraic equation, associative, distributive, reflexive, substitution, transitive	<i>New Vocabulary:</i> algebraic sentence, arithmetic progression, depreciate, equation of a line, linear graph, mathematical sentence, regression equation	<i>New Vocabulary:</i> algebra tile, domain, feet per second, function table, number sequence, point of intersection, polynomial, solution set, squared, system of equations, x-axis, y-intercept
<i>New Signs and Symbols:</i> ( ) parenthesis around an integer, $\cap$ intersection, + positive number, repeating decimal overbar, $\Delta$ triangle	<i>New Signs and Symbols:</i> $\bullet$ , $f(x)$ the value of the function $f$ at $x$ , $\geq$ greater than or equal to, $\leq$ less than or equal to, $-$ subtraction, $<$ less than	<i>New Signs and Symbols:</i> $\{ \}$ set notation, ft feet, $\bullet$ multiplication symbol, sec second

**Subject: Mathematics**  
**Goal Strand: Algebraic Concepts**  
**RIT Score Range: 241 - 250**

Skills and Concepts to Enhance 231 - 240	Skills and Concepts to Develop 241 - 250	Skills and Concepts to Introduce 251 - 260
<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>Recognizes and extends arithmetic sequences (predicts nth term)</li> <li>Recognizes and extends the Fibonacci sequence*</li> <li>Solves problems involving simple functions*</li> <li>Solves problems involving complex functions</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>Represents growing arithmetic patterns using algebraic expressions or equations*</li> <li>Uses an algebraic expression to represent a triangular number pattern*</li> <li>Determines the x- and/or y-intercept of an equation of a function*</li> <li>Performs operations on functions</li> <li>Solves problems involving complex functions</li> <li>Determines the domain and range of a function*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>Estimates the limit of a given infinite sequence (e.g., given the sequence <math>1/n</math>, as <math>n</math> gets larger)*</li> <li>Determines the effects of parameter changes on functions</li> <li>Determines the domain and range of a function*</li> </ul>
<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>Uses expressions to represent situations that involve variable quantities with exponents*</li> <li>Uses basic operations on algebraic expressions (substituting for unknowns)</li> <li>Uses basic operations on algebraic expressions (substituting for unknown exponents)</li> <li>Recognizes commutative, associative, distributive, symmetric, transitive, and reflexive properties*</li> <li>Uses basic operations on algebraic expressions (combining like terms)</li> <li>Uses basic operations on algebraic expressions (expanding - monomial by a binomial)*</li> <li>Writes equivalent forms of algebraic expressions (e.g., <math>(x + 3)/2 = x/2 + 3/2</math>)*</li> <li>Represents relationships of quantities in the form of an expression</li> <li>Expresses a simple linear equation from a contextual situation</li> <li>Solves 2-step open sentences with missing factors (variables on both sides of the sentence)*</li> <li>Solves 2-step linear equations*</li> <li>Solves linear equations with decimals*</li> <li>Solves linear equations with integers</li> <li>Solves linear equations with fractions</li> <li>Solves open sentences with integers*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>Uses expressions to represent situations that involve variable quantities with exponents*</li> <li>Determines the expression for the area of a figure represented by algebra tiles</li> <li>Evaluates expressions by substituting with rational numbers</li> <li>Evaluates absolute-value algebraic expressions using substitution strategies*</li> <li>Simplifies polynomial expressions</li> <li>Multiplies binomials</li> <li>Factors trinomials in the form <math>x^2 + bx + c</math></li> <li>Factors polynomials using difference of squares*</li> <li>Uses linear equations to represent situations involving variable quantities</li> <li>Solves 2-step open sentences with missing factors (variables on both sides of the sentence)*</li> <li>Solves linear equations with fractions</li> <li>Solves linear equations using rational numbers*</li> <li>Solves open sentences with fractions</li> <li>Applies algebraic methods to solve real-world problems*</li> <li>Applies algebraic methods to solve a variety of real-world and theoretical problems</li> <li>Solves problems involving consecutive numbers*</li> <li>Writes linear equations when given ordered pairs*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>Uses expressions to represent situations that involve variable quantities with exponents*</li> <li>Uses expressions with absolute value to represent situations*</li> <li>Evaluates expressions by substituting with rational numbers</li> <li>Simplifies monomials</li> <li>Simplifies polynomial expressions</li> <li>Multiplies binomials</li> <li>Multiplies a polynomial by a polynomial</li> <li>Divides a polynomial by a monomial*</li> <li>Factors polynomials by identifying common factors*</li> <li>Factors trinomials in the form <math>x^2 + bx + c</math></li> <li>Factors polynomials using difference of squares*</li> <li>Writes equivalent forms of algebraic equations using multiplication and division</li> <li>Solves linear equations using rational numbers*</li> <li>Applies algebraic methods to solve complex real-world and theoretical problems</li> <li>Solves problems involving consecutive numbers*</li> <li>Rewrites a complex formula to solve for a specific variable*</li> <li>Rewrites an equation for a line in standard form*</li> <li>Writes the equation of the line when given the graph of the line*</li> </ul>

