DesCartes (Combined)

Subject: Mathematics Goal: Mathematical Process, Operations, Relationships

Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: Below 161

Skills and Concepts to Develop Below 161	Skills and Concepts to Introduce 161 - 170
Mathematical Process	Mathematical Process
	 Analyzes another student's explanation to understand simple problems* Uses a structured model to solve problems using a variety of strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses manipulatives to model and justify solutions* Follows a model of problem solving that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness*
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers
	• Writes whole numbers in standard and expanded form through the tens
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
Number Concepts -Compare and Order Real Numbers	Number Concepts -Compare and Order Real Numbers
	• Orders whole numbers less than 10*
Number Concepts -Count and Number Theory Concepts	Number Concepts -Count and Number Theory Concepts
Counts numbers 0-20*	 Counts 1 to 10 objects Counts numbers 0-20* Identifies missing numbers in a series through 100 Counts ordinal numbers (1st to 10th)
Number Concepts - Money, Percent, Proportions	Number Concepts - Money, Percent, Proportions
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
Uses models to construct whole number addition facts with addends through 10*	• Uses a number line to construct addition facts with sums through 20 (whole numbers)*
• Uses models to calculate whole number sums through 99*	• Uses models to calculate whole number sums through 99*
• Adds two 1-digit numbers with sums to 10 in	• Uses models to calculate whole number sums through

horizontal format	999*
	• Adds two 1-digit numbers with sums to 10 in
	horizontal format
	• Adds two 1-digit numbers with sums to 10 in vertical
	format
	• Adds two 1-digit numbers with sums between 10 and 19 in horizontal format
	• Adds two 1-digit numbers with sums between 10 and 19 in vertical format*
	Adds multiple 1-digit numbers
	• Uses strategies for addition facts (e.g., compatible
	numbers, counting on, doubles, neighbors, making
	tens)
	• Adds 1-digit to multiple-digit number with no
	regrouping*
	• Adds 2-digit numbers with no regrouping
	• Adds 2-digit to 3-digit number, with no regrouping, with sums under 1000*
	Solves real-world whole number addition problems
	with sums to 20 (result unknown)
	• Uses models to construct subtraction facts with
	differences through 10 (whole numbers)*
	• Uses models to calculate differences through 100 (whole numbers)*
	Subtracts two 1-digit numbers horizontally
	• Subtracts a 1-digit number from a 2-digit number that
	is less than 20 (whole numbers only)
	Subtracts two 1-digit numbers vertically
	• Uses strategies for subtraction facts (e.g., counting
	back, one less, two less)*
	• Subtracts a 2-digit number from a 2-digit number,
	• Adda monovy vertically with no regrouping*
Number Computation Multiplication and Division	Adds money vertically with no regrouping
	Instantly recalls basic multiplication facts where one
	factor is 0-5 and the other factor is 0-12
	Identifies the missing operation symbol - 1-step
	number sentence
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
	• • • • • • • • • • • • • • • • • • • •
New Vocabulary: none	New Vocabulary: add, numeral
<i>New Signs and Symbols:</i> + addition, = is equal to, \Box	New Signs and Symbols: + division, \$ dollar sign, > greater
variable	than, < less than, × multiplication, – subtraction

Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 161 - 170

Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce
Below 161	161 - 170	171 - 180
Mathematical Process	Mathematical Process	Mathematical Process
	 Analyzes another student's explanation to understand simple problems* Uses a structured model to solve problems using a variety of strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses manipulatives to model and justify solutions* Follows a model of problem solving that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* 	 Analyzes another student's explanation to understand simple problems* Uses a structured model to solve problems using a variety of strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses appropriate technology to solve problems* Uses words, pictures, numbers, and technology to explain the solution to problems* Uses manipulatives to model and justify solutions* Follows a model of problem solving that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Recognizes geometric shapes in real-world objects
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers
	• Writes whole numbers in standard and expanded form through the tens	 Counts objects that are grouped into tens and ones Identifies the place value and value of each digit in whole numbers through the tens place*
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
		 Identifies the numerical and written name for whole numbers 21 to 100 (e.g., 62 is sixty-two, and vice versa)* Identifies the numeral and written name for whole numbers 101 to 999 (e.g., 342 is three hundred forty-two, and vice versa)* Identifies the numeral and written name for ordinal numbers 1st to 20th (e.g., 1st is first, and vice versa)* Writes equivalent forms of whole number expressions (e.g., 15 + 5 = 10 + 10) Represents 1/2 with a diagram or model Identifies equivalent fractions using visual representations*

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Number Concepts -Compare and Order Real Numbers	Number Concepts -Compare and Order Real Numbers	Number Concepts -Compare and Order Real Numbers
	• Orders whole numbers less than 10*	 Compares whole numbers through 100* Compares whole numbers through 999 Orders sets of objects 0-10* Orders sets of objects 0-20*
Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory
Counts numbers 0-20*	 Counts 1 to 10 objects Counts numbers 0-20* Identifies missing numbers in a series through 100 Counts ordinal numbers (1st to 10th) 	 Contepts Counts numbers 0-100 Counts numbers 0-1000* Identifies missing numbers in a series through 100 Counts by 2's to 100 Counts and writes by 5's* Counts backwards from a given number (given number greater than 10)* Identifies a whole number that comes between 2 given numbers (20 to 100)* Counts ordinal numbers (first to tenth) Identifies the ordinal number that comes before, between, or after a given ordinal number (first to tenth)*
Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions
		 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) Uses cent sign and dollar sign when appropriate* Connects money with place value
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
 Uses models to construct whole number addition facts with addends through 10* Uses models to calculate whole number sums through 99* Adds two 1-digit numbers with sums to 10 in horizontal format 	 Uses a number line to construct addition facts with sums through 20 (whole numbers)* Uses models to calculate whole number sums through 99* Uses models to calculate whole number sums through 999* Adds two 1-digit numbers with sums to 10 in horizontal format Adds two 1-digit numbers with sums to 10 in vertical format Adds two 1-digit numbers with sums between 10 and 19 in horizontal format Adds two 1-digit numbers with sums between 10 and 19 in vertical format 	 Uses a number line to construct addition facts with sums through 20 (whole numbers)* Uses models to calculate whole number sums through 999* Uses strategies for addition facts (e.g., compatible numbers, counting on, doubles, neighbors, making tens) Adds 2-digit to 3-digit number, with no regrouping, with sums under 1000* Adds two or three 2-digit number with regrouping Adds 1-, 2-, and/or 3-digit numbers with sums under 100* Adds 3-digit numbers with no regrouping, with sums

	• Adda multiple 1 digit numbers	under 1000
	 Adds multiple 1-digit numbers Uses strategies for addition facts (e.g., compatible numbers, counting on, doubles, neighbors, making tens) Adds 1-digit to multiple-digit number with no regrouping* Adds 2-digit numbers with no regrouping Adds 2-digit to 3-digit number, with no regrouping, with sums under 1000* Solves real-world whole number addition problems with sums to 20 (result unknown) Uses models to construct subtraction facts with differences through 10 (whole numbers)* Uses models to calculate differences through 100 (whole numbers)* Subtracts two 1-digit number from a 2-digit number that is less than 20 (whole numbers only) Subtracts two 1-digit number vertically Uses strategies for subtraction facts (e.g., counting back, one less, two less)* Subtracts a 2-digit number from a 2-digit number, with no regrouping Adds money vertically with no regrouping* 	 Adds multiple-digit numbers, with no regrouping, with sums over 1000* 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 20 (result unknown)* Solves real-world whole number addition problems with sums to 100 (result 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 (uses models to calculate differences through 100 (whole numbers)* Uses models to calculate differences through 1000 (whole numbers)* Subtracts a 1-digit number from a 2-digit number that is less than 20 (whole numbers only) Uses strategies for subtraction facts (e.g., counting back, one less, two less)* Subtracts a 1-digit number from a 2-digit number with no regrouping, vertically Subtracts a 2-digit number from a 2-digit number, with no regrouping Subtracts 2- and/or 3-digit numbers with no regrouping Subtraction with numbers under 20 Adds noney vertically with no regrouping*
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
	 Instantly recalls basic multiplication facts where one factor is 0-5 and the other factor is 0-12 Identifies the missing operation symbol - 1-step number sentence 	 Instantly recalls basic multiplication facts where one factor is 0-5 and the other factor is 0-12 Multiplies basic facts to 10 x 10 vertically Identifies the missing operation symbol - 1-step number sentence
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
New Vocabulary: none	New Vocabulary: add, numeral	<i>New Vocabulary:</i> before, between, count, counting order, diamond, dollar sign, eighth, eleventh, fifth, greater,

		greater than, hundred, ninth, ones, penny, ray, seventh, tens, tenth, thousand
<i>New Signs and Symbols:</i> + addition, = is equal to, \Box variable	<i>New Signs and Symbols:</i> ÷ division, \$ dollar sign, > greater than, < less than, × multiplication, – subtraction	<i>New Signs and Symbols:</i> () order of operations, ¢ cent sign, lb pound

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Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 171 - 180

Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce
161 - 170	171 - 180	181 - 190
Mathematical Process	Mathematical Process	Mathematical Process
 Analyzes another student's explanation to understand simple problems* Uses a structured model to solve problems using a variety of strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses manipulatives to model and justify solutions* Follows a model of problem solving that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* 	 Analyzes another student's explanation to understand simple problems* Uses a structured model to solve problems using a variety of strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses appropriate technology to solve problems* Uses words, pictures, numbers, and technology to explain the solution to problems* Uses manipulatives to model and justify solutions* Follows a model of problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Recognizes geometric shapes in real-world objects 	 Analyzes another student's explanation to understand simple problems* Draws pictures to represent whole number problems* Uses manipulatives to represent whole number problems* Uses a structured model to solve problems using a variety of strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses appropriate technology to solve problems* Relates everyday language to mathematical language and symbols, and progresses toward the use of appropriate terminology (e.g., "add more" becomes "plus")* Uses words, pictures, numbers, and technology to explain the solution to problems* Follows a model of problem solving that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Solves problems using ordinal numbers*
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers
Writes whole numbers in standard and expanded form through the tens	 Counts objects that are grouped into tens and ones Identifies the place value and value of each digit in whole numbers through the tens place* 	 Counts objects that are grouped into tens and ones Identifies whole numbers under 100 given place value terms (e.g., 3 tens and 4 ones = 34) Identifies the place value and value of each digit in whole numbers through the tens place* Identifies the place value and value of each digit in whole numbers through the hundreds place Identifies the place value and value of each digit in whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the thousands

		 Applies base ten place value concepts to solve problems using decimals*
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
	 Identifies the numerical and written name for whole numbers 21 to 100 (e.g., 62 is sixty-two, and vice versa)* Identifies the numeral and written name for whole numbers 101 to 999 (e.g., 342 is three hundred forty-two, and vice versa)* Identifies the numeral and written name for ordinal numbers 1st to 20th (e.g., 1st is first, and vice versa)* Writes equivalent forms of whole number expressions (e.g., 15 + 5 = 10 + 10) Represents 1/2 with a diagram or model Identifies equivalent fractions using visual representations* 	 Identifies the numeral and written name for whole numbers 101 to 999 (e.g., 342 is three hundred forty-two, and vice versa)* Identifies the numeral and written name for whole numbers to 1000 to 9999 (e.g., 3456 is three thousand, four hundred fifty-six, and vice versa) Identifies the numeral and written name for whole numbers 10,000 to 100,000 Identifies the number that is "1 more than" a given number* Identifies the number that is "1 less than" a given number* Counts and converts to dozens with models* Writes equivalent forms of whole numbers 11 to 20 using addition (e.g., 14 = 7 + 7)* Writes equivalent forms of whole numbers using multiplication (e.g., 12 = 4 x 3 = 2 x 6 = 2 x 2 x 3)* Converts to dozens without models Rounds 2- and 3- digit whole numbers to the nearest ten Rounds 3-digit whole numbers to the nearest hundred Represents 1/4 with a diagram or model* Identifies 1/2 from a region or set Identifies 2/3 or 3/3 from a region or set* Identifies a fraction (denominators other than 2, 3, 4, 0 10).
Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real
Numbers	Numbers	Numbers
• Orders whole numbers less than 10*	 Compares whole numbers through 100* Compares whole numbers through 999 Orders sets of objects 0-10* Orders sets of objects 0-20* 	 Compares whole numbers through 999 Compares whole numbers through 9999 Orders sets of objects 0-20* Orders whole numbers less than 100 Orders whole numbers less than 1000* Compares and orders decimals to the hundredths place (same number of digits after decimal)

Number Concepts -Count and Number Theory Concepts	Number Concepts -Count and Number Theory Concepts	Number Concepts -Count and Number Theory Concepts
 Counts 1 to 10 objects Counts numbers 0-20* Identifies missing numbers in a series through 100 Counts ordinal numbers (1st to 10th) 	 Counts numbers 0-100 Counts numbers 0-1000* Identifies missing numbers in a series through 100 Counts by 2's to 100 Counts and writes by 5's* Counts backwards from a given number (given number greater than 10)* Identifies a whole number that comes between 2 given numbers (20 to 100)* Counts ordinal numbers (first to tenth) Identifies the ordinal number that comes before, between, or after a given ordinal number (first to tenth)* 	 Counts numbers 0-1000* Counts and writes by 3's* Counts and writes by 4's* Counts and writes by 6's, 7's, 8's, or 9's* Counts ordinal numbers (first to tenth) Identifies the ordinal number that comes before, between, or after a given ordinal number (first to tenth)*
Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions
	 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) Uses cent sign and dollar sign when appropriate* Connects money with place value 	 Identifies the value of a collection of coins and bills to \$10.00 by "counting on" (with picture of money) Makes change to \$1.00 by "counting on" or subtracting
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
 Uses a number line to construct addition facts with sums through 20 (whole numbers)* Uses models to calculate whole number sums through 99* Uses models to calculate whole number sums through 999* Adds two 1-digit numbers with sums to 10 in horizontal format Adds two 1-digit numbers with sums to 10 in vertical format Adds two 1-digit numbers with sums between 10 and 19 in horizontal format Adds two 1-digit numbers with sums between 10 and 19 in vertical format Adds two 1-digit numbers with sums between 10 and 19 in vertical format Adds multiple 1-digit numbers Uses strategies for addition facts (e.g., compatible numbers, counting on, doubles, neighbors, making tens) Adds 1-digit to multiple-digit number with no regrouping* 	 Uses a number line to construct addition facts with sums through 20 (whole numbers)* Uses models to calculate whole number sums through 999* Uses strategies for addition facts (e.g., compatible numbers, counting on, doubles, neighbors, making tens) Adds 2-digit to 3-digit number, with no regrouping, with sums under 1000* Adds two or three 2-digit number with regrouping Adds 1-, 2-, and/or 3-digit numbers with sums under 100* Adds 3-digit numbers, with no regrouping, with sums under 100* Adds 3-digit numbers, with regrouping, with sums under 1000 Adds multiple-digit numbers, with no regrouping, with sums under 1000 Solves real-world whole number addition problems with sums to 20 (result unknown) Solves real-world whole number addition problems 	 Adds 1-digit to multiple-digit number with regrouping* Adds two or three 2-digit number with regrouping Adds 2-digit to 3-digit number with regrouping Adds 3-digit numbers, with regrouping, with sums under 1000 Performs mental computation with 2, 3, or 4 addends Adds two 3- and/or 4-digit numbers, with regrouping, with sums over 1000 Adds multiple-digit numbers, with regrouping, with sums over 1000 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 100 (result unknown)* Solves real-world whole number addition problems with sums to 100 (result unknown)*

