DesCartes: A Continuum of Learning®

Mathematics

Goal: Operations and Algebraic Thinking

RIT Score Range: 201 - 210
Statements Last Updated: Mar 10, 2014

Skills and Concepts to Enhance (73% Probability*) 191 - 200	Skills and Concepts to Develop (50% Probability*) 201 - 210	Skills and Concepts to Introduce (27% Probability*) 211 - 220
Represent and Solve Problems	Represent and Solve Problems	Represent and Solve Problems
• Uses rounding to estimate answers to real-world problems involving numbers less than 1000 with addition and subtraction (whole numbers only)	• Uses rounding to estimate answers to real-world problems involving numbers 1000 or greater with addition and subtraction (whole numbers only)	• Uses rounding to estimate answers to real-world problems involving multiplication and division 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 problems involving subtraction with numbers 100 and under (analysis)	• Uses rounding to estimate answers to real-world problems involving numbers less than 1000 with multiplication and division (whole numbers only)
• Solves real-world whole number addition problems with sums to 20 (change unknown)	• Solves whole number subtraction word problems with numbers over 1000	• Models whole number multiplication and division algorithms (e.g., uses physical materials to show 4 groups of 3 objects)
• Solves real-world whole number problems involving subtraction with numbers 100 and under	• Solves problems using the inverse relationship between addition and subtraction	• Performs mental computation with division
• Solves real-world whole number problems involving subtraction with numbers under 1000	• Solves word problems involving whole number multiplication with numbers greater than 10 x 10	• Solves whole number word problems with division over 10 x 10
• Solves whole number subtraction word problems with numbers over 1000	• Models whole number multiplication and division algorithms (e.g., uses physical materials to show 4 groups of 3 objects)	• Solves complex word problems involving whole number division with remainder (e.g., 2-step, 2-digit divisor)
• Solves problems using the inverse relationship between addition and subtraction	• Instantly recalls division facts with dividend and divisors less than 13	• Solves real-world problems involving 2-step multiple operations, whole numbers only
• Instantly recalls basic multiplication facts where one factor is 6-12 and the other factor is 0-12	• Performs mental computation with division	• Solves real-world multiple-step problems involving whole numbers
• Solves word problems involving basic whole number multiplication facts to 10 x 10	• Solves word problems with whole number division facts with dividend and divisors less than 11	• Predicts the relative size of the answer when multiplying whole numbers
• Solves word problems involving whole number multiplication with numbers greater than 10 x 10	• Solves simple word problems involving whole number division with remainder (e.g., 1-step, 1-digit divisor)	• Demonstrates an understanding of the inverse relationship between addition and subtraction
• Uses manipulatives to divide a small set of objects into groups of equal size	• Solves whole number word problems with division over 10 x 10	• Demonstrates an understanding of the commutative property of multiplication with simple problems
• Models whole number multiplication and division algorithms (e.g., shows multiplication as repeated addition and division as repeated subtraction)	• Determines the remainder in a real-world problem (whole numbers)	• Demonstrates an understanding of the associative property of multiplication
• Instantly recalls division facts with dividend and divisors less than 10	• Uses division for multiple-step real-world problems (whole numbers)	• Demonstrates an understanding of the distributive property of multiplication by decomposing a term
• Instantly recalls division facts with dividend and divisors less than 13	• Evaluates numerical expressions using grouping symbols (whole numbers only)	• Understands equivalence and extends the concept to number sentences involving variables (e.g., 8 + 2 = [] + 2)
• Solves word problems with whole number division facts with dividend and divisors less than 11	• Solves real-world problems involving 2-step multiple operations, whole numbers only	• Uses algebraic reasoning to solve problems involving equality relationships
• Solves simple word problems involving whole number division with remainder (e.g., 1-step, 1-digit divisor)	• Demonstrates an understanding of the commutative property of multiplication with simple problems	• Uses simple linear equations to represent problem situations
• Evaluates numerical expressions using grouping symbols (whole numbers only)	• Understands equivalence and extends the concept to number sentences involving variables (e.g., 8 + 2 = [] + 2)	• Solves simple open sentences with missing factors (numbers over 100)
• Demonstrates an understanding of the commutative property of multiplication with simple problems	• Uses algebraic reasoning to solve problems involving equality relationships	• Solves open sentences using the distributive property
• Demonstrates an understanding of the zero property of multiplication	• Uses simple linear equations to represent problem situations	• Solves open sentences with calculations on both sides of the sentence
• Uses algebraic reasoning to solve problems involving equality relationships	• Describes a realistic situation using information given in a linear equation	• Applies algebraic methods to solve theoretical problems
• Solves 1-step open sentences with missing addends (numbers 100 and under)	• Solves simple open sentences with missing factors (numbers 100 and under)	• Uses pictures to represent problems
	• Solves 2-step open sentences with missing addends	• Translates a 2-step problem to a symbolic expression or equation
	• Solves open sentences with basic-facts calculations on both sides of the sentence	
	• Translates a 1-step problem to a symbolic expression or equation	

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

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Represent and Solve Problems	Represent and Solve Problems	Represent and Solve Problems
• Solves simple open sentences with missing factors (numbers 100 and under) • Solves 2-step open sentences with missing addends • Determines the operation needed from a simple problem • Translates a 1-step problem to a symbolic expression or equation • Interprets a chart or table - calculation required • Solves problems using tables • Writes equivalent forms of whole numbers 11 to 20 using addition (e.g., 14 = 7 + 7) • Distinguishes between odd and even numbers	• Translates a 2-step problem to a symbolic expression or equation • Solves problems using tables • Uses number sense strategies to solve problems (addition/subtraction only)	
Analyze Patterns and Relationships	Analyze Patterns and Relationships	Analyze Patterns and Relationships
• Extends a growing arithmetic pattern, defined by objects or diagrams • Analyzes a growing, arithmetic pattern with numbers to determine the rule • Completes a simple function table based on real-life situations (e.g., the number of tricycles related to the number of wheels) • Identifies numbers as composite	• Extends a growing arithmetic pattern, defined by objects or diagrams • Completes a simple function table based on real-life situations (e.g., the number of tricycles related to the number of wheels) • Completes a function table given a simple rule (e.g., x + 2) • Determines the rule and completes a simple function machine output • Predicts from simple charts and tables	• Completes a function table given a simple rule (e.g., x + 2) • Determines the rule given a simple real-world function table (e.g., # Dogs compared to # Legs) • Determines the rule and completes a simple function machine output • Looks for a growing pattern to solve a problem • Determines factors of whole numbers • Identifies numbers as prime
New Vocabulary: composite number, each, prime number	*New Vocabulary:* minimum, plus	*New Vocabulary:* None
New Signs and Symbols: °F degrees Fahrenheit, $ dollar sign, lb pound	*New Signs and Symbols:* ¢ cent sign, = is equal to, + positive number	*New Signs and Symbols:* ( ) parenthesis around an integer, { } set notation

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