<ul style="list-style-type: none"> <li>Solves linear equations using rational numbers*</li> <li>Applies algebraic methods to solve real-world problems*</li> <li>Writes the equation of a horizontal or vertical line when given the graph of the line*</li> <li>Determines the graph of a horizontal or vertical line when given the equation*</li> <li>Determines slope from a linear equation*</li> <li>Using the slope of an equation, identifies parallel and perpendicular lines*</li> <li>Expresses a simple linear inequality from a contextual situation</li> <li>Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step)*</li> <li>Solves simple linear inequalities using graphs*</li> <li>Represents real-world functions using an equation</li> <li>Uses tables to determine function equations</li> <li>Completes a function table according to a rule*</li> <li>Models real life functions using function notation*</li> </ul>	<ul style="list-style-type: none"> <li>Determines slope from a linear equation*</li> <li>Using the slope of an equation, identifies parallel and perpendicular lines*</li> <li>Recognizes the slope of horizontal and vertical lines*</li> <li>Uses the Multiplication Property of Equality as a first step in solving systems of linear equations*</li> <li>Uses algebraic methods to solve systems of linear equations</li> <li>Uses graphs to solve systems of linear equations in real-world situations*</li> <li>Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step)*</li> <li>Solves linear inequalities using graphs</li> <li>Uses tables to determine function equations</li> <li>Completes a function table according to a rule (rational numbers)*</li> <li>Represents a real-world function using a complex equation (e.g., variables on both sides, distributive, rational)</li> <li>Models real life functions using function notation*</li> </ul>	<ul style="list-style-type: none"> <li>Determines the graph of a line when given the equation*</li> <li>Writes linear equations, given two points on a line</li> <li>Determines slope from an equation (analysis)*</li> <li>Determines slope from graphs</li> <li>Determines slope from ordered pairs and tables</li> <li>Determines the slope of parallel lines*</li> <li>Determines the slope of perpendicular lines*</li> <li>Uses the Multiplication Property of Equality as a first step in solving systems of linear equations*</li> <li>Uses substitution as a first step in solving systems of linear equations*</li> <li>Uses algebraic methods to solve systems of linear equations</li> <li>Uses graphs to solve systems of linear equations</li> <li>Uses graphs to solve systems of linear equations in real-world situations*</li> <li>Solves real-world systems of linear equations*</li> <li>Solves single variable linear inequalities with variable in both members using number lines</li> <li>Represents a real-world function using a complex equation (e.g., variables on both sides, distributive, rational)</li> <li>Models real life functions using function notation*</li> </ul>
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
<ul style="list-style-type: none"> <li>Solves complex problems involving miles per gallon</li> <li>Solves problems comparing unit prices</li> </ul>	<ul style="list-style-type: none"> <li>Solves problems involving rate conversions (e.g., mi/hr to ft/sec)*</li> <li>Identifies and describes situations with varying rates of change*</li> </ul>	<ul style="list-style-type: none"> <li>Solves problems involving rate conversions (e.g., mi/hr to ft/sec)*</li> <li>Interprets the meaning of slope and intercepts in problem solving situations</li> </ul>
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
<ul style="list-style-type: none"> <li>Identifies the graph type, given equations of linear and nonlinear functions*</li> </ul>	<ul style="list-style-type: none"> <li>Describes a relationship or a real-world situation represented by a quadratic equation*</li> <li>Uses ordered pairs to graph a parabola*</li> </ul>	<ul style="list-style-type: none"> <li>Identifies discriminants and roots</li> <li>Solves quadratic equations by factoring</li> <li>Solves quadratic equations by completing the square*</li> <li>Distinguishes between linear and nonlinear functions (analysis)</li> <li>Uses graphs to represent functions and interpret slope*</li> <li>Identifies the equation of a parabola</li> <li>Determines the vertex of a parabola</li> <li>Investigates, describes, and predicts the effects of parameter changes on the graphs of exponential functions*</li> </ul>
<i>New Vocabulary:</i> algebraic sentence, arithmetic progression, depreciate, equation of a line, linear graph,	<i>New Vocabulary:</i> algebra tile, domain, feet per second, function table, number sequence, point of intersection,	<i>New Vocabulary:</i> coordinate plane, geometric series, undefined, x-coordinate, x-intercept, y-coordinate