 Adds 2-digit numbers with no regrouping Adds 2-digit to 3-digit number, with no regrouping, with sums under 1000* Solves real-world whole number addition problems with sums to 20 (result unknown) Uses models to construct subtraction facts with differences through 10 (whole numbers)* Uses models to calculate differences through 100 (whole numbers) Subtracts two 1-digit numbers horizontally Subtracts two 1-digit numbers only) Subtracts two 1-digit numbers vertically Uses strategies for subtraction facts (e.g., counting back, one less, two less)* Subtracts a 2-digit number from a 2-digit number, with no regrouping Adds money vertically with no regrouping* 	 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 Uses models to calculate differences through 100 (whole numbers)* Uses models to calculate differences through 1000 (whole numbers)* Subtracts a 1-digit number from a 2-digit number that is less than 20 (whole numbers only) Uses strategies for subtraction facts (e.g., counting back, one less, two less)* Subtracts a 1-digit number from a 2-digit number with no regrouping, vertically Subtracts a 2-digit number from a 2-digit number, with no regrouping Subtracts 2-digit number from a 2-digit number, with no regrouping Subtracts 2-digit number from a 2-digit number, with no regrouping Subtracts 2-digit number from a 2-digit number, with no regrouping Subtracts 2-digit number from a 1/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2	 Uses a number line to construct subtraction facts with subtrahends and minuends through 20 (whole numbers)* Uses models to calculate differences through 1000 (whole numbers)* Instantly recalls basic subtraction facts with minuend less than 10* Subtracts a 1-digit number from a multiple-digit number* Subtracts 1-digit number from a 2-digit number with regrouping* Subtracts 2-digit number from a 2-digit number, with regrouping Uses strategies for sums and differences with 2-digit numbers (e.g., decomposing, compatible, compensation, partial sums, counting on) Subtracts 3- or 4-digit numbers with no regrouping Subtracts a - digit numbers with regrouping Subtracts 3- or 4-digit numbers with no regrouping Subtracts nultiple-digit numbers with no regrouping Subtracts nultiple-digit numbers with no regrouping Subtracts nultiple-digit numbers with no regrouping* Solves real-world whole number problems involving subtraction with numbers under 20 Solves real-world whole number problems involving subtraction with numbers under 1000 Solves real-world whole number problems involving subtraction with numbers under 1000 Solves real-world whole number problems involving subtraction with numbers under 1000 Solves real-world whole number problems involving subtraction with numbers under 1000 Solves real-world whole number problems involving subtraction with numbers under 1000 Solves real-world whole number problems involving addition and subtraction Adds decimals to the hundredths place (same number of digits) Identifies the value of a collection of coins and bills to \$100.00 by "counting on"* Finds equivalent combinations of coins with the same value* Combines a collection of coins and identifies the correct notation Subtracts decimals to the hundredths place (same number of digits) without regrouping
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		only)
		• Computes 1 operation on addition or subtraction real-world problems involving money up to \$5.00
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
 Instantly recalls basic multiplication facts where one factor is 0-5 and the other factor is 0-12 Identifies the missing operation symbol - 1-step number sentence 	 Instantly recalls basic multiplication facts where one factor is 0-5 and the other factor is 0-12 Multiplies basic facts to 10 x 10 vertically Identifies the missing operation symbol - 1-step number sentence 	 Multiplies basic facts to 10 x 10 vertically Multiplies a 2-digit number by a 1-digit number with regrouping Solves word problems involving basic whole number multiplication facts to 10 x 10 Uses sharing for division Models whole number multiplication and division algorithms (e.g., shows multiplication as repeated addition and division as repeated subtraction) Models multiplication and division algorithms using arrays (whole numbers) Instantly recalls division facts with dividend and divisors less than 10 Solves word problems with whole number division facts with dividend and divisors less that 11 involving money Identifies the missing operation symbol - 2-step number sentence*
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
		• Uses rounding to estimate answers to real-world problems involving addition of numbers less than 100 (whole numbers only)
New Vocabulary: add, numeral	<i>New Vocabulary:</i> before, between, count, counting order, diamond, dollar sign, eighth, eleventh, fifth, greater, greater than, hundred, ninth, ones, penny, ray, seventh, tens, tenth, thousand	<i>New Vocabulary:</i> closest, coins, digit, dozen, fourth, fourths, fraction, hundred thousand, hundreds, million, nearest, number statement, one, product, round, row, subtrahend, ten, ten thousand, thirds, thousandth, unifix cubes, unit, value
<i>New Signs and Symbols:</i> ÷ division, \$ dollar sign, > greater than, < less than, × multiplication, – subtraction	<i>New Signs and Symbols:</i> () order of operations, ¢ cent sign, lb pound	New Signs and Symbols: { } set notation, long division symbol

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Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 181 - 190

Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce
171 - 180	181 - 190	191 - 200
Mathematical Process	Mathematical Process	Mathematical Process
 Analyzes another student's explanation to understand simple problems* Uses a structured model to solve problems using a variety of strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses appropriate technology to solve problems* Uses words, pictures, numbers, and technology to explain the solution to problems* Uses manipulatives to model and justify solutions* Follows a model of problem solving that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Recognizes geometric shapes in real-world objects 	 Analyzes another student's explanation to understand simple problems* Draws pictures to represent whole number problems* Uses manipulatives to represent whole number problems* Uses a structured model to solve problems using a variety of strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses appropriate technology to solve problems* Relates everyday language to mathematical language and symbols, and progresses toward the use of appropriate terminology (e.g., "add more" becomes "plus")* Uses manipulatives to model and justify solutions* Follows a model of problem solving that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Solves problems using ordinal numbers* 	 Analyzes another student's explanation to understand more difficult problems* Restates the problem in own words* Selects the information necessary to solve a simple problem and determines whether any further information is needed Draws pictures to represent whole number problems* Uses a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses calculators as problem solving tools (e.g., to explore patterns, to validate solutions)* Uses technology to gather, analyze, and communicate mathematical information* Relates everyday language to mathematical language and symbols, and progresses toward the use of appropriate terminology (e.g., "repeated addition" becomes "multiplication," "fair share" becomes "divide," "balance the equation" becomes "solve the equation")** Verifies reasonableness of results of simple problems* Uses a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Solves problems using ordinal numbers*
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts - Place-Value - Real Numbers
• Counts objects that are grouped into tens and ones	• Counts objects that are grouped into tens and ones	• Identifies whole numbers under 100 given place value
• Identifies the place value and value of each digit in	• Identifies whole numbers under 100 given place value	terms (e.g., 3 tens and 4 ones = 34)
whole numbers through the tens place*	terms (e.g., 3 tens and 4 ones $=$ 34)	• Identifies the place value and value of each digit in

	 Identifies the place value and value of each digit in whole numbers through the tens place* Identifies the place value and value of each digit in whole numbers through the hundreds place Identifies the place value and value of each digit in whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the hundred thousands Applies base ten place value concepts to solve problems using decimals* 	 whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the hundred thousands Writes whole numbers in standard and expanded form through the hundreds Writes whole numbers in standard and expanded form through the thousands
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
 Identifies the numerical and written name for whole numbers 21 to 100 (e.g., 62 is sixty-two, and vice versa)* Identifies the numeral and written name for whole numbers 101 to 999 (e.g., 342 is three hundred forty-two, and vice versa)* Identifies the numeral and written name for ordinal numbers 1st to 20th (e.g., 1st is first, and vice versa)* Writes equivalent forms of whole number expressions (e.g., 15 + 5 = 10 + 10) Represents 1/2 with a diagram or model Identifies equivalent fractions using visual representations* 	 Identifies the numeral and written name for whole numbers 101 to 999 (e.g., 342 is three hundred forty-two, and vice versa)* Identifies the numeral and written name for whole numbers to 1000 to 9999 (e.g., 3456 is three thousand, four hundred fifty-six, and vice versa) Identifies the numeral and written name for whole numbers 10,000 to 100,000 Identifies the number that is "1 more than" a given number* Identifies the number that is "1 less than" a given number Counts and converts to dozens with models* Writes equivalent forms of whole numbers 11 to 20 using addition (e.g., 14 = 7 + 7)* Writes equivalent forms of whole numbers using multiplication (e.g., 12 = 4 x 3 = 2 x 6 = 2 x 2 x 3)* Converts to dozens without models Rounds 2- and 3- digit whole numbers to the nearest ten Rounds 3-digit whole numbers to the nearest hundred Represents 1/4 with a diagram or model* Identifies equal parts by using models Identifies 2/3 or 3/3 from a region or set* Identifies a fraction (denominators other than 2, 3, 4, 8, 10) from a region or set 	 Identifies whole numbers 100 - 999 using base-10 blocks* Identifies whole numbers over 999 using base-10 blocks* Identifies the numeral and written name for whole numbers with a zero between digits to the ten thousands place Identifies the numeral and written name for whole numbers 10,000 to 100,000 Identifies the numeral and written name for whole numbers over 100,000 Identifies the numeral and written name for ordinal numbers 21st to100th (e.g., 21st is twenty-first, and vice versa)* Counts and converts to dozens with models* Writes equivalent forms of whole numbers 11 to 20 using addition (e.g., 14 = 7 + 7)* Writes equivalent forms of whole numbers using multiplication (e.g., 12 = 4 x 3 = 2 x 6 = 2 x 2 x 3)* Converts to dozens without models Rounds 2- and 3- digit whole numbers to the nearest ten Rounds 3-digit whole numbers to the nearest hundred Represents 1/3 with a diagram or model Identifies 1/4 from a region or set* Identifies 2/3 or 3/3 from a region or set* Identifies a fraction (denominators other than 2, 3, 4, 8, 10) from a region or set Matches numeric and visual representation of equivalent fractions

		 Identifies a decimal on a number line to the tenths place* 	
Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	
Numbers	Numbers	Numbers	
• Compares whole numbers through 100*	Compares whole numbers through 999	• Compares sets of objects and identifies which is equal	
Compares whole numbers through 999	• Compares whole numbers through 9999	to, more than, or less than the other (1 to 10 objects) ^{n}	
• Orders sets of objects 0-10*	• Orders sets of objects 0-20*	• Compares whole numbers through 999,999	
• Orders sets of objects 0-20*	• Orders whole numbers less than 100	• Compares whole numbers to 100, using the symbols for 'less than' 'aqual to' or 'greater than' $(< - >)$	
	 Orders whole numbers less than 1000⁴ Compares and orders desimals to the hundredths place 	 Compares whole numbers through the thousands 	
	(same number of digits after decimal)	using the symbols <, >, or =	
		 Orders whole numbers less than 1000* 	
		• Orders whole numbers less than 10,000	
		 Compares and orders money in decimal form 	
		• Compares and orders decimals to the thousandths	
		place (same number of digits after decimal)*	
Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory	
Concepts	Concepts	Concepts	
Counts numbers 0-100	• Counts numbers 0-1000*	 Identifies numbers as composite 	
• Counts numbers 0-1000*	• Counts and writes by 3's*		
• Identifies missing numbers in a series through 100	• Counts and writes by 4's*		
• Counts by 2's to 100	• Counts and writes by 6's, 7's, 8's, or 9's*		
• Counts and writes by 5's*	• Counts ordinal numbers (first to tenth)		
• Counts backwards from a given number (given number greater than 10)*	• Identifies the ordinal number that comes before, between, or after a given ordinal number (first to		
• Identifies a whole number that comes between 2 given numbers (20 to 100)*	tenth)*		
• Counts ordinal numbers (first to tenth)			
• Identifies the ordinal number that comes before,			
between, or after a given ordinal number (first to			
Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions	
• 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)	• Writes the missing number in a proportion using basic	
• Identifies the value of a collection of coins and hills to	• Makes change to \$1.00 by "counting on" or subtracting	• Makes change to \$1.00 by "counting on" or subtracting	
• Identifies the value of a conection of coms and bins to \$10.00 by "counting on" (with picture of money)	• Makes change to \$1.00 by counting on of subtracting	 Makes change to \$1.00 by counting on of subtracting Solves problems involving basic percent concepts (e.g. 	
• Uses cent sign and dollar sign when appropriate*		10% 50% 100%)	
 Connects money with place value 		1070, 0070, 10070)	
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	
• Uses a number line to construct addition facts with	Adds 1-digit to multiple-digit number with	Adds 2-digit to 3-digit number with regrouping	
sums through 20 (whole numbers)*	regrouping*	• Uses number sense strategies to determine the correct	
• Uses models to calculate whole number sums through	• Adds two or three 2-digit number with regrouping	answer for an addition computation*	
999*	Adds 2-digit to 3-digit number with regrouping	• Adds two 3- and/or 4-digit numbers, with regrouping,	

				-	
٠	Uses strategies for addition facts (e.g., compatible	٠	Adds 3-digit numbers, with regrouping, with sums		with sums over 1000
	numbers, counting on, doubles, neighbors, making		under 1000	•	Adds multiple-digit numbers, with regrouping, with
	tens)	•	Performs mental computation with 2, 3, or 4 addends		sums over 1000
•	Adds 2-digit to 3-digit number, with no regrouping.		Adds two 3- and/or 4-digit numbers with regrouping		Adds multiple-digit numbers with sums under 1000
-	with sums under 1000*	•	with sums over 1000		Solves real world whole number addition problems
-	Adda two on three 2 digit number with regrouping			1	with sums to 20 (result unline sum) with sutremestic
•	Adds two or three 2-digit number with regrouping	•	Adds multiple-digit numbers, with regrouping, with		with sums to 20 (result unknown) - with extraneous
•	Adds 1-, 2-, and/or 3-digit numbers with sums under		sums over 1000		information given
	100*	٠	Solves real-world whole number addition problems	•	Solves real-world whole number addition problems
٠	Adds 3-digit numbers with no regrouping		with sums to 20 (result unknown) - with extraneous		with sums to 100 (start unknown)*
•	Adds 3-digit numbers, with regrouping, with sums		information given	•	Solves whole number addition word problems with
	under 1000	٠	Solves real-world whole number addition problems		sums over 1000
•	Adds multiple-digit numbers, with no regrouping, with		with sums to 20 (start unknown)*	•	Uses a number line to construct subtraction facts with
	sums over 1000*	•	Solves real-world whole number addition problems		subtrahends and minuends through 20 (whole
	Solves real world whole number addition problems	-	with sums to 100 (result unknown)*		numbers)*
"	with sums to 20 (result unknown)		Solves real world whole number addition problems		Adds and subtracts whole numbers using place value
	Colored and lower land of a mark the land of the second state of t	•	with sums to 1000		Subtracts 1 digit number from a 2 digit number with
•	Solves real-world whole number addition problems			ſ	· Subtracts 1-digit number mom a 2-digit number with
	with sums to 20 (start unknown)*	•	Uses a number line to construct subtraction facts with		regrouping
٠	Solves real-world whole number addition problems		subtrahends and minuends through 20 (whole	•	Subtracts a 2-digit number from a 2-digit number,
	with sums to 20 (change unknown)*		numbers)*		with regrouping
٠	Solves real-world whole number addition problems	٠	Uses models to calculate differences through 1000	•	Uses strategies for sums and differences with 2-digit
	with sums to 100 (result unknown)*		(whole numbers)*		numbers (e.g., decomposing, compatible,
•	Solves real-world whole number addition problems	٠	Instantly recalls basic subtraction facts with minuend		compensation, partial sums, counting on)
	with sums to 1000		less than 10*	•	Subtracts a 2-digit number from a 3-digit number with
	Uses models to calculate differences through 100	•	Subtracts a 1-digit number from a multiple-digit		a single regrouping
-	(whole numbers)*	-	number*		Subtracts 3- or 4-digit numbers with regrouping
-	(whole numbers)		Subtracte 1 digit number from a 2 digit number with		Derforms montal subtraction with numbers under 1000
•	(sub als models to calculate differences through 1000	•	subtracts 1-digit number from a 2-digit number with		Desfermes as ental subtraction with numbers under 1000
	(whole numbers)			•	Performs mental subtraction with numbers 1000 and
•	Subtracts a 1-digit number from a 2-digit number that	•	Subtracts a 2-digit number from a 2-digit number,		over
	is less than 20 (whole numbers only)		with regrouping	•	• Subtracts multiple-digit numbers with no regrouping*
٠	Uses strategies for subtraction facts (e.g., counting	٠	Uses strategies for sums and differences with 2-digit	•	• Solves real-world whole number problems involving
	back, one less, two less)*		numbers (e.g., decomposing, compatible,		subtraction with numbers 100 and under
•	Subtracts a 1-digit number from a 2-digit number with		compensation, partial sums, counting on)		Solves real-world whole number problems involving
	no regrouping, vertically	٠	Subtracts 2- and/or 3-digit numbers with no		subtraction with numbers under 1000
•	Subtracts a 1-digit number from a multiple-digit		regrouping		Solves whole number subtraction word problems with
	number*	•	Subtracts 3- or 4-digit numbers with regrouping		numbers over 1000
	Subtracts a 2-digit number from a 2-digit number	•	Performs mental subtraction with numbers under 1000		Solves problems using the inverse relationship between
Ī	with no regrouping		Subtracts multiple-digit numbers with no regrouping*		addition and subtraction*
-	Subtracts 2 and/on 2 digit numbers with no		Salvas neel world what any method much long involving		Uses models to add and subtract fractions and connect
	Subtracts 2- allu/of 3-digit flutilibers with flo	•	subtraction with numbers under 20	•	the actions to algorithms*
			subtraction with numbers under 20	1	
•	Solves real-world whole number problems involving	•	Solves real-world whole number problems involving	•	Subtracts fractions with like denominators without
1	subtraction with numbers under 20		subtraction with numbers 100 and under		reducing
•	Adds 1-digit numbers with sums to 18 (with	٠	Solves real-world whole number problems involving	•	Solves real-world 1-step problems involving addition
1	parentheses)		subtraction with numbers under 1000		and subtraction of fractions with like denominators
•	Adds money vertically with no regrouping*	•	Solves real-world whole number problems involving	•	Adds decimals to the hundredths place (same number

	 addition and subtraction Adds decimals to the hundredths place (same number of digits) Identifies the value of a collection of coins to \$1.00 (without picture of coins) Adds money with regrouping 	 of digits) Adds decimals to the hundredths place in vertical format (not same number of digits)* Adds decimals to the thousandths place vertically with and without regrouping Identifies the value of a collection of coins to \$1.00
	 Identifies the value of a collection of coins and bills to \$100.00 by "counting on"* Finds equivalent combinations of coins with the same value* Combines a collection of coins and identifies the correct notation Subtracts decimals to the hundredths place (same number of digits) without regrouping 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 	 (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) Identifies the value of a collection of coins and bills to \$100.00 by "counting on"* Finds equivalent combinations of coins with the same value* Finds equivalent combinations of dollars and cents with the same value* Subtracts decimals to the hundredths place (same number of digits) without regrouping Subtracts decimals to the hundredths place (same number of digits) with regrouping Subtracts decimals to the thousandths place, vertically, with and without regrouping 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)
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
 Instantly recalls basic multiplication facts where one factor is 0-5 and the other factor is 0-12 Multiplies basic facts to 10 x 10 vertically Identifies the missing operation symbol - 1-step number sentence 	 Multiplies basic facts to 10 x 10 vertically Multiplies a 2-digit number by a 1-digit number with regrouping Solves word problems involving basic whole number multiplication facts to 10 x 10 Uses sharing for division Models whole number multiplication and division algorithms (e.g., shows multiplication as repeated addition and division as repeated subtraction) Models multiplication and division algorithms using arrays (whole numbers) Instantly recalls division facts with dividend and divisors less than 10 	 Instantly recalls basic multiplication facts where one factor is 6-12 and the other factor is 0-12* Multiplies a 2- or 3-digit number by a 1-digit number with no regrouping Multiplies a 2-digit number by a 1-digit number with regrouping Multiplies a 3- or 4-digit number by a 1-digit number Multiplies a 2-digit number by a 2-digit number with no regrouping* Multiplies a 3-digit number by a 2-digit number with no regrouping Performs mental computation with multiplication Solves word problems involving basic whole number

	 Solves word problems with whole number division facts with dividend and divisors less that 11 involving money Identifies the missing operation symbol - 2-step number sentence* 	 multiplication facts to 10 x 10 Solves word problems involving whole number multiplication with numbers greater than 10 x 10 Uses repeated subtraction for division* Models whole number multiplication and division algorithms (e.g., shows multiplication as repeated addition and division as repeated subtraction) Instantly recalls division facts with dividend and divisors less than 10 Instantly recalls division facts with dividend and divisors less than 13 Divides a 2-digit number by a 1-digit number with no remainder Uses strategies to determine 1 missing digit (multiplication/division only) 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)* Identifies the missing operation symbol - 2-step number sentence* Solves real-world 1-step problems involving multiplication or division of a whole number by a fraction* Multiplies a decimal by whole number 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)
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
	Uses rounding to estimate answers to real-world problems involving addition of numbers less than 100 (whole numbers only)	 Uses rounding to estimate answers to real-world problems involving numbers less than 1000 with addition and subtraction (whole numbers only)* Uses front end digits to estimate answers in addition and subtraction computations (whole numbers only)* Uses rounding to estimate answers to addition and subtraction problems (whole numbers only) Uses rounding to estimate answers to 1-step problems involving answers less than \$1 (whole numbers only, e.g., 10 cents + 10 cents)* Uses rounding to estimate answers to 1-step problems involving answers less than \$20 (decimals only, e.g., 10 cents)

		\$1.20 + \$2.75)
New Vocabulary: before, between, count, counting order,	New Vocabulary: closest, coins, digit, dozen, fourth,	<i>New Vocabulary:</i> billion, capacity, composite number,
diamond, dollar sign, eighth, eleventh, fifth, greater,	fourths, fraction, hundred thousand, hundreds, million,	deposit, hundred million, hundredths, longer, prime
greater than, hundred, ninth, ones, penny, ray, seventh,	nearest, number statement, one, product, round, row,	number, quintillion, regroup, standard numeral, symbol,
tens, tenth, thousand	subtrahend, ten, ten thousand, thirds, thousandth, unifix	thousands, trillion, zero
	cubes, unit, value	
New Signs and Symbols: () order of operations, ¢ cent	New Signs and Symbols: { } set notation, long division	<i>New Signs and Symbols</i> : a.m., ≈ approximately equal to, °F
sign, lb pound	symbol	degrees Fahrenheit, ft feet, \geq greater than or equal to, \leq
		less than or equal to, oz ounce, % percent, R remainder, :
		used with time

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Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 191 - 200

Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce	
181 - 190	191 - 200	201 - 210	
Mathematical Process	Mathematical Process	Mathematical Process	
 Analyzes another student's explanation to understand simple problems* Draws pictures to represent whole number problems* Uses manipulatives to represent whole number problems* Uses a structured model to solve problems using a variety of strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses appropriate technology to solve problems* Relates everyday language to mathematical language and symbols, and progresses toward the use of appropriate terminology (e.g., "add more" becomes "plus")* Uses words, pictures, numbers, and technology to explain the solution to problems* Follows a model of problem solving that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Solves problems using ordinal numbers* 	 Analyzes another student's explanation to understand more difficult problems* Restates the problem in own words* Selects the information necessary to solve a simple problem and determines whether any further information is needed Draws pictures to represent whole number problems* Uses a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses calculators as problem solving tools (e.g., to explore patterns, to validate solutions)* Uses technology to gather, analyze, and communicate mathematical information* Relates everyday language to mathematical language and symbols, and progresses toward the use of appropriate terminology (e.g., "repeated addition" becomes "multiplication," "fair share" becomes "divide," "balance the equation" becomes "solve the equation")** Verifies reasonableness of results of simple problems* Uses a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Solves problems using ordinal numbers* 	 Analyzes another student's explanation to understand more difficult problems* Restates the problem in own words* Selects the information necessary to solve a simple problem and determines whether any further information is needed Draws pictures to represent whole number problems* Uses manipulatives to represent problems* Uses a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses calculators as problem solving tools (e.g., to explore patterns, to validate solutions)* Uses technology to gather, analyze, and communicate mathematical information* Relates everyday language to mathematical language and symbols and progresses toward the use of appropriate terminology (e.g., "repeated addition" becomes "multiplication," "fair share" becomes "divide, "balance the equation" becomes "solve the equation")** Verifies reasonableness of results of simple problems* Uses a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Solves problems using ordinal numbers* Uses number sense strategies to solve problems (addition/subtraction only) 	

Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers
 Counts objects that are grouped into tens and ones Identifies whole numbers under 100 given place value terms (e.g., 3 tens and 4 ones = 34) Identifies the place value and value of each digit in whole numbers through the tens place* Identifies the place value and value of each digit in whole numbers through the hundreds place Identifies the place value and value of each digit in whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the hundred thousands Applies base ten place value concepts to solve problems using decimals* 	 Identifies whole numbers under 100 given place value terms (e.g., 3 tens and 4 ones = 34) Identifies the place value and value of each digit in whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the hundred thousands Writes whole numbers in standard and expanded form through the hundreds Writes whole numbers in standard and expanded form through the thousands 	 Writes equivalent forms of whole numbers using place value (e.g., 54 = 4 tens and 14 ones) Identifies the place value and value of each digit in whole numbers through the billions Writes whole numbers in standard and expanded form through the hundred thousands Applies base ten place value concepts with whole numbers to solve problems Writes whole numbers using place value terms and vice versa Identifies the place value and value of each digit to the tenths*
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
 Identifies the numeral and written name for whole numbers 101 to 999 (e.g., 342 is three hundred forty-two, and vice versa)* Identifies the numeral and written name for whole numbers to 1000 to 9999 (e.g., 3456 is three thousand, four hundred fifty-six, and vice versa) Identifies the numeral and written name for whole numbers 10,000 to 100,000 Identifies the number that is "1 more than" a given number* Identifies the number that is "1 less than" a given number Counts and converts to dozens with models* Writes equivalent forms of whole numbers 11 to 20 using addition (e.g., 14 = 7 + 7)* Writes equivalent forms of whole numbers using multiplication (e.g., 12 = 4 x 3 = 2 x 6 = 2 x 2 x 3)* Converts to dozens without models Rounds 3-digit whole numbers to the nearest ten Rounds 3-digit whole numbers to the nearest hundred Represents 1/4 with a diagram or model* Identifies equal parts by using models Identifies 1/2 from a region or set Identifies 2/3 or 3/3 from a region or set* 	 Identifies whole numbers 100 - 999 using base-10 blocks* Identifies whole numbers over 999 using base-10 blocks* Identifies the numeral and written name for whole numbers with a zero between digits to the ten thousands place Identifies the numeral and written name for whole numbers 10,000 to 100,000 Identifies the numeral and written name for whole numbers over 100,000 Identifies the numeral and written name for ordinal numbers 21st to100th (e.g., 21st is twenty-first, and vice versa)* Counts and converts to dozens with models* Writes equivalent forms of whole numbers using multiplication (e.g., 12 = 4 x 3 = 2 x 6 = 2 x 2 x 3)* Converts to dozens without models Rounds 2- and 3- digit whole numbers to the nearest ten Rounds 3-digit whole numbers to the nearest hundred Represents 1/3 with a diagram or model Identifies 1/4 from a region or set* Identifies 2/3 or 3/3 from a region or set* 	 Identifies whole numbers over 999 using base-10 blocks* Identifies the numeral and written name for whole numbers with a zero between digits to the ten thousands place Identifies the numeral and written name for whole numbers over 100,000 Rounds 4-, 5-, and 6-digit whole numbers to the nearest ten Rounds 4-, 5-, and 6-digit whole numbers to the nearest hundred Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds whole numbers to the nearest hundred thousand Explains the rules for rounding* Identifies halves of a region using nonadjacent parts Converts a basic fractional numeral to lowest terms (e.g., halves, thirds, quarters)* Writes mixed numbers as improper fractions and improper fractions as mixed numbers Rounds decimals to the nearest whole number* Writes a terminating decimal as a fraction or mixed number Writes a number "squared" in factored form*

 Identifies eighths from a region or set Identifies a fraction (denominators other than 2, 3, 4) 	 Identifies tenths from a region or set* Identifies a fraction (denominators other than 2, 3, 4) 	
8, 10) from a region or set	8, 10) from a region or set	
	• Matches numeric and visual representation of	
	equivalent fractions	
	• Identifies a decimal on a number line to the tenths	
	place*	
Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real
Numbers	Numbers	Numbers
Compares whole numbers through 999 Compares whole numbers through 0000	• Compares sets of objects and identifies which is equal to more than or less than the other (1 to 10 objects)*	Compares whole numbers through 999,999
Orders sets of objects 0, 20*	 Compares whole numbers through 999 999 	• Compares whole numbers unrough the bimons using the symbols $< > $ or $=$ *
 Orders whole numbers less than 100 	 Compares whole numbers to 100, using the symbols 	• Orders whole numbers less than 10.000
 Orders whole numbers less than 1000* 	for 'less than', 'equal to', or 'greater than' $(<, =, >)$	• Orders whole numbers a million or greater
 Compares and orders decimals to the hundredths place 	• Compares whole numbers through the thousands	• Compares fractions (e.g., common denominator, 1 in
(same number of digits after decimal)	using the symbols <, >, or =	the numerator, denominator is 2, 3, 4, 6, 8, 10)
	 Orders whole numbers less than 1000* 	 Compares integers on a number line*
	• Orders whole numbers less than 10,000	 Orders integers on a number line*
	• Compares and orders money in decimal form	
	• Compares and orders decimals to the thousandths	
Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory
Concepts	Concepts	Concepts
Counts numbers 0-1000*	Identifies numbers as composite	Identifies a whole number that comes before and/or
• Counts and writes by 3's*	1	after a given number (over 100)*
• Counts and writes by 4's*		 Determines multiples of a whole number*
• Counts and writes by 6's, 7's, 8's, or 9's*		 Determines common multiples of whole numbers*
• Counts ordinal numbers (first to tenth)		 Applies rules of divisibility by 5's*
• Identifies the ordinal number that comes before,		• Applies rules of divisibility by 2's
between, or after a given ordinal number (first to		
Number Concents Manay Percent Propertiens	Number Concents, Manay, Persont, Propertiens	Number Concepts Manay Percent Propertiens
Identifies the value of a collection of coins and bills to	• Writes the missing number in a proportion using basic	• Writes the missing number in a proportion using basic
\$10.00 by "counting on" (with picture of money)	facts	facts
• Makes change to \$1.00 by "counting on" or subtracting	• Makes change to \$1.00 by "counting on" or subtracting	
	• Solves problems involving basic percent concepts (e.g.,	
	10%, 50%, 100%)	
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
• Adds 1-digit to multiple-digit number with	• Adds 2-digit to 3-digit number with regrouping	• Instantly recalls basic addition facts with sums to 18 in
regrouping ^{π}	• Uses number sense strategies to determine the correct	a table ²
• Adds two or three 2-digit number with regrouping	auswer for an addition complitation?	\bullet uses reasoning strategies to solve magic solutions and
• Adda 2 digit to 2 digit number with regressing	• Adda two 2 and/or 4 digit numbers with regressing	related nuzzles (addition, whole numbers only)
 Adds 2-digit to 3-digit number with regrouping Adds 3-digit numbers with regrouping with surgest 	 Adds two 3- and/or 4-digit numbers, with regrouping, with sums over 1000 	 e destruction in the second structure is a second structure in the second structure is th

under 1000	• Adds multiple-digit numbers, with regrouping, with	sums over 1000
• Performs mental computation with 2, 3, or 4 addends	sums over 1000	• Adds multiple-digit numbers with sums under 1000
• Adds two 3- and/or 4-digit numbers, with regrouping,	• Adds multiple-digit numbers with sums under 1000	• Performs mental computation with more than 4
with sums over 1000	• Solves real-world whole number addition problems	addends
• Adds multiple-digit numbers, with regrouping, with	with sums to 20 (result unknown) - with extraneous	Solves real-world whole number addition problems
sums over 1000	information given	with sums to 100 (start unknown)*
 Solves real-world whole number addition problems 	 Solves real-world whole number addition problems 	• Adds and subtracts whole numbers using place value
with sums to 20 (result unknown) - with extraneous	with sums to 100 (start unknown)*	• Subtracts 3 or 4 digit numbers with regrouping
information given	• Solves whole number addition word problems with	Subtracts 5- 01 4-digit numbers with regrouping Denformers montal subtraction with numbers 1000 and
 Solves real world whole number addition problems 	• Solves whole humber addition word problems with	• Performs mental subtraction with numbers 1000 and
• Solves real-world whole humber addition problems	Sums over 1000	
Colored and the state of the second and the second large	• Uses a number line to construct subtraction facts with	• Subtracts numbers with 5 digits or more with
• Solves real-world whole number addition problems	subtranends and minuends through 20 (whole $1 \rightarrow 1$	regrouping
with sums to 100 (result unknown)	numbers)^	• Uses strategies to determine 2 or more missing digits
• Solves real-world whole number addition problems	• Adds and subtracts whole numbers using place value	(addition/subtraction only)
with sums to 1000	• Subtracts 1-digit number from a 2-digit number with	Solves real-world whole number problems involving
• Uses a number line to construct subtraction facts with	regrouping*	subtraction with numbers 100 and under (analysis)
subtrahends and minuends through 20 (whole	• Subtracts a 2-digit number from a 2-digit number,	• Solves whole number subtraction word problems with
numbers)*	with regrouping	numbers over 1000
 Uses models to calculate differences through 1000 	• Uses strategies for sums and differences with 2-digit	• Identifies the missing symbol to compare 2 expressions
(whole numbers)*	numbers (e.g., decomposing, compatible,	(e.g., < or >)
• Instantly recalls basic subtraction facts with minuend	compensation, partial sums, counting on)	Adds fractions with like denominators without
less than 10*	• Subtracts a 2-digit number from a 3-digit number with	reducing
• Subtracts a 1-digit number from a multiple-digit	a single regrouping	• Adds simple mixed fractions with unlike denominators
number*	• Subtracts 3- or 4-digit numbers with regrouping	(e.g., halves, thirds, fourths, eighths)*
• Subtracts 1-digit number from a 2-digit number with	• Performs mental subtraction with numbers under 1000	Adds whole numbers and fractions
regrouping*	• Performs mental subtraction with numbers 1000 and	• Uses models to add and subtract fractions and connect
• Subtracts a 2-digit number from a 2-digit number,	over	the actions to algorithms*
with regrouping	• Subtracts multiple-digit numbers with no regrouping*	 Subtracts fractions with like denominators without
• Uses strategies for sums and differences with 2-digit	 Solves real-world whole number problems involving 	reducing
numbers (e.g., decomposing, compatible,	subtraction with numbers 100 and under	• Subtracts mixed fractions with like denominators with
compensation, partial sums, counting on)	 Solves real world whole number problems involving 	• Subtracts mixed fractions with fixe denominators with
• Subtracts 2- and/or 3-digit numbers with no	subtraction with numbers under 1000	Subtracts whole numbers fractions and mixed
regrouping	Solves whole number subtraction wood mechanismith	• Subtracts whole numbers, fractions, and mixed
• Subtracts 3- or 4-digit numbers with regrouping	solves whole number subtraction word problems with numbers over 1000	I actions Colvers and would 1 stor much land in the store of the stor
 Derforme mental subtraction with numbers under 1000 	numbers over 1000	• Solves real-world 1-step problems involving addition
• Subtracts multiple digit numbers with no regression **	• Solves problems using the inverse relationship between	and subtraction of fractions with like denominators
• Subtracts multiple-digit numbers with no regrouping	addition and subtraction	• Adds decimals to the hundredths place in vertical
• Solves real-world whole number problems involving	• Uses models to add and subtract fractions and connect	format (not same number of digits)*
subtraction with numbers under 20	the actions to algorithms	• Adds decimals to the thousandths place horizontally
• Solves real-world whole number problems involving	• Subtracts fractions with like denominators without	with and without regrouping
subtraction with numbers 100 and under	reducing	• Finds equivalent combinations of dollars and cents
• Solves real-world whole number problems involving	Solves real-world 1-step problems involving addition	with the same value*
subtraction with numbers under 1000	and subtraction of fractions with like denominators	• Subtracts decimals to the hundredths place (same
• Solves real-world whole number problems involving	• Adds decimals to the hundredths place (same number	number of digits) with regrouping
addition and subtraction	of digits)	• Subtracts decimals to the thousandths place, vertically,