mathematical sentence, regression equation	polynomial, solution set, squared, system of equations, x-axis, y-intercept	
<i>New Signs and Symbols:</i> •, $f(x)$ the value of the function $f$ at $x$ , $\geq$ greater than or equal to, $\leq$ less than or equal to, – subtraction, $<$ less than	<i>New Signs and Symbols:</i> { } set notation, ft feet, • multiplication symbol, sec second	<i>New Signs and Symbols:</i>    absolute value, – subtraction, % percent, P perimeter, square root symbol

**Subject: Mathematics**  
**Goal Strand: Algebraic Concepts**  
**RIT Score Range: 251 - 260**

Skills and Concepts to Enhance 241 - 250	Skills and Concepts to Develop 251 - 260	Skills and Concepts to Introduce 261 - 270
<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Represents growing arithmetic patterns using algebraic expressions or equations*</li> <li>• Uses an algebraic expression to represent a triangular number pattern*</li> <li>• Determines the x- and/or y-intercept of an equation of a function*</li> <li>• Performs operations on functions</li> <li>• Solves problems involving complex functions</li> <li>• Determines the domain and range of a function*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Estimates the limit of a given infinite sequence (e.g., given the sequence <math>1/n</math>, as <math>n</math> gets larger)*</li> <li>• Determines the effects of parameter changes on functions</li> <li>• Determines the domain and range of a function*</li> </ul>	<p><b>Patterns, Relations, Functions</b></p> <ul style="list-style-type: none"> <li>• Uses the compound interest equation to solve problems</li> </ul>
<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Uses expressions to represent situations that involve variable quantities with exponents*</li> <li>• Determines the expression for the area of a figure represented by algebra tiles</li> <li>• Evaluates expressions by substituting with rational numbers</li> <li>• Evaluates absolute-value algebraic expressions using substitution strategies*</li> <li>• Simplifies polynomial expressions</li> <li>• Multiplies binomials</li> <li>• Factors trinomials in the form <math>x^2 + bx + c</math></li> <li>• Factors polynomials using difference of squares*</li> <li>• Uses linear equations to represent situations involving variable quantities</li> <li>• Solves 2-step open sentences with missing factors (variables on both sides of the sentence)*</li> <li>• Solves linear equations with fractions</li> <li>• Solves linear equations using rational numbers*</li> <li>• Solves open sentences with fractions</li> <li>• Applies algebraic methods to solve real-world problems*</li> <li>• Applies algebraic methods to solve a variety of real-world and theoretical problems</li> <li>• Solves problems involving consecutive numbers*</li> <li>• Writes linear equations when given ordered pairs*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Uses expressions to represent situations that involve variable quantities with exponents*</li> <li>• Uses expressions with absolute value to represent situations*</li> <li>• Evaluates expressions by substituting with rational numbers</li> <li>• Simplifies monomials</li> <li>• Simplifies polynomial expressions</li> <li>• Multiplies binomials</li> <li>• Multiplies a polynomial by a polynomial</li> <li>• Divides a polynomial by a monomial*</li> <li>• Factors polynomials by identifying common factors*</li> <li>• Factors trinomials in the form <math>x^2 + bx + c</math></li> <li>• Factors polynomials using difference of squares*</li> <li>• Writes equivalent forms of algebraic equations using multiplication and division</li> <li>• Solves linear equations using rational numbers*</li> <li>• Applies algebraic methods to solve complex real-world and theoretical problems</li> <li>• Solves problems involving consecutive numbers*</li> <li>• Rewrites a complex formula to solve for a specific variable*</li> <li>• Rewrites an equation for a line in standard form*</li> <li>• Writes the equation of the line when given the graph of the line*</li> </ul>	<p><b>Numbers, Symbols, Words, Tables, Graphs</b></p> <ul style="list-style-type: none"> <li>• Simplifies monomials</li> <li>• Simplifies polynomial expressions using power laws*</li> <li>• Factors polynomials by identifying a common monomial and then factoring the trinomial</li> <li>• Rewrites a complex formula to solve for a specific variable*</li> <li>• Determines x- or y-intercept of a given linear equation*</li> <li>• Writes the equation of the line when given the graph of the line*</li> <li>• Writes linear equations, given slope and point on a line</li> <li>• Determines slope from an equation (analysis)*</li> <li>• Determines the slope of parallel lines*</li> <li>• Determines the slope of perpendicular lines*</li> <li>• Solves real-world systems of linear equations*</li> </ul>