 Adds decimals to the hundredths place (same number of digits) 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 \$100.00 by "counting on"* Finds equivalent combinations of coins with the same value* Combines a collection of coins and identifies the correct notation Subtracts decimals to the hundredths place (same number of digits) without regrouping 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 	 Adds decimals to the hundredths place in vertical format (not same number of digits)* Adds decimals to the thousandths place vertically with and without regrouping 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) Identifies the value of a collection of coins and bills to \$100.00 by "counting on" (without picture of money) Identifies the value of a collection of coins and bills to \$100.00 by "counting on"* Finds equivalent combinations of coins with the same value* Finds equivalent combinations of dollars and cents with the same value* Subtracts decimals to the hundredths place (same number of digits) without regrouping Subtracts decimals to the thousandths place, vertically, with and without regrouping 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) 	 with and without regrouping Subtracts decimals through the hundred-thousandths place, vertically* Computes the value of multiple bills and coins (addition/subtraction only)* Computes addition and subtraction on multiple-step real-world problems involving money Solves real-world problems involving addition and subtraction of integers*
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
 Multiplies basic facts to fox 10 vertically Multiplies a 2-digit number by a 1-digit number with regrouping Solves word problems involving basic whole number multiplication facts to 10 x 10 Uses sharing for division Models whole number multiplication and division algorithms (e.g., shows multiplication as repeated addition and division as repeated subtraction) Models multiplication and division algorithms using arrays (whole numbers) Instantly recalls division facts with dividend and divisors less than 10 	 Instanty recars basic multiplication facts where one factor is 6-12 and the other factor is 0-12* Multiplies a 2- or 3-digit number by a 1-digit number with no regrouping Multiplies a 2-digit number by a 1-digit number with regrouping Multiplies a 3- or 4-digit number by a 1-digit number Multiplies a 2-digit number by a 2-digit number with no regrouping* Multiplies a 3-digit number by a 2-digit number with no regrouping Performs mental computation with multiplication Solves word problems involving basic whole number 	 Oses a number line to model induplication (whole numbers)* Instantly recalls basic multiplication facts where one factor is 6-12 and the other factor is 0-12* Instantly recalls basic multiplication and division facts in a table Multiplies a 2-digit number by a 1-digit number with regrouping Multiplies a 3- or 4-digit number by a 1-digit number Multiplies multiple 1-digit numbers Multiplies a 2-digit number by a 2-digit number with no regrouping* Multiplies a 2-digit number by a 2-digit number with

•	facts with dividend and divisors less that 11 involving money	•	Solves word problems involving whole number multiplication with numbers greater than 10 x 10 User repeated subtraction for division*		 Multiplies a 3-digit number by a 2-digit number with regrouping Performs mental computation with multiplication
•	Identifies the missing operation symbol - 2-step number sentence*		solves word problems involving whole number multiplication with numbers greater than 10 x 10 Uses repeated subtraction for division algorithms (e.g., shows multiplication and repeated addition and division as repeated subtraction) Instantly recalls division facts with dividend and divisors less than 10 Instantly recalls division facts with dividend and divisors less than 13 Divides a 2-digit number by a 1-digit number with no remainder Uses strategies to determine 1 missing digit (multiplication/division only) 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)* Identifies the missing operation symbol - 2-step number sentence* Solves real-world 1-step problems involving multiplication or division of a whole number by a fraction* Multiplies a decimal by whole number 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)		 Multiplies a 3-digit number by a 2-digit number with regrouping Performs mental computation with multiplication Multiplies a 2- or 3-digit number by multiples of 10 or 100 Multiplies a 3-digit number by a 3-digit number Solves word problems involving whole number multiplication with numbers greater than 10 x 10 Models whole number multiplication and division algorithms (e.g., uses physical materials to show 4 groups of 3 objects)* Instantly recalls division facts with dividend and divisors less than 13 Divides a 1-digit number by a 1-digit number with a remainder* Divides a 2-digit number or a 3-digit number by a 1-digit number with no remainder Performs mental computation with division Divides a 3-digit number by a 1-digit number with no remainder Divides a 4-digit number by a 1-digit number with no remainder Divides a 4-digit number by a 1-digit number with no remainder Divides a 4-digit number by a 1-digit number with a remainder Divides a 4-digit number by a 2-digit number with a remainder Divides a 4-digit number by a 2-digit number with a remainder Divides a 4-digit number by a 2-digit number with a remainder Divides a 4-digit number by a 2-digit number with a remainder Divides a 4-digit number by a 2-digit number with a remainder Divides a 4-digit number by a 2-digit number with a remainder Divides a 4-digit number by a 2-digit number with a remainder Divides a 4-digit number by a 2-digit number with a remainder Divides a 4-digit number or a 2-digit number with a remainder Divides a 4-digit number or a 2-digit number with a remainder Divides a 4-digit number or a 2-digit number with a remainder Divides a 4-digit number or a 2-digit number with a remainder Divides a 4-digit number or a 2-digit number with a remainder Divides a 4-digit number or a 2-digit num
				•	Divides decimal by a whole number

		 Computes with dollars and cents up to and including \$5.00 and converts to decimals (multiplication/division) Computes money problems with multiple operations (addition/subtraction only) Computes addition, subtraction, multiplication, and division on multiple-step, real-world problems involving money
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
Uses rounding to estimate answers to real-world problems involving addition of numbers less than 100 (whole numbers only)	 Uses rounding to estimate answers to real-world problems involving numbers less than 1000 with addition and subtraction (whole numbers only)* Uses front end digits to estimate answers in addition and subtraction computations (whole numbers only)* Uses rounding to estimate answers to addition and subtraction problems (whole numbers only) Uses rounding to estimate answers to 1-step problems involving answers less than \$1 (whole numbers only, e.g., 10 cents + 10 cents)* Uses rounding to estimate answers to 1-step problems involving answers less than \$20 (decimals only, e.g., \$1.20 + \$2.75) 	 Uses rounding to estimate answers to real-world problems involving numbers 1000 or greater with addition and subtraction (whole numbers only)* Uses front end digits to estimate answers in addition and subtraction computations (whole numbers only)* Uses front end estimation for multiplication and division computations (whole numbers only)* Uses rounding to estimate answers to addition and subtraction problems (whole numbers only) Uses rounding to estimate answers to simple multiplication and division problems (whole numbers only) Uses rounding to estimate answers to 1-step problems involving answers \$20 or greater (using decimals)* Uses rounding to estimate answers to 2-step problems involving money (whole numbers only)*
<i>New Vocabulary:</i> closest, coins, digit, dozen, fourth, fourths, fraction, hundred thousand, hundreds, million, nearest, number statement, one, product, round, row, subtrahend, ten, ten thousand, thirds, thousandth, unifix cubes, unit, value	<i>New Vocabulary:</i> billion, capacity, composite number, deposit, hundred million, hundredths, longer, prime number, quintillion, regroup, standard numeral, symbol, thousands, trillion, zero	<i>New Vocabulary:</i> above, annual, below, biggest, column, common multiple, compatible numbers, divisible, expanded numeral, hundred thousands, hundredth, integer, kilowatt, larger, magic square, mixed number, multiple, place value, plus, remainder, ten thousands, twice
New Signs and Symbols: { } set notation, long division symbol	New Signs and Symbols: a.m., ≈ approximately equal to, °F degrees Fahrenheit, ft feet, ≥ greater than or equal to, ≤ less than or equal to, oz ounce, % percent, R remainder, : used with time	<i>New Signs and Symbols:</i> ? a variable, °C degrees Celsius, \Box missing operation, – negative number, \emptyset null or empty set, p.m.

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Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 201 - 210

191 - 200201 - 210211 - 220Mathematical ProcessMathematical ProcessMathematical ProcessAnalyzes another student's explanation to understand more difficult problems in own words'• Analyzes another student's explanation to understand more difficult problems'• Analyzes another student's explanation to understand more difficult problems and whether any further information is needed'• Analyzes another student's explanation to understand more difficult problem and whether any further information is needed'• Analyzes another student's explanation to understand more difficult problem and whether any further information is needed'• Determines the required information required to solve problems'• Uses a variety of problem solving strategies (e.g., draws a picture, looks for patterns, to validate solutions)*• Uses spettures to represent problems information ' • Uses calculators as problem solving tools (e.g., to explore patterns, to validate solutions)*• Uses spettures to represent problems • Uses stechnology to gather, analyze, and communicate mathematical information*• Uses spettures to validate solutions)* • Uses stechnology to gather, analyze, and communicate mathematical information*• Uses spettures, to validate solutions)* • Uses stechnology to gather, analyze, and communicate mathematical information*• Uses spettures, to validate solutions)* • Uses satuality of problem solving model that incorporates understanding the problem, making a plan, carrying vorties reasona	Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce
Mothematical ProcessMathematical Process• Analyzes another student's explanation to understand more difficult problems'• Analyzes another student's explanation to understand more difficult problems'• Analyzes another student's explanation to understand more difficult problems'• Restates the problem information is needed• Selects the information necessary to solve a simple problem and determines whether any further information is needed• Analyzes another student's explanation to understand more difficult problems'• Restates the problem information requires ' explore patterns, to validate solutions) is needed• Determines the additional information required to solve problems'• Uses a variety of problem solving strategies (e.g., draw explore patterns, to validate solutions)*• Uses avariety of problem solving strategies (e.g., draw a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)'• Uses avariety of problem solving strategies (e.g., draw explore patterns, to validate solutions)*• Uses avariety of problem solving strategies (e.g., draw explore patterns, to validate solutions)*• Uses calculators as problem sing tools (e.g., to explore patterns, to validate solutions)*• Uses tachnology to gather, analyze, and communicate mathematical information*• Uses tachnology to gather, analyze, and communicate mathematical information*• Relates everyday language to mathematical anguage and symbols and progresses toward the use of appropriate terminology (e.g., "peated addition" becomes "multiplication," "fair share" becomes "divide," "balance the equation becomes "solve the equation")**• Verifies reasona	191 - 200	201 - 210	211 - 220
 Analyzes another student's explanation to understand more difficult problems' Analyzes another student's explanation to understand more difficult problems' Selects the information necessary to solve a simple problem and determines whether any further information is needed Draws pictures to represent whole number problems' Uses a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem solving tools (e.g., to explore patterns, to validate solutions)* Uses sectional information* Uses sectional and error, works backwards, uses models)* Uses sectional and entronicate and symbols and progresses toward the use of appropriate terminology (e.g., "add more" becomes "altivide," balance the equation "becomes "multiplication," "fair share" becomes "divide, "balance the equation becomes "divide," "balance the equation for reasonableness of results of simple problems and oblems and progresses toward the use of appropriate terminology (e.g., "repeated addition" becomes "multiplication," "fair share" becomes "divide, "balance the equation becomes "divide," "balance the equation becomes "active so of results of simple problems and becomes "active so of results of simple problems and progresses toward the use of appropriate terminology (e.g., "repeated addition" becomes "multiplication," "fair share" becomes "divide, "balance the equation becomes "divide, "balance the equation becomes "actively and addition" becomes "multiplication," "fair share" becomes "divide, "balance the equation for reasonableness of results of simple problems." Solves problems using ordinal numbers* 	Mathematical Process	Mathematical Process	Mathematical Process
• Explains different interpretations of fractions (e.g., parts of a whole, parts of a set, and division of whole	 Mathematical Process Analyzes another student's explanation to understand more difficult problems* Restates the problem in own words* Selects the information necessary to solve a simple problem and determines whether any further information is needed Draws pictures to represent whole number problems* Uses a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses calculators as problem solving tools (e.g., to explore patterns, to validate solutions)* Uses technology to gather, analyze, and communicate mathematical information* Relates everyday language to mathematical language and symbols, and progresses toward the use of appropriate terminology (e.g., "repeated addition" becomes "multiplication," "fair share" becomes "divide," "balance the equation" becomes "solve the equation")** Verifies reasonableness of results of simple problems* Uses a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Solves problems using ordinal numbers* 	 Mathematical Process Analyzes another student's explanation to understand more difficult problems* Restates the problem in own words* Selects the information necessary to solve a simple problem and determines whether any further information is needed Draws pictures to represent whole number problems* Uses manipulatives to represent problems* Uses a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses calculators as problem solving tools (e.g., to explore patterns, to validate solutions)* Uses technology to gather, analyze, and communicate mathematical information* Relates everyday language to mathematical language and symbols and progresses toward the use of appropriate terminology (e.g., "repeated addition" becomes "multiplication," "fair share" becomes "divide," "balance the equation" becomes "solve the equation")** Verifies reasonableness of results of simple problems* Uses a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Solves problems using ordinal numbers* Uses number sense strategies to solve problems (addition/subtraction only) 	 Mathematical Process Analyzes another student's explanation to understand complex problems* Restates the problem from various perspectives* Determines the required information for solving a difficult problem and whether any further information is needed* Determines the additional information required to solve problems* Uses pictures to represent problems* Uses diagrams to represent problems Uses systematic lists to represent problems* Applies a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to generate and analyze data to solve problems* Expresses the solution clearly and logically by using the appropriate mathematical terms and notation* Verifies reasonableness of results of more difficult problems* Golves real-world problems using reasoning strategies Applies a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Uses number sense strategies to solve problems (multiplication/division)* Evaluates number sense strategies used to solve problems*

Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts - Place-Value - Peal Numbers
		Red
 Identifies whole numbers under 100 given place value terms (e.g., 3 tens and 4 ones = 34) Identifies the place value and value of each digit in whole numbers through the thousands Identifies the place value and value of each digit in whole numbers through the hundred thousands Writes whole numbers in standard and expanded form through the hundreds Writes whole numbers in standard and expanded form through the thousands 	 Writes equivalent forms of whole numbers using place value (e.g., 54 = 4 tens and 14 ones) Identifies the place value and value of each digit in whole numbers through the billions Writes whole numbers in standard and expanded form through the hundred thousands Applies base ten place value concepts with whole numbers to solve problems Writes whole numbers using place value terms and vice versa Identifies the place value and value of each digit to the tenths* 	 Writes whole numbers in standard and expanded form through the hundred thousands Identifies the place value and value of each digit to the tenths* Applies base ten place value concepts to solve problems using decimals (analysis)*
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
 Identifies whole numbers 100 - 999 using base-10 blocks* Identifies whole numbers over 999 using base-10 blocks* Identifies the numeral and written name for whole numbers with a zero between digits to the ten thousands place Identifies the numeral and written name for whole numbers 10,000 to 100,000 Identifies the numeral and written name for whole numbers over 100,000 Identifies the numeral and written name for ordinal numbers 21st to100th (e.g., 21st is twenty-first, and vice versa)* Counts and converts to dozens with models* Writes equivalent forms of whole numbers 11 to 20 using addition (e.g., 12 = 4 x 3 = 2 x 6 = 2 x 2 x 3)* Converts to dozens without models Rounds 2- and 3- digit whole numbers to the nearest ten Rounds 3-digit whole numbers to the nearest hundred Represents 1/3 with a diagram or model Identifies 1/4 from a region or set Identifies 1/3 from a region or set 	 Identifies whole numbers over 999 using base-10 blocks* Identifies the numeral and written name for whole numbers with a zero between digits to the ten thousands place Identifies the numeral and written name for whole numbers over 100,000 Rounds 4-, 5-, and 6-digit whole numbers to the nearest ten Rounds 4-, 5-, and 6-digit whole numbers to the nearest hundred Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds whole numbers to the nearest hundred thousand Rounds whole numbers to the nearest hundred thousand Explains the rules for rounding* Identifies halves of a region using nonadjacent parts Converts a basic fractional numeral to lowest terms (e.g., halves, thirds, quarters)* Writes mixed numbers as improper fractions and improper fractions as mixed numbers Rounds decimals to the nearest whole number* Writes a terminating decimal as a fraction or mixed number Writes a number "squared" in factored form* 	 Identifies whole numbers 100 - 999 using 2-D and 3-D models* Identifies whole numbers over 999 using 2- and 3-D models* Rounds 4-, 5-, and 6-digit whole numbers to the nearest hundred Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds 4-, 5-, and 6-digit whole numbers to the nearest ten thousand Writes improper fractions and mixed numbers from a visual representation* Identifies a fractions in lowest terms from a region or set Identifies eighths, reduced to lowest terms, from a region or set Expresses "1" in many different ways (e.g., 3/3, 4/4)* Expresses improper fractions as whole numbers (e.g., 4/2=2)* Determines simple equivalent fractions using multiples Converts fractions to lowest terms Writes mixed numbers as improper fractions and improper fractions as mixed numbers Represents a decimal to the hundredths place (e.g., three hundredths = 0.03) Writes a decimal for a shaded region to the tenths place*
 Identifies one-main from a region or set Identifies 1/4 from a region or set Identifies 1/3 from a region or set Identifies 2/3 or 3/3 from a region or set* 	• writes a number squared in factored form	 Writes a decimal for a shaded region to the tenths place* Rounds decimals to the nearest whole number*

 Identifies tenths from a region or set* Identifies a fraction (denominators other than 2, 3, 4, 8, 10) from a region or set Matches numeric and visual representation of equivalent fractions Identifies a decimal on a number line to the tenths place* 		 Rounds decimals to the nearest tenth Identifies an integer from a number line Expresses a simple fraction as a decimal Writes a simple mixed fraction as a decimal and vice versa Writes a fraction or mixed number as a decimal when the denominator is a multiple of 10 Writes a basic percent as a fraction and vice versa (e.g., 10%, 25%, 50%, 100%)* Expresses a percent as a fraction with 100 as the denominator and vice versa Writes a basic percent as a decimal and vice versa* Expresses a percent as a decimal and vice versa Writes a basic percent as a decimal and vice versa Writes a basic percent as a decimal and vice versa Writes a power as a product of multiplied numbers and vice versa (e.g., 2^4 = 2 x 2 x 2 x 2) Uses powers to represent 10, 100, 1000, 10,000, and 100,000
Number Concepts -Compare and Order Real Numbers	Number Concepts -Compare and Order Real Numbers	Number Concepts -Compare and Order Real Numbers
 Compares sets of objects and identifies which is equal to, more than, or less than the other (1 to 10 objects)* Compares whole numbers through 999,999 Compares whole numbers to 100, using the symbols for 'less than', 'equal to', or 'greater than' (<, =, >) Compares whole numbers through the thousands using the symbols <, >, or = Orders whole numbers less than 1000* Orders whole numbers less than 10,000 Compares and orders money in decimal form Compares and orders decimals to the thousandths place (same number of digits after decimal)* 	 Compares whole numbers through 999,999 Compares whole numbers through the billions using the symbols <, >, or =* Orders whole numbers less than 10,000 Orders whole numbers a million or greater Compares fractions (e.g., common denominator, 1 in the numerator, denominator is 2, 3, 4, 6, 8, 10) Compares integers on a number line* Orders integers on a number line* 	 Compares fractions on a number line Compares fractions greater than or less than a given fraction using visual representations Compares fractions and mixed numbers Compares fractions and mixed numbers using symbols Compares two integers Orders integers on a number line*
Number Concepts -Count and Number Theory Concepts	Number Concepts -Count and Number Theory Concepts	Number Concepts -Count and Number Theory Concepts
Identifies numbers as composite	 Identifies a whole number that comes before and/or after a given number (over 100)* Determines multiples of a whole number* Determines common multiples of whole numbers* Applies rules of divisibility by 5's* Applies rules of divisibility by 2's 	 Determines factors of whole numbers Completes a factor tree for a number (prime factorization)* Determines multiples of a whole number* Determines common multiples of whole numbers* Identifies numbers as prime Identifies common factors of two or more numbers* Identifies the greatest common factor of whole numbers Applies rules of divisibility by 5's*

 Writes the missing number in a proportion using basic facts Makes change to \$1.00 by "counting on" or subtracting Solves problems involving basic percent concepts (e.g., 10%, 50%, 100%) 	Writes the missing number in a proportion using basic facts	 Uses concrete and pictorial models to represent proportions* Recognizes and writes proportions* Identifies the percent represented in a 2-D region* Solves problems involving equivalent fractions* Solves 1-step problems involving proportions Calculates basic percents of a number (e.g., 10%, 20%, 25%, 50%, 100%)
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
 Adds 2-digit to 3-digit number with regrouping Uses number sense strategies to determine the correct answer for an addition computation* Adds two 3- and/or 4-digit numbers, with regrouping, with sums over 1000 Adds multiple-digit numbers, with regrouping, with sums over 1000 Adds multiple-digit numbers with sums under 1000 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 100 (start unknown) - with extraneous information given Solves whole number addition word problems with sums over 1000 Uses a number line to construct subtraction facts with subtrahends and minuends through 20 (whole numbers)* Adds and subtracts whole numbers using place value Subtracts 1-digit number from a 2-digit number, with regrouping* Subtracts a 2-digit number from a 2-digit number, with regrouping Uses strategies for sums and differences with 2-digit numbers (e.g., decomposing, compatible, compensation, partial sums, counting on) Subtracts 3- or 4-digit number from a 3-digit number with a single regrouping Subtracts 3- or 4-digit numbers with regrouping Subtracts 3- or 4-digit numbers with numbers under 1000 Performs mental subtraction with numbers under 1000 Performs mental subtraction with numbers under 1000 	 Instantly recalls basic addition facts with sums to 18 in a table* Uses reasoning strategies to solve magic squares and related puzzles (addition, whole numbers only) Adds multiple-digit numbers, with regrouping, with sums over 1000 Adds multiple-digit numbers with sums under 1000 Performs mental computation with more than 4 addends Solves real-world whole number addition problems with sums to 100 (start unknown)* Adds and subtracts whole numbers using place value Subtracts 3- or 4-digit numbers with regrouping Performs mental subtraction with numbers 1000 and over Subtracts numbers with 5 digits or more with regrouping Uses strategies to determine 2 or more missing digits (addition/subtraction only) Solves real-world whole number problems involving subtraction with numbers 100 and under (analysis) Solves real-world whole number problems involving subtraction with numbers 100 and under (analysis) Solves whole number subtraction word problems with numbers over 1000 Identifies the missing symbol to compare 2 expressions (e.g., < or >) Adds simple mixed fractions with unlike denominators (e.g., halves, thirds, fourths, eighths)* Adds whole numbers and fractions Uses models to add and subtract fractions and connect the actions to algorithms* 	 Uses reasoning strategies to solve magic squares and related puzzles (addition, whole numbers only) Subtracts numbers with 5 digits or more with regrouping Uses strategies to determine 2 or more missing digits (addition/subtraction only) Predicts the relative size of the answer when adding whole numbers* Predicts the relative size of the answer when subtracting whole numbers* Adds fractions with like denominators without reducing Adds fractions with like denominators with reducing or converting to a mixed fraction Adds fractions with unlike denominators without reducing Adds simple mixed fractions with unlike denominators without reducing Subtracts simple fractions with unlike denominators without reducing Subtracts simple fractions with unlike denominators without reducing (e.g., halves, thirds, fourths, eighths)* Subtracts fractions with unlike denominators without reducing Subtracts mixed fractions with unlike denominators with no regrouping Solves real-world problems involving addition and subtraction of fractions where converting one denominator is necessary Adds decimals to the hundredths place in horizontal format (not same number of digits)

 subtraction with numbers 100 and under Solves real-world whole number problems involving subtraction with numbers over 1000 Solves problems using the inverse relationship between addition and subtraction* Uses models to add and subtract fractions and connect the actions to algorithms* Subtracts fractions with like denominators without reducing Solves real-world 1-step problems involving addition and subtraction of fractions with like denominators Adds decimals to the hundredths place (same number of digits) Adds decimals to the hundredths place in vertical format (not same number of digits)* Adds decimals to the thousandths place vertically with and without regrouping 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) Identifies the value of a collection of coins and bills to \$100.00 by "counting on". Finds equivalent combinations of coins with the same value* Subtracts decimals to the hundredths place (same number of digits) with the same value* Subtracts decimals to the hundredths place (same number of digits) without regrouping Subtracts decimals to the hundredths place (same number of digits) without regrouping Subtracts decimals to the hundredths place (same number of digits) without regrouping Subtracts decimals to the hundredths place (same number of digits) without regrouping Subtracts decimals to the hundredths place (same number of digits) without regrouping Subtracts decimals to the hundredths place (same number of digits) without regrouping Subtracts decimals to the hundredths place, vertically, with and without regrouping Subtracts decimals to the hundredths place (same number of digits) with regrouping Subtracts decimals	 Subtracts mixed fractions with like denominators with no regrouping Subtracts whole numbers, fractions, and mixed fractions* Solves real-world 1-step problems involving addition and subtraction of fractions with like denominators Adds decimals to the hundredths place in vertical format (not same number of digits)* Adds decimals to the thousandths place horizontally with and without regrouping Finds equivalent combinations of dollars and cents with the same value* Subtracts decimals to the hundredths place (same number of digits) with regrouping Subtracts decimals to the thousandths place, vertically, with and without regrouping Subtracts decimals to the hundredths place, vertically, with and without regrouping Subtracts decimals through the hundred-thousandths place, vertically* Computes the value of multiple bills and coins (addition/subtraction only)* Computes addition and subtraction on multiple-step real-world problems involving addition and subtraction of integers* 	 Adds decimals through the hundred-thousandths place Subtracts decimals to the thousandths place, vertically, with the zero missing in the ones place* Subtracts decimals to the thousandths place, horizontally, with and without regrouping 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)* Computes addition and subtraction on multiple-step real-world problems involving money Adds integers with like signs Solves real-world problems involving addition and subtraction of integers*
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only)		
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
 Instantly recalls basic multiplication facts where one factor is 6-12 and the other factor is 0-12* 	 Uses a number line to model multiplication (whole numbers)* 	• Instantly recalls basic multiplication and division facts in a table
• Multiplies a 2- or 3-digit number by a 1-digit number with no regrouping	 Instantly recalls basic multiplication facts where one factor is 6-12 and the other factor is 0-12* 	• Multiplies a 2-digit number by a 2-digit number with regrouping
• Multiplies a 2-digit number by a 1-digit number with regrouping	• Instantly recalls basic multiplication and division facts in a table	• Multiplies a 3-digit number by a 2-digit number with regrouping
• Multiplies a 3- or 4-digit number by a 1-digit number	• Multiplies a 2-digit number by a 1-digit number with	Performs mental computation with multiplication
• Multiplies a 2-digit number by a 2-digit number with	regrouping	• Multiplies a 3-digit number by a 3-digit number
no regrouping*	• Multiplies a 3- or 4-digit number by a 1-digit number	• Multiplies a 4- or more digit number by multiples of
• Multiplies a 3-digit number by a 2-digit number with	 Multiplies multiple 1-digit numbers 	100 or 1000
no regrouping	• Multiplies a 2-digit number by a 2-digit number with	 Multiplies multiple-digit numbers
 Performs mental computation with multiplication 	no regrouping*	 Models whole number multiplication and division
• Solves word problems involving basic whole number multiplication facts to 10 x 10	 Multiplies a 2-digit number by a 2-digit number with regrouping 	algorithms (e.g., uses physical materials to show 4 groups of 3 objects)*
 Solves word problems involving whole number 	• Multiplies a 3-digit number by a 2-digit number with	• Divides a 2-digit number or a 3-digit number by a
multiplication with numbers greater than 10 x 10	regrouping	1-digit number with a remainder
 Uses repeated subtraction for division* 	 Performs mental computation with multiplication 	 Performs mental computation with division
 Models whole number multiplication and division 	• Multiplies a 2- or 3-digit number by multiples of 10 or	• Divides a 4-digit number by a 1-digit number with no
algorithms (e.g., shows multiplication as repeated	100	remainder
addition and division as repeated subtraction)	• Multiplies a 3-digit number by a 3-digit number	• Divides a 4-digit number by a 1-digit number with a
• Instantly recalls division facts with dividend and	Solves word problems involving whole number	remainder*
divisors less than 10	multiplication with numbers greater than 10×10	• Divides a 3-digit number by a 2-digit number
• Instantly recalls division facts with dividend and	• Models whole number multiplication and division	• Divides a 4-digit number by a 2-digit number
Divides a 2 digit number by a 1 digit number with no	algorithms (e.g., uses physical materials to show 4 groups of 3 $\frac{1}{2}$ abjects)*	• Solves problems using the inverse relationship between
• Divides a 2-digit number by a 1-digit number with no remainder	groups of 5 objects)	multiplication and division
• Uses strategies to determine 1 missing digit	• Instantly recails division facts with dividend and divisors less than 13	• Divides a whole number by a whole number and
(multiplication/division only)	 Divides a 1 digit number by a 1 digit number with a 	Divides multiple digit numbers
 Solves word problems with whole number division 	remainder*	 Divides indupie-digit numbers Uses strategies to determine 2 or more missing digits
facts with dividend and divisors less than 11	• Divides a 2-digit number by a 1-digit number with no	• Oses strategies to determine 2 of more missing digits (multiplication/division only)*
• Solves simple word problems involving whole number	remainder	 Solves whole number word problems with division
division with remainder (e.g., 1-step, 1-digit divisor)*	• Divides a 2-digit number or a 3-digit number by a	over 10 x 10
• Identifies the missing operation symbol - 2-step	1-digit number with a remainder	• Solves complex word problems involving whole
number sentence*	• Performs mental computation with division	number division with remainder (e.g., 2-step, 2-digit
 Solves real-world 1-step problems involving 	• Divides a 3-digit number by a 1-digit number with no	divisor)
multiplication or division of a whole number by a	remainder	• Solves real-world problems involving 2-step multiple
fraction*	• Divides a 4-digit number by a 1-digit number with no	operations, whole numbers only
 Multiplies a decimal by whole number 	remainder	Solves real-world multiple-step problems involving
 Computes half price (multiplication/division)* 	• Divides a 4-digit number by a 1-digit number with a	whole numbers*
• Computes with dollars and cents up to and including	remainder*	• Predicts the relative size of the answer when computing
\$5.00 and converts to decimals	• Divides a 2-digit number by a 2-digit number with a	with 10's, 100's, 1000's
(multiplication/division)	remainder	• Predicts the relative size of the answer when

Computes 1 operation on real-world problems involving money over \$5.00 (multiplication/division)	 Divides a 3-digit number by a multiple of 10 Divides a 4-digit number by a 2-digit number 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 x 10 Solves real-world problems involving 2-step multiple operations, whole numbers only Identifies the missing operation symbol - 2-step number sentence* Multiplies a fraction by a fraction without reducing to simplest form (simple problem) Multiplies a decimal by whole number Divides decimal by a whole number Computes with dollars and cents up to and including \$5.00 and converts to decimals (multiplication/division) Computes money problems with multiple operations (addition/subtraction only) Computes addition, subtraction, multiplication, and division on multiple-step, real-world problems involving money 	 multiplying whole numbers Multiplies a fraction by a fraction where reducing to simplest form is necessary Multiplies a fraction by a whole number Solves 1-step real-world problems involving fractions with multiplication and division Multiplies a decimal by a decimal, vertical form (factors to tenths or hundredths) Multiplies a decimal by a decimal (factors to hundredths) Multiplies a decimal by a decimal (factors to hundredths) Solves real-world problems involving decimals (not money) using multiplication* Divides decimal by a whole number 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, subtraction, multiplication, and division on multiple-step, real-world problems involving money Multiplies integers with unlike signs* Solves real-world problems involving multiplication and division of integers*
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness	Calculates the value of a power (e.g., 2/3 = 8) Number Computation -Estimate and Reasonableness
 Uses rounding to estimate answers to real-world problems involving numbers less than 1000 with addition and subtraction (whole numbers only)* Uses front end digits to estimate answers in addition and subtraction computations (whole numbers only)* Uses rounding to estimate answers to addition and subtraction problems (whole numbers only) Uses rounding to estimate answers to 1-step problems involving answers less than \$1 (whole numbers only, e.g., 10 cents + 10 cents)* Uses rounding to estimate answers to 1-step problems involving answers less than \$20 (decimals only, e.g., \$1.20 + \$2.75) 	 Uses rounding to estimate answers to real-world problems involving numbers 1000 or greater with addition and subtraction (whole numbers only)* Uses front end digits to estimate answers in addition and subtraction computations (whole numbers only)* Uses front end estimation for multiplication and division computations (whole numbers only)* Uses rounding to estimate answers to addition and subtraction problems (whole numbers only) Uses rounding to estimate answers to simple multiplication and division problems (whole numbers only) Uses rounding to estimate answers to 1-step problems involving answers \$20 or greater (using decimals)* Uses rounding to estimate answers to 2-step problems involving money (whole numbers only)* 	 Uses rounding to estimate answers to real-world problems involving multiplication and division of numbers less than 100 (whole numbers only)* Uses rounding to estimate answers to real-world problems involving numbers less than 1000 with multiplication and division (whole numbers only)* 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 (whole numbers only)* Uses rounding to estimate answers to difficult multiplication and division problems (whole numbers only) Uses rounding to estimate answers to 1-step problems involving answers \$20 or greater (using decimals)* Uses rounding to estimate answers to 2-step problems involving money (using decimals) Uses referent numbers to estimate answers when

	involving money (using decimals)	adding and subtracting fractions and mixed numbers*
<i>New Vocabulary:</i> billion, capacity, composite number, deposit, hundred million, hundredths, longer, prime number, quintillion, regroup, standard numeral, symbol, thousands, trillion, zero	<i>New Vocabulary:</i> above, annual, below, biggest, column, common multiple, compatible numbers, divisible, expanded numeral, hundred thousands, hundredth, integer, kilowatt, larger, magic square, mixed number, multiple, place value, plus, remainder, ten thousands	<i>New Vocabulary:</i> coin, common factor, decimal, decimal form, decimal point, factor tree, greatest common factor, interest, lowest terms, negative, positive, reduce, region, smaller, south, standard form, systematic list, triple
	twice	
<i>New Signs and Symbols:</i> a.m., \approx approximately equal to, °F degrees Fahrenheit, ft feet, \geq greater than or equal to, \leq less than or equal to, oz ounce, % percent, R remainder, : used with time	<i>New Signs and Symbols:</i> ? a variable, °C degrees Celsius, □ missing operation, – negative number, Ø null or empty set, p.m.	New Signs and Symbols: () parenthesis around an integer, \$ dollar sign, in. inch, mph miles per hour, – negative sign, ≠ not equal to, + positive number