<ul style="list-style-type: none"> <li>• Determines slope from a linear equation*</li> <li>• Using the slope of an equation, identifies parallel and perpendicular lines*</li> <li>• Recognizes the slope of horizontal and vertical lines*</li> <li>• Uses the Multiplication Property of Equality as a first step in solving systems of linear equations*</li> <li>• Uses algebraic methods to solve systems of linear equations</li> <li>• Uses graphs to solve systems of linear equations in real-world situations*</li> <li>• Describes the relationship or a real-world situation represented by a simple linear inequality (e.g., 1- or 2-step)*</li> <li>• Solves linear inequalities using graphs</li> <li>• Uses tables to determine function equations</li> <li>• Completes a function table according to a rule (rational numbers)*</li> <li>• Represents a real-world function using a complex equation (e.g., variables on both sides, distributive, rational)</li> <li>• Models real life functions using function notation*</li> </ul>	<ul style="list-style-type: none"> <li>• Determines the graph of a line when given the equation*</li> <li>• Writes linear equations, given two points on a line</li> <li>• Determines slope from an equation (analysis)*</li> <li>• Determines slope from graphs</li> <li>• Determines slope from ordered pairs and tables</li> <li>• Determines the slope of parallel lines*</li> <li>• Determines the slope of perpendicular lines*</li> <li>• Uses the Multiplication Property of Equality as a first step in solving systems of linear equations*</li> <li>• Uses substitution as a first step in solving systems of linear equations*</li> <li>• Uses algebraic methods to solve systems of linear equations</li> <li>• Uses graphs to solve systems of linear equations</li> <li>• Uses graphs to solve systems of linear equations in real-world situations*</li> <li>• Solves real-world systems of linear equations*</li> <li>• Solves single variable linear inequalities with variable in both members using number lines</li> <li>• Represents a real-world function using a complex equation (e.g., variables on both sides, distributive, rational)</li> <li>• Models real life functions using function notation*</li> </ul>	
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
<ul style="list-style-type: none"> <li>• Solves problems involving rate conversions (e.g., mi/hr to ft/sec)*</li> <li>• Identifies and describes situations with varying rates of change*</li> </ul>	<ul style="list-style-type: none"> <li>• Solves problems involving rate conversions (e.g., mi/hr to ft/sec)*</li> <li>• Interprets the meaning of slope and intercepts in problem solving situations</li> </ul>	<ul style="list-style-type: none"> <li>• Solves problems involving rate conversions (e.g., mi/hr to ft/sec)*</li> <li>• Solves problems involving rates*</li> </ul>
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
<ul style="list-style-type: none"> <li>• Describes a relationship or a real-world situation represented by a quadratic equation*</li> <li>• Uses ordered pairs to graph a parabola*</li> </ul>	<ul style="list-style-type: none"> <li>• Identifies discriminants and roots</li> <li>• Solves quadratic equations by factoring</li> <li>• Solves quadratic equations by completing the square*</li> <li>• Distinguishes between linear and nonlinear functions (analysis)</li> <li>• Uses graphs to represent functions and interpret slope*</li> <li>• Identifies the equation of a parabola</li> <li>• Determines the vertex of a parabola</li> <li>• Investigates, describes, and predicts the effects of parameter changes on the graphs of exponential functions*</li> </ul>	<ul style="list-style-type: none"> <li>• Solves quadratic equations using the quadratic formula</li> <li>• Solves quadratic equations by completing the square*</li> <li>• Determines the minimum and maximum of a quadratic function*</li> </ul>
<i>New Vocabulary:</i> algebra tile, domain, feet per second, function table, number sequence, point of intersection,	<i>New Vocabulary:</i> coordinate plane, geometric series, undefined, x-coordinate, x-intercept, y-coordinate	<i>New Vocabulary:</i> semi-annual