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Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 211 - 220

Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce
201 - 210	211 - 220	221 - 230
Mathematical Process	Mathematical Process	Mathematical Process
 Analyzes another student's explanation to understand more difficult problems* Restates the problem in own words* Selects the information necessary to solve a simple problem and determines whether any further information is needed Draws pictures to represent whole number problems* Uses manipulatives to represent problems* Uses a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses calculators as problem solving tools (e.g., to explore patterns, to validate solutions)* Uses technology to gather, analyze, and communicate mathematical information* Relates everyday language to mathematical language and symbols and progresses toward the use of appropriate terminology (e.g., "repeated addition" becomes "multiplication," "fair share" becomes "divide," "balance the equation" becomes "solve the equation")** Verifies reasonableness of results of simple problems* Uses a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Solves problems using ordinal numbers* Uses number sense strategies to solve problems (addition/subtraction only) 	 Analyzes another student's explanation to understand complex problems* Restates the problem from various perspectives* Determines the required information for solving a difficult problem and whether any further information is needed* Determines the additional information required to solve problems* Uses pictures to represent problems* Uses diagrams to represent problems Uses systematic lists to represent problems* Applies a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to generate and analyze data to solve problems* Expresses the solution clearly and logically by using the appropriate mathematical terms and notation* Verifies reasonableness of results of more difficult problems* Solves real-world problems using reasoning strategies Applies a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Uses number sense strategies to solve problems Explains different interpretations of fractions (e.g., parts of a whole, parts of a set, and division of whole numbers by whole numbers)* 	 Analyzes another student's explanation to understand complex problems* Restates the problem from various perspectives* Identifies the question from a problem solving situation Determines the required information for solving a difficult problem and whether any further information is needed* Determines the additional information required to solve problems* Uses pictures to represent problems* Applies a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to generate and analyze data to solve problems* Organizes information from a paragraph to solve a problem* Applies what was learned to a new and/or more complex problem* Expresses the solution clearly and logically by using the appropriate mathematical terms and notation* Verifies reasonableness of results of more difficult problems* Solves real-world problems using reasoning strategies Applies a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Uses alternative algorithms to explain the meaning of "fraction"*

	Uses correct terminology for integers*	Defines "absolute value"*
		• Identifies whether predictions are based on theoretical
		or experimental probability*
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers
 Writes equivalent forms of whole numbers using place value (e.g., 54 = 4 tens and 14 ones) Identifies the place value and value of each digit in whole numbers through the billions Writes whole numbers in standard and expanded form through the hundred thousands Applies base ten place value concepts with whole numbers to solve problems Writes whole numbers using place value terms and vice versa Identifies the place value and value of each digit to the tenths* 	 Writes whole numbers in standard and expanded form through the hundred thousands Identifies the place value and value of each digit to the tenths* Applies base ten place value concepts to solve problems using decimals (analysis)* 	 Writes equivalent forms of whole numbers using place value (numbers 100 or greater) (e.g., 253 = 2 hundreds, 5 tens, and 3 ones) Writes whole numbers in standard and exponential form Identifies the place value and value of each digit to the hundredths and thousandths Identifies the place value and value of each digit in numbers through the ten thousandths and beyond
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
 Identifies whole numbers over 999 using base-10 blocks* Identifies the numeral and written name for whole numbers with a zero between digits to the ten thousands place Identifies the numeral and written name for whole numbers over 100,000 Rounds 4-, 5-, and 6-digit whole numbers to the nearest ten Rounds 4-, 5-, and 6-digit whole numbers to the nearest hundred Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds whole numbers to the nearest hundred thousand Explains the rules for rounding* Identifies halves of a region using nonadjacent parts Converts a basic fractional numeral to lowest terms (e.g., halves, thirds, quarters)* Writes mixed numbers as improper fractions and improper fractions as mixed numbers Rounds decimals to the nearest whole number* Writes a terminating decimal as a fraction or mixed number 	 Identifies whole numbers 100 - 999 using 2-D and 3-D models* Identifies whole numbers over 999 using 2- and 3-D models* Rounds 4-, 5-, and 6-digit whole numbers to the nearest hundred Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds 4-, 5-, and 6-digit whole numbers to the nearest ten thousand Writes improper fractions and mixed numbers from a visual representation* Identifies a fractions in lowest terms from a region or set Identifies eighths, reduced to lowest terms, from a region or set Expresses "1" in many different ways (e.g., 3/3, 4/4)* Expresses improper fractions as whole numbers (e.g., 4/2=2)* Determines simple equivalent fractions using multiples Converts fractions to lowest terms Writes mixed numbers as improper fractions and improper fractions as mixed numbers Represents a decimal to the hundredths place (e.g., three hundredths = 0.03) Writes a decimal for a shaded region to the tenths 	 Rounds whole numbers to the nearest million* Rounds wholes numbers to the nearest billion* Identifies a fractions in lowest terms from a region or set Determines simple equivalent fractions using multiples Determines equivalent fractions using multiples Represents a decimal to thousandths place (e.g., three thousandths = 0.003) Represents a decimal to the hundred thousandths place - (e.g., three hundred thousandths = 0.0003)* Writes a decimal for a shaded region to the hundredths place Rounds decimals to the nearest hundredth Locates rational numbers on a number line Writes a fraction or mixed number as a decimal and vice versa Writes a ratio as a decimal and vice versa* Expresses a percent as a fraction and vice versa Writes a ratio as a percent and vice versa* Expresses the equivalent form of a fraction, decimal, and/or percent (simple fraction)* Writes a power as a product of multiplied numbers and vice versa (e.g., 2^4 = 2 x 2 x 2 x 2)

	 Rounds decimals to the nearest whole number* Rounds decimals to the nearest tenth Identifies an integer from a number line Expresses a simple fraction as a decimal Writes a simple mixed fraction as a decimal and vice versa Writes a fraction or mixed number as a decimal when the denominator is a multiple of 10 Writes a basic percent as a fraction and vice versa (e.g., 10%, 25%, 50%, 100%)* Expresses a percent as a fraction with 100 as the denominator and vice versa Writes a basic percent as a decimal and vice versa Writes a basic percent as a decimal and vice versa Writes a basic percent as a decimal and vice versa Writes a basic percent as a decimal and vice versa Writes a power as a product of multiplied numbers and vice versa (e.g., 2^4 = 2 x 2 x 2 x 2) Uses powers to represent 10, 100, 1000, 10,000, and 100,000 	= 8000) • Uses powers to represent 10, 100, 1000, 10,000, and 100,000
Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real
 Compares whole numbers through 999,999 Compares whole numbers through the billions using the symbols <, >, or =* Orders whole numbers less than 10,000 Orders whole numbers a million or greater Compares fractions (e.g., common denominator, 1 in the numerator, denominator is 2, 3, 4, 6, 8, 10) Compares integers on a number line* Orders integers on a number line* 	 Compares fractions on a number line Compares fractions greater than or less than a given fraction using visual representations Compares fractions and mixed numbers Compares fractions and mixed numbers using symbols Compares two integers Orders integers on a number line* 	 Determines the relative magnitude of whole numbers* Orders whole numbers a million or greater using < or > symbols* Compares fractions (e.g., comparing numerators and denominators) Orders fractions on a number line* Compares and orders decimals to the hundredths place (not same number of digits after decimal)* Compares and orders decimals to the thousandths place (not same number of digits after decimal) Compares and orders decimals past the thousandths place (not same number of digits after decimal) Compares and orders decimals past the thousandths place* Orders integers Orders rational numbers, in a/b form* Orders fractions and decimals to the hundred thousandths Compares numbers written exponentially
Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory
 Identifies a whole number that comes before and/or after a given number (over 100)* Determines multiples of a whole number* 	 Determines factors of whole numbers Completes a factor tree for a number (prime factorization)* 	 Determines factors of whole numbers Completes a factor tree for a number (prime factorization)*

 Determines common multiples of whole numbers* Applies rules of divisibility by 5's* Applies rules of divisibility by 2's 	 Determines multiples of a whole number* Determines common multiples of whole numbers* Identifies numbers as prime Identifies common factors of two or more numbers* Identifies the greatest common factor of whole numbers Applies rules of divisibility by 5's* 	 Uses multiple number theory concepts to solve problems (e.g., factors, digits, odd/even, divisibility) Determines common denominators of fractions Uses factor and multiple concepts to solve simple problems Identifies common factors of two or more numbers* Identifies the greatest common factor of whole numbers Uses divisibility concepts to solve problems*
Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions	Number Concepts - Money, Percent, Proportions
Writes the missing number in a proportion using basic facts	 Uses concrete and pictorial models to represent proportions* Recognizes and writes proportions* Identifies the percent represented in a 2-D region* Solves problems involving equivalent fractions* Solves 1-step problems involving proportions Calculates basic percents of a number (e.g., 10%, 20%, 25%, 50%, 100%) 	 Uses concrete and pictorial models to represent ratios* Writes the missing number in a proportion with numbers other than basic facts (e.g., 5/13=?/117) Identifies the percent represented in a given model* Solves problems involving ratios Solves 1-step problems involving proportions Calculates basic percents of a number (e.g., 10%, 20%, 25%, 50%, 100%) Calculates a percent of a number (e.g., 6% of 30) Calculates a number from a percent (e.g., 4 is 9% of what) Adds and subtracts percent Solves problems involving tax and tips Solves problems involving simple interest rates with the formula Solves problems comparing percents, fractions, and decimals*
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
 Instantly recalls basic addition facts with sums to 18 in a table* Uses reasoning strategies to solve magic squares and related puzzles (addition, whole numbers only) Adds multiple-digit numbers, with regrouping, with sums over 1000 Adds multiple-digit numbers with sums under 1000 Performs mental computation with more than 4 addends Solves real-world whole number addition problems with sums to 100 (start unknown)* Adds and subtracts whole numbers using place value Subtracts 3- or 4-digit numbers with regrouping 	 Uses reasoning strategies to solve magic squares and related puzzles (addition, whole numbers only) Subtracts numbers with 5 digits or more with regrouping Uses strategies to determine 2 or more missing digits (addition/subtraction only) Predicts the relative size of the answer when adding whole numbers* Predicts the relative size of the answer when subtracting whole numbers* Adds fractions with like denominators with reducing Adds fractions with like denominators with reducing 	 Models algorithms using place value concepts (addition and subtraction with whole numbers)* Predicts the relative size of the answer when adding whole numbers* Predicts the relative size of the answer when subtracting whole numbers* Adds fractions with like denominators with reducing or converting to a mixed fraction Adds fractions with unlike denominators without reducing Adds fractions with unlike denominators with reducing

 Subtracts numbers with 5 digits or more with regrouping Uses strategies to determine 2 or more missing digits (addition/subtraction only) Solves real-world whole number problems involving subtraction with numbers 100 and under (analysis) Solves whole number subtraction word problems with numbers over 1000 Identifies the missing symbol to compare 2 expressions (e.g., < or >) Adds fractions with like denominators without reducing Adds simple mixed fractions with unlike denominators (e.g., halves, thirds, fourths, eighths)* Adds whole numbers and fractions Uses models to add and subtract fractions and connect the actions to algorithms* Subtracts fractions with like denominators without reducing Subtracts mixed fractions with like denominators with no regrouping Subtracts whole numbers, fractions, and mixed fractions* Solves real-world 1-step problems involving addition and subtraction of fractions with like denominators Adds decimals to the hundredths place in vertical format (not same number of digits)* Adds decimals to the thousandths place (same number of digits) with regrouping Subtracts decimals to the hundredths place (same number of digits) with regrouping Subtracts decimals to the hundredths place, vertically, with and without regrouping Subtracts decimals to the hundredths place, vertically, with and without regrouping Subtracts decimals to the hundredths place (same number of digits) with regrouping Subtracts decimals to the hundredths place, vertically, with and without regrouping Subtracts decimals to the downandths place, vertically, with and without regrouping Subtracts decimals to the hundredths place (same number of digits) with regrouping Subtracts decimals to the downandths place, vertically, with and without regrouping Subtracts decimals to the downandths place, vertically, with and	 reducing Adds mixed fractions with like denominators Adds simple mixed fractions with unlike denominators (e.g., halves, thirds, fourths, eighths)* Subtracts simple fractions with unlike denominators without reducing (e.g., halves, quarters, thirds, eighths)* Subtracts fractions with unlike denominators without reducing Subtracts mixed fractions with like denominators without reducing Subtracts mixed fractions with unlike denominators with no regrouping Subtracts mixed fractions with unlike denominators with no regrouping Solves real-world problems involving addition and subtraction of fractions where converting one denominator is necessary Adds decimals to the hundredths place in horizontal format (not same number of digits) Adds decimals to the thousandths place, horizontally with and without regrouping Adds decimals to the thousandths place, vertically, with the zero missing in the ones place* Subtracts decimals to the thousandths place, horizontally, with and without regrouping 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)* Computes addition and subtraction on multiple-step real-world problems involving money Adds integers with like signs Solves real-world problems involving addition and subtraction of integers* 	 fractions is necessary Subtracts fractions with like denominators with reducing Subtracts fractions with unlike denominators with reducing[*] Subtracts mixed fractions with unlike denominators with reducing[*] Subtracts mixed fractions with unlike denominators with no regrouping Subtracts whole numbers, fractions, and mixed fractions with regrouping Solves real-world problems involving addition and subtraction of fractions where converting one denominator is necessary Adds decimals to the hundredths place in horizontal format (not same number of digits) Adds decimals to the hundredths place (not same number of digits) Subtracts decimals to the thousandths place, horizontally, with and without regrouping Subtracts decimals through the hundred-thousandths place, horizontally Subtracts a decimal from a whole number, horizontally Adds integers with unlike signs Adds several positive and negative integers Solves real-world problems involving addition and subtraction of integers[*] Solves real-world problems involving addition and subtraction of integers[*]
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Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
• Uses a number line to model multiplication (whole	• Instantly recalls basic multiplication and division facts	• Uses multiplication strategies to explain computation
numbers)*	in a table	(e.g., doubles, 9-patterns, decomposing, partial
• Instantly recalls basic multiplication facts where one	• Multiplies a 2-digit number by a 2-digit number with	products)*
factor is 6-12 and the other factor is 0-12*	regrouping	 Multiplies multiple-digit numbers
• Instantly recalls basic multiplication and division facts	• Multiplies a 3-digit number by a 2-digit number with	 Models algorithms using place value concepts
in a table	regrouping	(multiplication and division with whole numbers)*
• Multiplies a 2-digit number by a 1-digit number with	Performs mental computation with multiplication	• Divides a 4-digit number by a 2-digit number
regrouping	• Multiplies a 3-digit number by a 3-digit number	 Divides multiple-digit numbers
• Multiplies a 3- or 4-digit number by a 1-digit number	• Multiplies a 4- or more digit number by multiples of	 Divides numbers by powers of 10*
 Multiplies multiple 1-digit numbers 	100 or 1000	Solves complex word problems involving whole
• Multiplies a 2-digit number by a 2-digit number with	 Multiplies multiple-digit numbers 	number division with remainder (e.g., 2-step, 2-digit
no regrouping*	Models whole number multiplication and division	divisor)
• Multiplies a 2-digit number by a 2-digit number with	algorithms (e.g., uses physical materials to show 4	• Uses division for multiple-step real-world problems
regrouping	groups of 3 objects)*	(whole numbers)*
• Multiplies a 3-digit number by a 2-digit number with	• Divides a 2-digit number or a 3-digit number by a	Solves real-world multiple-step problems involving
regrouping	1-digit number with a remainder	whole numbers*
• Performs mental computation with multiplication	 Performs mental computation with division 	• Predicts the relative size of the answer when dividing
• Multiplies a 2- or 3-digit number by multiples of 10 or	• Divides a 4-digit number by a 1-digit number with no	whole numbers
100	remainder	• Multiplies a fraction by a fraction without reducing to
 Multiplies a 3-digit number by a 3-digit number 	• Divides a 4-digit number by a 1-digit number with a	simplest form (complex problem)
 Solves word problems involving whole number 	remainder*	• Multiplies a fraction by a fraction where reducing to
multiplication with numbers greater than 10 x 10	• Divides a 3-digit number by a 2-digit number	simplest form is necessary
 Models whole number multiplication and division 	• Divides a 4-digit number by a 2-digit number	 Multiplies a fraction by a whole number
algorithms (e.g., uses physical materials to show 4	• Solves problems using the inverse relationship between	 Multiplies mixed fractions
groups of 3 objects)*	multiplication and division	• Divides a fraction by a fraction
 Instantly recalls division facts with dividend and 	• Divides a whole number by a whole number and	 Divides a mixed fraction by a fraction
divisors less than 13	expresses the remainder as a decimal*	• Solves 1-step real-world problems involving fractions
• Divides a 1-digit number by a 1-digit number with a	Divides multiple-digit numbers	with multiplication and division
remainder*	• Uses strategies to determine 2 or more missing digits	• Solves 2- or more step real-world problems involving
• Divides a 2-digit number by a 1-digit number with no	(multiplication/division only)*	fractions with multiplication and division
remainder	Solves whole number word problems with division	• Solves problems involving fractions (e.g., multiple
• Divides a 2-digit number or a 3-digit number by a	over 10 x 10	operations, conversions)*
1-digit number with a remainder	 Solves complex word problems involving whole 	• Multiplies a decimal by a decimal, vertical form
 Performs mental computation with division 	number division with remainder (e.g., 2-step, 2-digit	(factors to tenths or hundredths)
• Divides a 3-digit number by a 1-digit number with no	divisor)	• Multiplies a decimal by a decimal (factors to
remainder	Solves real-world problems involving 2-step multiple	hundredths)
• Divides a 4-digit number by a 1-digit number with no	operations, whole numbers only	 Multiplies a decimal by 10, 100, 1000
remainder	Solves real-world multiple-step problems involving	• Multiplies a decimal by a decimal (factors to
• Divides a 4-digit number by a 1-digit number with a	whole numbers*	thousandths)
remainder*	• Predicts the relative size of the answer when computing	 Solves real-world problems involving rate of pay
• Divides a 2-digit number by a 2-digit number with a	with 10's, 100's, 1000's	• Divides a decimal by 10, 100, 1000
remainder	• Predicts the relative size of the answer when	• Divides a decimal by a decimal
 Divides a 3-digit number by a multiple of 10 	multiplying whole numbers	

 Divides a 4-digit number by a 2-digit number 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 x 10 Solves real-world problems involving 2-step multiple operations, whole numbers only Identifies the missing operation symbol - 2-step number sentence* Multiplies a fraction by a fraction without reducing to simplest form (simple problem) Multiplies a decimal by whole number Divides decimal by a whole number Computes with dollars and cents up to and including \$5.00 and converts to decimals (multiplication/division) Computes money problems with multiple operations (addition/subtraction only) Computes addition, subtraction, multiplication, and division on multiple-step, real-world problems involving money 	 Multiplies a fraction by a fraction where reducing to simplest form is necessary Multiplies a fraction by a whole number Solves 1-step real-world problems involving fractions with multiplication and division Multiplies a decimal by a decimal, vertical form (factors to tenths or hundredths) Multiplies a decimal by a decimal (factors to hundredths) Solves real-world problems involving decimals (not money) using multiplication* Divides decimal by a whole number 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, subtraction, multiplication, and division on multiple-step, real-world problems involving money Multiplies integers with unlike signs* Solves real-world problems involving multiplication and division of integers* 	 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) Multiplies integers with unlike signs* Uses a number line to determine the midpoint between a positive and negative number* Divides integers with unlike signs* Solves real-world problems involving multiplication and division of integers* Calculates the value of a power (e.g., 2^3 = 8)
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
 Oses rounding to estimate answers to real-world problems involving numbers 1000 or greater with addition and subtraction (whole numbers only)* Uses front end digits to estimate answers in addition and subtraction computations (whole numbers only)* Uses front end estimation for multiplication and division computations (whole numbers only)* Uses rounding to estimate answers to addition and subtraction problems (whole numbers only) Uses rounding to estimate answers to simple multiplication and division problems (whole numbers only) Uses rounding to estimate answers to 1-step problems involving answers \$20 or greater (using decimals)* Uses rounding to estimate answers to 2-step problems involving money (whole numbers only)* Uses rounding to estimate answers to 2-step problems involving money (using decimals) 	 Oses rounding to estimate answers to real-world problems involving multiplication and division of numbers less than 100 (whole numbers only)* Uses rounding to estimate answers to real-world problems involving numbers less than 1000 with multiplication and division (whole numbers only)* 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 1-step problems involving answers \$20 or greater (using decimals)* Uses rounding to estimate answers to 2-step problems involving money (using decimals) Uses referent numbers to estimate answers when adding and subtracting fractions and mixed numbers* 	 Oses rounding to estimate answers to real-world problems involving multiplication and division of numbers less than 100 (whole numbers only)* Uses rounding to estimate answers to real-world problems involving numbers less than 1000 with multiplication and division (whole numbers only)* 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 real-world problems involving numbers 1000 or greater using multiplication and division (whole numbers only)* Uses rounding to estimate answers to real-world problems involving fractions and mixed numbers* Uses estimation to solve problems involving fractions and mixed numbers

<i>New Vocabulary:</i> above, annual, below, biggest, column, common multiple, compatible numbers, divisible, expanded numeral, hundred thousands, hundredth, integer, kilowatt, larger, magic square, mixed number, multiple, place value, plus, remainder, ten thousands, twice	<i>New Vocabulary:</i> coin, common factor, decimal, decimal form, decimal point, factor tree, greatest common factor, interest, lowest terms, negative, positive, reduce, region, smaller, south, standard form, systematic list, triple	<i>New Vocabulary:</i> absolute value, borrow, common denominator, compute, cord, expanded notation, experimental probability, exponent, half hour, heaviest, least common denominator, lightest, lowest common denominator, net, odd, real number, short, tax, ten million, ten thousandth, tenths, theoretical probability, thousandths, whole
<i>New Signs and Symbols:</i> ? a variable, °C degrees Celsius, \Box missing operation, – negative number, \emptyset null or empty set, p.m.	New Signs and Symbols: () parenthesis around an integer, \$ dollar sign, in. inch, mph miles per hour, – negative sign, ≠ not equal to, + positive number	<i>New Signs and Symbols:</i> gal gallon, I interest, m meter/metre, • multiplication symbol, # number, : ratio, × multiplication, < less than, = is equal to, > greater than

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Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 221 - 230

Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce
211 - 220	221 - 230	231 - 240
Mathematical Process	Mathematical Process	Mathematical Process
 Analyzes another student's explanation to understand complex problems* Restates the problem from various perspectives* Determines the required information for solving a difficult problem and whether any further information is needed* Determines the additional information required to solve problems* Uses pictures to represent problems* Uses diagrams to represent problems Uses systematic lists to represent problems* Applies a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to generate and analyze data to solve problems* Expresses the solution clearly and logically by using the appropriate mathematical terms and notation* Verifies reasonableness of results of more difficult problems* Golves real-world problems using reasoning strategies Applies a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Uses number sense strategies to solve problems (multiplication/division)* Evaluates number sense strategies used to solve problems* 	 Analyzes another student's explanation to understand complex problems* Restates the problem from various perspectives* Identifies the question from a problem solving situation Determines the required information for solving a difficult problem and whether any further information is needed* Determines the additional information required to solve problems* Uses pictures to represent problems* Applies a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to generate and analyze data to solve problems* Applies what was learned to a new and/or more complex problem* Expresses the solution clearly and logically by using the appropriate mathematical terms and notation* Verifies reasonableness of results of more difficult problems* Solves real-world problems using reasoning strategies Applies a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Uses alternative algorithms to explain the meaning of "fraction"* 	 Uses equivalent representations to understand new mathematical content* Uses pictures to represent problems* Applies the most appropriate problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ideas* Organizes information from a paragraph to solve a problem* Analyzes complex problems to separate into simpler parts* Verifies reasonableness of results of complex problems* Uses the components of mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, interpretation of solution within the model, validation in original real-world problem situation)* Uses correct terminology for powers*

 Uses correct terminology for integers* 	 Defines "absolute value"* 	
	• Identifies whether predictions are based on theoretical	
	or experimental probability*	
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers
 Writes whole numbers in standard and expanded form through the hundred thousands Identifies the place value and value of each digit to the tenths* Applies base ten place value concepts to solve problems using decimals (analysis)* 	 Writes equivalent forms of whole numbers using place value (numbers 100 or greater) (e.g., 253 = 2 hundreds, 5 tens, and 3 ones) Writes whole numbers in standard and exponential form Identifies the place value and value of each digit to the hundredths and thousandths Identifies the place value and value of each digit in numbers through the ten thousandths and beyond 	• Writes whole numbers in standard and exponential form
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
 Identifies whole numbers 100 - 999 using 2-D and 3-D models* Identifies whole numbers over 999 using 2- and 3-D models* Rounds 4-, 5-, and 6-digit whole numbers to the nearest hundred Rounds 4-, 5-, and 6-digit whole numbers to the nearest thousand Rounds 4-, 5-, and 6-digit whole numbers to the nearest ten thousand Writes improper fractions and mixed numbers from a visual representation* Identifies eighths, reduced to lowest terms, from a region or set Expresses "1" in many different ways (e.g., 3/3, 4/4)* Expresses improper fractions as whole numbers (e.g., 4/2=2)* Determines simple equivalent fractions using multiples Converts fractions to lowest terms Writes mixed numbers as improper fractions and improper fractions as whole numbers Represents a decimal to the hundredths place (e.g., three hundredths = 0.03) Writes a decimal for a shaded region to the tenths place* Rounds decimals to the nearest tenth 	 Rounds whole numbers to the nearest million* Rounds wholes numbers to the nearest million* Identifies a fractions in lowest terms from a region or set Determines equivalent fractions using multiples Represents a decimal to thousandths place (e.g., three thousandths = 0.003) Represents a decimal to the hundred thousandths place - (e.g., three hundred thousandths = 0.0003)* Writes a decimal for a shaded region to the hundredths place Rounds decimals to the nearest hundredth Locates rational numbers on a number line Writes a fraction or mixed number as a decimal when the denominator is a multiple of 10 Writes a ratio as a decimal and vice versa* Expresses the equivalent form of a fraction, decimal, and/or percent (simple fraction)* Writes a power as a product of multiplied numbers and vice versa (e.g., 2^4 = 2 x 2 x 2 x 2) Uses powers to represent 10, 100, 1000, 10,000, and 100,000 	 Rounds decimals to the nearest hundredth Rounds decimals to nearest thousandth* Rounds decimals to nearest ten-thousandth* Writes a ratio as a decimal and vice versa* Writes a fraction as a decimal and vice versa Writes a fraction as a mixed decimal and vice versa* Expresses a decimal as a whole number (e.g., 1.3 thousand = ?)* Expresses a percent as a fraction and vice versa Writes a ratio as a percent and vice versa* Uses powers of 10 to represent numbers (e.g., 8 x 10^3 = 8000) Writes a number expressed in scientific notation in standard form* Writes a decimal in scientific notation Writes a basolute value using positive and negative numbers*

 Identifies an integer from a number line Expresses a simple fraction as a decimal Writes a simple mixed fraction as a decimal and vice versa Writes a fraction or mixed number as a decimal when the denominator is a multiple of 10 Writes a basic percent as a fraction and vice versa (e.g., 10%, 25%, 50%, 100%)* Expresses a percent as a fraction with 100 as the denominator and vice versa Writes a basic percent as a decimal and vice versa* Expresses a percent as a decimal and vice versa Writes a basic percent as a decimal and vice versa Writes a power as a product of multiplied numbers and vice versa (e.g., 2^4 = 2 x 2 x 2 x 2) Uses powers to represent 10, 100, 1000, 10,000, and 100,000 		
Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real
 Compares fractions on a number line Compares fractions greater than or less than a given fraction using visual representations Compares fractions and mixed numbers Compares fractions and mixed numbers using symbols Compares two integers Orders integers on a number line* 	 Determines the relative magnitude of whole numbers* Orders whole numbers a million or greater using < or > symbols* Compares fractions (e.g., comparing numerators and denominators) Orders fractions on a number line* Compares and orders decimals to the hundredths place (not same number of digits after decimal)* Compares and orders decimals to the thousandths place (not same number of digits after decimal) Compares and orders decimals past the thousandths place* Compares two integers Orders integers 	 Compares fractions (e.g., comparing numerators and denominators) Orders rational numbers, in a/b form* Compares and orders decimal and fractional coordinates on a number line* Estimates relative magnitude of fractions, decimals, and percents* Orders fractions, decimals, and percents Orders fractions, decimals, and integers on a number line* Compares numbers written exponentially
	 Orders rational numbers, in a/b form* Orders fractions and decimals to the hundred thousandths Compares numbers written exponentially 	
Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory Concepts	Number Concepts -Count and Number Theory Concepts
 Determines factors of whole numbers Completes a factor tree for a number (prime factorization)* Determines multiples of a whole number* Determines common multiples of whole numbers* 	 Determines factors of whole numbers Completes a factor tree for a number (prime factorization)* Uses multiple number theory concepts to solve problems (e.g., factors, digits, odd/even, divisibility) 	 Determines the prime factorization of a number Applies rules of divisibility by 3's* Applies rules of divisibility

 Identifies numbers as prime Identifies common factors of two or more numbers* 	Determines common denominators of fractions	
 Identifies the greatest common factor of whole 	problems	
numbers	 Identifies common factors of two or more numbers* 	
• Applies rules of divisibility by 5's*	• Identifies the greatest common factor of whole	
	numbers	
	 Uses divisibility concepts to solve problems* 	
Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions
• Uses concrete and pictorial models to represent	• Uses concrete and pictorial models to represent ratios*	• Identifies the ratio from a given real-world situation*
proportions [*]	• Writes the missing number in a proportion with	• Estimates percent using 2-D regions*
 Recognizes and writes proportions Identifies the percent represented in a 2 D region* 	Identifies the percent represented in a given model*	• Compares and orders percent?
 Identifies the percent represented in a 2-D region Solves problems involving equivalent fractions* 	 Solves problems involving ratios 	• Solves problems involving equivalent fractions
 Solves 1-step problems involving proportions 	 Solves 1-step problems involving proportions 	 Solves problems involving ratios
 Calculates basic percents of a number (e.g., 10%, 20%, 	 Calculates basic percents of a number (e.g., 10%, 20%, 	 Solves problems involving rando Solves multiple-step problems involving proportions
25%, 50%, 100%)	25%, 50%, 100%)	• Calculates a percent of a number (e.g., 6% of 30)
	• Calculates a percent of a number (e.g., 6% of 30)	• Calculates the percent one number is of another (e.g.,
	• Calculates a number from a percent (e.g., 4 is 9% of	20 is what % of 90)
	what)	Solves problems involving percents
	Adds and subtracts percent	Solves problems involving percents (analysis)
	Solves problems involving percents	• Solves problems involving simple percent discounts
	 Solves problems involving tax and tips Solves problems involving simple interest rates with the 	(e.g., finding sale price)
	formula	• Solves problems involving percent increase and decrease*
	• Solves problems comparing percents, fractions, and	 Solves problems involving tax and tips
	decimals*	Calculates commission/deductions and total pay
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
• Uses reasoning strategies to solve magic squares and	 Models algorithms using place value concepts 	Models algorithms using place value concepts
related puzzles (addition, whole numbers only)	(addition and subtraction with whole numbers)*	(addition and subtraction with whole numbers)*
• Subtracts numbers with 5 digits or more with	• Predicts the relative size of the answer when adding	• Adds fractions with unlike denominators with
regrouping	whole numbers ²	reducing or converting to a mixed fraction
(addition/subtraction only)	• Predicts the relative size of the answer when subtracting whole numbers*	Adds whole numbers, fractions, and mixed fractions without reducing
• Predicts the relative size of the answer when adding whole numbers*	• Adds fractions with like denominators with reducing	• Adds mixed fractions where converting from improper fractions is paceasary
 Predicts the relative size of the answer when 	 Adds fractions with unlike denominators without 	 Subtracts whole numbers fractions and mixed
subtracting whole numbers*	reducing	fractions with regrouping
Adds fractions with like denominators without	• Adds fractions with unlike denominators with	Solves real-world problems involving addition and
reducing	reducing or converting to a mixed fraction	subtraction of fractions where converting both
• Adds fractions with like denominators with reducing	• Adds whole numbers, fractions, and mixed fractions	denominators is necessary
or converting to a mixed fraction	without reducing	• Subtracts a decimal from a whole number, horizontally
• Adds fractions with unlike denominators without	• Adds mixed fractions where converting from improper	Adds integers with unlike signs
icuucilig	IT ACTIONS IS NECESSALY	Adds several positive and negative integers