polynomial, solution set, squared, system of equations, x-axis, y-intercept		
<i>New Signs and Symbols:</i> { } set notation, ft feet, • multiplication symbol, sec second	<i>New Signs and Symbols:</i>    absolute value, – subtraction, % percent, P perimeter, square root symbol	<i>New Signs and Symbols:</i> P principal, r rate, t time

**Subject: Mathematics**  
**Goal Strand: Algebraic Concepts**  
**RIT Score Range: 261 - 270**

Skills and Concepts to Enhance 251 - 260	Skills and Concepts to Develop 261 - 270	Skills and Concepts to Introduce Above 270
<b>Patterns, Relations, Functions</b> <ul style="list-style-type: none"> <li>Estimates the limit of a given infinite sequence (e.g., given the sequence <math>1/n</math>, as <math>n</math> gets larger)*</li> <li>Determines the effects of parameter changes on functions</li> <li>Determines the domain and range of a function*</li> </ul>	<b>Patterns, Relations, Functions</b> <ul style="list-style-type: none"> <li>Uses the compound interest equation to solve problems</li> </ul>	<b>Patterns, Relations, Functions</b> <ul style="list-style-type: none"> <li>Solves problems involving successive discounts*</li> </ul>
<b>Numbers, Symbols, Words, Tables, Graphs</b> <ul style="list-style-type: none"> <li>Uses expressions to represent situations that involve variable quantities with exponents*</li> <li>Uses expressions with absolute value to represent situations*</li> <li>Evaluates expressions by substituting with rational numbers</li> <li>Simplifies monomials</li> <li>Simplifies polynomial expressions</li> <li>Multiplies binomials</li> <li>Multiplies a polynomial by a polynomial</li> <li>Divides a polynomial by a monomial*</li> <li>Factors polynomials by identifying common factors*</li> <li>Factors trinomials in the form <math>x^2 + bx + c</math></li> <li>Factors polynomials using difference of squares*</li> <li>Writes equivalent forms of algebraic equations using multiplication and division</li> <li>Solves linear equations using rational numbers*</li> <li>Applies algebraic methods to solve complex real-world and theoretical problems</li> <li>Solves problems involving consecutive numbers*</li> <li>Rewrites a complex formula to solve for a specific variable*</li> <li>Rewrites an equation for a line in standard form*</li> <li>Writes the equation of the line when given the graph of the line*</li> <li>Determines the graph of a line when given the equation*</li> <li>Writes linear equations, given two points on a line</li> <li>Determines slope from an equation (analysis)*</li> </ul>	<b>Numbers, Symbols, Words, Tables, Graphs</b> <ul style="list-style-type: none"> <li>Simplifies monomials</li> <li>Simplifies polynomial expressions using power laws*</li> <li>Factors polynomials by identifying a common monomial and then factoring the trinomial</li> <li>Rewrites a complex formula to solve for a specific variable*</li> <li>Determines x- or y-intercept of a given linear equation*</li> <li>Writes the equation of the line when given the graph of the line*</li> <li>Writes linear equations, given slope and point on a line</li> <li>Determines slope from an equation (analysis)*</li> <li>Determines the slope of parallel lines*</li> <li>Determines the slope of perpendicular lines*</li> <li>Solves real-world systems of linear equations*</li> </ul>	<b>Numbers, Symbols, Words, Tables, Graphs</b>

<ul style="list-style-type: none"> <li>• Determines slope from graphs</li> <li>• Determines slope from ordered pairs and tables</li> <li>• Determines the slope of parallel lines*</li> <li>• Determines the slope of perpendicular lines*</li> <li>• Uses the Multiplication Property of Equality as a first step in solving systems of linear equations*</li> <li>• Uses substitution as a first step in solving systems of linear equations*</li> <li>• Uses algebraic methods to solve systems of linear equations</li> <li>• Uses graphs to solve systems of linear equations</li> <li>• Uses graphs to solve systems of linear equations in real-world situations*</li> <li>• Solves real-world systems of linear equations*</li> <li>• Solves single variable linear inequalities with variable in both members using number lines</li> <li>• Represents a real-world function using a complex equation (e.g., variables on both sides, distributive, rational)</li> <li>• Models real life functions using function notation*</li> </ul>		
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
<ul style="list-style-type: none"> <li>• Solves problems involving rate conversions (e.g., mi/hr to ft/sec)*</li> <li>• Interprets the meaning of slope and intercepts in problem solving situations</li> </ul>	<ul style="list-style-type: none"> <li>• Solves problems involving rate conversions (e.g., mi/hr to ft/sec)*</li> <li>• Solves problems involving rates*</li> </ul>	
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
<ul style="list-style-type: none"> <li>• Identifies discriminants and roots</li> <li>• Solves quadratic equations by factoring</li> <li>• Solves quadratic equations by completing the square*</li> <li>• Distinguishes between linear and nonlinear functions (analysis)</li> <li>• Uses graphs to represent functions and interpret slope*</li> <li>• Identifies the equation of a parabola</li> <li>• Determines the vertex of a parabola</li> <li>• Investigates, describes, and predicts the effects of parameter changes on the graphs of exponential functions*</li> </ul>	<ul style="list-style-type: none"> <li>• Solves quadratic equations using the quadratic formula</li> <li>• Solves quadratic equations by completing the square*</li> <li>• Determines the minimum and maximum of a quadratic function*</li> </ul>	
<i>New Vocabulary:</i> coordinate plane, geometric series, undefined, x-coordinate, x-intercept, y-coordinate	<i>New Vocabulary:</i> semi-annual	<i>New Vocabulary:</i> none
<i>New Signs and Symbols:</i>    absolute value, – subtraction, % percent, P perimeter, square root symbol	<i>New Signs and Symbols:</i> P principal, r rate, t time	<i>New Signs and Symbols:</i> none

**Subject: Mathematics**  
**Goal Strand: Algebraic Concepts**  
**RIT Score Range: Above 270**

Skills and Concepts to Enhance 261 - 270	Skills and Concepts to Develop Above 270
<b>Patterns, Relations, Functions</b>	<b>Patterns, Relations, Functions</b>
<ul style="list-style-type: none"> <li>• Uses the compound interest equation to solve problems</li> </ul>	<ul style="list-style-type: none"> <li>• Solves problems involving successive discounts*</li> </ul>
<b>Numbers, Symbols, Words, Tables, Graphs</b>	<b>Numbers, Symbols, Words, Tables, Graphs</b>
<ul style="list-style-type: none"> <li>• Simplifies monomials</li> <li>• Simplifies polynomial expressions using power laws*</li> <li>• Factors polynomials by identifying a common monomial and then factoring the trinomial</li> <li>• Rewrites a complex formula to solve for a specific variable*</li> <li>• Determines x- or y-intercept of a given linear equation*</li> <li>• Writes the equation of the line when given the graph of the line*</li> <li>• Writes linear equations, given slope and point on a line</li> <li>• Determines slope from an equation (analysis)*</li> <li>• Determines the slope of parallel lines*</li> <li>• Determines the slope of perpendicular lines*</li> <li>• Solves real-world systems of linear equations*</li> </ul>	
<b>Analyze Change in Various Contexts</b>	<b>Analyze Change in Various Contexts</b>
<ul style="list-style-type: none"> <li>• Solves problems involving rate conversions (e.g., mi/hr to ft/sec)*</li> <li>• Solves problems involving rates*</li> </ul>	
<b>Models and Quantitative Relationships</b>	<b>Models and Quantitative Relationships</b>
<ul style="list-style-type: none"> <li>• Solves quadratic equations using the quadratic formula</li> <li>• Solves quadratic equations by completing the square*</li> <li>• Determines the minimum and maximum of a quadratic function*</li> </ul>	
<i>New Vocabulary: semi-annual</i>	<i>New Vocabulary: none</i>
<i>New Signs and Symbols: P principal, r rate, t time</i>	<i>New Signs and Symbols: none</i>