Adds mixed fractions with like denominators	Subtracts fractions with like denominators with	Subtracts integers*
• Adds simple mixed fractions with unlike denominators	reducing	Solves real-world problems involving addition and
(e.g., halves, thirds, fourths, eighths)*	• Subtracts fractions with unlike denominators without	subtraction of integers (analysis)*
 Subtracts simple fractions with unlike denominators 	reducing	 Subtracts rational expressions in decimal form*
without reducing (e.g., halves, quarters, thirds,	Subtracts fractions with unlike denominators with	
eighths)*	reducing*	
• Subtracts fractions with unlike denominators without	• Subtracts mixed fractions with unlike denominators	
reducing	with no regrouping	
• Subtracts mixed fractions with like denominators with	• Subtracts whole numbers, fractions, and mixed	
no regrouping	fractions with regrouping	
• Subtracts mixed fractions with unlike denominators	• Solves real-world problems involving addition and	
with no regrouping	subtraction of fractions where converting one	
• Solves real-world problems involving addition and	denominator is necessary	
subtraction of fractions where converting one	• Adds decimals to the nundredths place in norizontal format (not same number of digita)	
• Adds desimals to the hundredths place in horizontal	• Adds desimals through the hundred thousand the place	
• Adds decimals to the number of digits)	 Adds declinals through the hundred-thousandths place Subtracts decimals to the hundredths place (not same) 	
• Adds decimals to the thousand the place horizontally	• Subtracts decimals to the number of digits)	
with and without regrouping	 Subtracts decimals to the thousandths place 	
• Adds decimals through the hundred-thousandths place	horizontally, with and without regrouping	
 Subtracts decimals to the thousandths place, vertically. 	 Subtracts decimals through the hundred-thousandths 	
with the zero missing in the ones place*	place, horizontally	
• Subtracts decimals to the thousandths place,	• Subtracts a decimal from a whole number, horizontally	
horizontally, with and without regrouping	Adds integers with unlike signs	
• Computes the value of multiple bills and coins	• Adds several positive and negative integers	
(addition/subtraction only)*	• Solves real-world problems involving addition and	
• Analyzes and computes 1 operation on real-world	subtraction of integers*	
problems involving money over \$5.00	• Solves problems involving addition and subtraction of	
(addition/subtraction only)*	integers*	
 Computes addition and subtraction on multiple-step 	Adds rational expressions in decimal form	
real-world problems involving money	-	
 Adds integers with like signs 		
Solves real-world problems involving addition and		
subtraction of integers*		
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
• Instantly recalls basic multiplication and division facts	• Uses multiplication strategies to explain computation	• Models algorithms using place value concepts
III a table	(e.g., doubles, 9-patterns, decomposing, partial	(inumplication and division with whole numbers) ²
• Multiplies a 2-digit number by a 2-digit number with	• Multiplies multiple digit numbers	Divides multiple-digit numbers
Multiplice a 3 digit number by a 2 digit number with	 Models algorithms using place value concents 	• Uses appropriate algorithms to represent
• Multiplies a 5-digit number by a 2-digit number with	• models algorithms using place value concepts	Dradiets the relative size of the ensure when distance
 Derforms mental computation with multiplication 	Divides a 4 digit number by a 2 digit number	• Freucts the relative size of the answer when dividing a smaller whole number by a larger whole number
 Multiplies a 3 digit number by a 3 digit number 	 Divides a 4-digit number by a 2-digit number Divides multiple digit numbers 	• Uses models to multiply and divide fractions and
 Multiplies a 3-digit number by a 5-digit number Multiplies a 4 or more digit number by multiplies of 	 Divides numbers by powers of 10* 	• Oses models to multiply and divide fractions and connect the actions to algorithms*
 Multiplies a 4- or more digit number by multiples of 	• Divides numbers by powers of 10°	connect the actions to argonithing

100 or 1000	Solves complex word problems involving whole	Multiplies mixed fractions
Multiplies multiple-digit numbers	number division with remainder (e.g., 2-step, 2-digit	• Uses models to multiply and divide fractions and
Models whole number multiplication and division	divisor)	mixed fractions and connect the actions to algorithms*
algorithms (e.g., uses physical materials to show 4	• Uses division for multiple-step real-world problems	Divides a fraction by a fraction
groups of 3 objects)*	(whole numbers)*	 Divides a fraction by a whole number
• Divides a 2-digit number or a 3-digit number by a	• Solves real-world multiple-step problems involving	 Divides a maction by a whole number Divides a whole number by a fraction*
1-digit number with a remainder	whole numbers*	 Divides a whole number by a fraction Divides a mixed fraction by a whole number*
Performs mental computation with division	• Predicts the relative size of the answer when dividing	 Divides a mixed fraction by a whole fulfiber Divides a whole number by a mixed fraction*
 Divides a 4-digit number by a 1-digit number with no 	whole numbers	• Divides a whole number by a mixed fraction
remainder	 Multiplies a fraction by a fraction without reducing to 	Divides a mixed fraction by a fraction
 Divides a 4-digit number by a 1-digit number with a 	simplest form (complex problem)	• Divides a fraction by a mixed fraction*
• Divides a 4-digit number by a 1-digit number with a remainder*	 Multiplies a fraction by a fraction where reducing to 	• Divides a mixed fraction by a mixed fraction
 Divides 2.3 digit number by 2.2 digit number 	simplest form is necessary	• Solves 2- or more step real-world problems involving
 Divides a 4-digit number by a 2-digit number 	 Multiplies a fraction by a whole number 	fractions with multiplication and division
• Divides a 4-digit number by a 2-digit number	 Multiplies mixed fractions 	• Solves problems involving fractions (e.g., multiple
Solves problems using the inverse relationship between multiplication and division	 Divides a fraction by a fraction 	operations, conversions)*
Divides a whole number by a whole number or d	 Divides a mixed fraction by a fraction 	• Multiplies a decimal by 10, 100, 1000
• Divides a whole number by a whole number and avprases the remainder as a docimal*	• Divides a mixed fraction by a fraction	 Solves real-world problems involving rate of pay
Divides multiple digit numbers	• Solves 1-step real-world problems involving fractions	• Solves real-world problems involving rate of pay with
 Divides indupie-digit numbers Uses strategies to determine 2 or more missing digits 	• Solves 2. or more step real world problems involving	time and a half*
• Uses strategies to determine 2 of more missing digits (multiplication/division only)*	• Solves 2- of more step real-world problems involving fractions with multiplication and division	• Divides a whole number by a decimal
 Solves whole number word problems with division 	 Solves problems involving fractions (e.g. multiple 	• Divides a decimal by 10, 100, 1000
over 10 x 10	operations conversions)*	• Divides a decimal by a decimal
 Solves complex word problems involving whole 	 Multiplies a decimal by a decimal vertical form 	• Solves difficult real-world problems involving decimals
number division with remainder (e.g. 2-step 2-digit	(factors to tenths or hundredths)	(e.g., multiple multiplications, conversions)
divisor)	 Multiplies a decimal by a decimal (factors to 	• Describes the effects of multiplying a number by a
• Solves real-world problems involving 2-step multiple	hundredths)	number between 0 and 1*
operations, whole numbers only	• Multiplies a decimal by 10, 100, 1000	 Multiplies integers with like signs*
 Solves real-world multiple-step problems involving 	 Multiplies a decimal by a decimal (factors to 	 Divides integers with like signs*
whole numbers*	thousandths)	Solves real-world problems involving multiplication
• Predicts the relative size of the answer when computing	 Solves real-world problems involving rate of pay 	and division of integers (analysis)*
with 10's, 100's, 1000's	 Divides a decimal by 10, 100, 1000 	 Multiplies rational expressions*
• Predicts the relative size of the answer when	Divides a decimal by a decimal	 Divides rational expressions in a/b form*
multiplying whole numbers	 Computes with dollars and cents over \$5.00 and 	• Calculates the power of a number (e.g., $8 = 2^3$)
• Multiplies a fraction by a fraction where reducing to	converts to decimals (multiplication/division)	• Evaluates expressions containing powers (e.g., 3^2 x
simplest form is necessary	 Computes the value of multiple bills and coins 	2^3)
• Multiplies a fraction by a whole number	(multiplication/division)	 Applies rules for multiplying and dividing powers
• Solves 1-step real-world problems involving fractions	Solves difficult real-world problems involving decimals	• Calculates the positive square root of a perfect square
with multiplication and division	(e.g., multiple multiplications, conversions)	 Solves problems with scientific notation*
• Multiplies a decimal by a decimal, vertical form	• Multiplies integers with unlike signs*	Simplifies rational expressions with absolute value
(factors to tenths or hundredths)	• Uses a number line to determine the midpoint between	
• Multiplies a decimal by a decimal (factors to	a positive and negative number*	
hundredths)	• Divides integers with unlike signs*	
Solves real-world problems involving decimals (not	• Solves real-world problems involving multiplication	
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money) using multiplication*	and division of integers*	
• Divides decimal by a whole number	• Calculates the value of a power (e.g., $2^3 = 8$)	
• 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, subtraction, multiplication, and		
division on multiple-step, real-world problems		
involving money		
• Multiplies integers with unlike signs*		
• Divides integers with unlike signs [*]		
• Solves real-world problems involving multiplication		
and division of integers $(a, a, 2A^2 - 8)$		
Calculates the value of a power (e.g., 2/3 – 8)	Number Computation, Estimate and Peasenableness	Number Computation Estimate and Peasonableness
Liese rounding to estimate answers to real world	Noniber Comportation -Listingle and Reasonableness	• Uses estimation to solve problems involving desimals
• Uses founding to estimate answers to rear-world problems involving multiplication and division of	• Oses founding to estimate answers to real-world problems involving multiplication and division of	 Determines the most accurate answer (fractions only)*
numbers less than 100 (whole numbers only)*	numbers less than 100 (whole numbers only)*	 Determines the most accurate answer (fractions only) Uses estimation to solve problems involving
 Uses rounding to estimate answers to real-world 	 Uses rounding to estimate answers to real-world 	 Oses estimation to solve problems involving proportional reasoning (decimals only)
problems involving numbers less than 1000 with	problems involving numbers less than 1000 with	proportional reasoning (accinitis only)
multiplication and division (whole numbers only)*	multiplication and division (whole numbers only)*	
• Uses rounding to estimate answers to real-world	• Uses rounding to estimate answers to real-world	
problems involving numbers 1000 or greater using	problems involving numbers 1000 or greater using	
multiplication and division (whole numbers only)*	multiplication and division (whole numbers only)*	
• Uses rounding to estimate answers to difficult	• Uses rounding to estimate answers to real-world	
multiplication and division problems (whole numbers	problems involving fractions and mixed numbers	
Olly)	• Uses estimation to solve problems involving fractions	
involving answers \$20 or greater (using decimals)*	and mixed numbers	
 Uses rounding to estimate answers to 2-step problems 		
involving money (using decimals)		
• Uses referent numbers to estimate answers when		
adding and subtracting fractions and mixed numbers*		
New Vocabulary: coin, common factor, decimal, decimal	New Vocabulary: absolute value, borrow, common	New Vocabulary: commission, cubed, discount, equality,
form, decimal point, factor tree, greatest common factor,	denominator, compute, cord, expanded notation,	prime factor, prime factorization, representative sample,
interest, lowest terms, negative, positive, reduce, region,	experimental probability, exponent, half hour, heaviest,	scientific notation, square region, tenth power,
smaller, south, standard form, systematic list, triple	denominator, net odd real number short tay ten	time-and-a-nair
	million, ten thousandth, tenths, theoretical probability	
	thousandths, whole	
New Signs and Symbols: () parenthesis around an integer,	New Signs and Symbols: gal gallon, I interest, m	New Signs and Symbols: absolute value, BC, km
\$ dollar sign, in. inch, mph miles per hour, - negative	meter/metre, • multiplication symbol, # number, : ratio,	kilometer/kilometre, • point, segment overbar, square
sign, \neq not equal to, + positive number	\times multiplication, < less than, = is equal to, > greater than	root symbol, – subtraction
	· · · · · · · · · · · · · · · · · · ·	

Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 231 - 240

Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce
221 - 230	231 - 240	241 - 250
Mathematical Process	Mathematical Process	Mathematical Process
 Analyzes another student's explanation to understand complex problems* Restates the problem from various perspectives* Identifies the question from a problem solving situation Determines the required information for solving a difficult problem and whether any further information is needed* Determines the additional information required to solve problems* Uses pictures to represent problems* Applies a variety of problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to generate and analyze data to solve problems* Applies what was learned to a new and/or more complex problem* Expresses the solution clearly and logically by using the appropriate mathematical terms and notation* Verifies reasonableness of results of more difficult problems* Solves real-world problems using reasoning strategies Applies a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness* Uses alternative algorithms to explain the meaning of "fraction"* 	 Uses equivalent representations to understand new mathematical content* Uses pictures to represent problems* Applies the most appropriate problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ideas* Organizes information from a paragraph to solve a problem* Analyzes complex problems to separate into simpler parts* Verifies reasonableness of results of complex problems* Uses the components of mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, validation in original real-world problem situation)* Uses correct terminology for powers* 	 Uses equivalent representations to understand new mathematical content* Uses algebraic representations to model and interpret mathematical and real-world situations* Applies the most appropriate problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ideas* Verifies reasonableness of results of complex problems* Uses the components of mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, unterpretation of solution within the model, validation in original real-world problem situation)*

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 Defines "absolute value"* 		
• Identifies whether predictions are based on theoretical		
or experimental probability*		
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers
 Writes equivalent forms of whole numbers using place value (numbers 100 or greater) (e.g., 253 = 2 hundreds, 5 tens, and 3 ones) Writes whole numbers in standard and exponential form Identifies the place value and value of each digit to the hundredths and thousandths Identifies the place value and value of each digit in numbers through the ten thousandths and beyond 	Writes whole numbers in standard and exponential form	Number Concepts -Read, Write, Represent
• Rounds whole numbers to the nearest million*	Rounds decimals to the nearest hundredth	• Expresses the equivalent form of a fraction, decimal,
• Rounds wholes numbers to the nearest billion*	 Rounds decimals to nearest thousandth* 	and/or percent (complex fraction)*
• Identifies a fractions in lowest terms from a region or	 Rounds decimals to nearest ten-thousandth* 	• Writes a number expressed in scientific notation in
set	 Writes a ratio as a decimal and vice versa* 	standard form*
• Determines simple equivalent fractions using multiples	• Writes a fraction as a decimal and vice versa	• Writes a whole number in scientific notation
• Determines equivalent fractions using multiples	• Writes a fraction as a mixed decimal and vice versa*	• Writes a decimal in scientific notation [*]
• Represents a decimal to thousandths place (e.g., three thousandths = 0.003)	 Expresses a decimal as a whole number (e.g., 1.3 thousand = ?)* 	
• Represents a decimal to the hundred thousandths place	• Expresses a percent as a fraction and vice versa	
- (e.g., three hundred thousandths = 0. 00005) ⁻ Writes a desimal for a shaded region to the hundred the	• Writes a ratio as a percent and vice versa*	
place	• Uses powers of 10 to represent numbers (e.g., 8×10^{3}	
Rounds decimals to the nearest hundredth	 Writes a number expressed in scientific notation in 	
• Locates rational numbers on a number line	standard form*	
• Writes a simple mixed fraction as a decimal and vice	• Writes a whole number in scientific notation	
versa	 Writes a decimal in scientific notation* 	
• Writes a fraction or mixed number as a decimal when	• Represents absolute value using positive and negative	
the denominator is a multiple of 10	numbers*	
 Fypresses a percent as a fraction and vice versa 		
 Writes a ratio as a percent and vice versa* 		
• Expresses the equivalent form of a fraction, decimal.		
and/or percent (simple fraction)*		
• Writes a power as a product of multiplied numbers and		
vice versa (e.g., $2^{4} = 2 \times 2 \times 2 \times 2$)		
• Uses powers of 10 to represent numbers (e.g., 8 x 10^3 = 8000)		
• Uses powers to represent 10, 100, 1000, 10,000, and 100,000		

Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real
 Determines the relative magnitude of whole numbers* Orders whole numbers a million or greater using < or > symbols* Compares fractions (e.g., comparing numerators and denominators) Orders fractions on a number line* Compares and orders decimals to the hundredths place (not same number of digits after decimal)* Compares and orders decimals to the thousandths place (not same number of digits after decimal) Compares and orders decimals past the thousandths place* Compares two integers Orders rational numbers, in a/b form* Orders fractions and decimals to the hundred thousandths Compares numbers written exponentially 	 Compares fractions (e.g., comparing numerators and denominators) Orders rational numbers, in a/b form* Compares and orders decimal and fractional coordinates on a number line* Estimates relative magnitude of fractions, decimals, and percents* Orders fractions, decimals, and percents Orders fractions, decimals, and integers on a number line* Compares numbers written exponentially 	Numbers
Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory
 Determines factors of whole numbers Completes a factor tree for a number (prime factorization)* Uses multiple number theory concepts to solve problems (e.g., factors, digits, odd/even, divisibility) Determines common denominators of fractions Uses factor and multiple concepts to solve simple problems Identifies common factors of two or more numbers* Identifies the greatest common factor of whole numbers Uses divisibility concepts to solve problems* 	 Determines the prime factorization of a number Applies rules of divisibility by 3's* Applies rules of divisibility 	 Determines the prime factorization of a number using powers Uses factor and multiple concepts to solve difficult problems Identifies the least common multiple of whole numbers* Identifies the greatest common factor and least common multiple of multiple whole numbers*
Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions
 Uses concrete and pictorial models to represent ratios* Writes the missing number in a proportion with numbers other than basic facts (e.g., 5/13=?/117) Identifies the percent represented in a given model* Solves problems involving ratios Solves 1-step problems involving proportions Calculates basic percents of a number (e.g., 10%, 20%, 25%, 50%, 100%) 	 Identifies the ratio from a given real-world situation* Estimates percent using 2-D regions* Compares and orders percent* Solves problems involving equivalent fractions (analysis)* Solves problems involving ratios Solves multiple-step problems involving proportions Calculates a percent of a number (e.g., 6% of 30) 	 Identifies the ratio from a given real-world situation* Solves multiple-step problems involving proportions Solves problems involving a fractional increase* Calculates the percent one number is of another (e.g., 20 is what % of 90) Calculates a percent of a rational number (e.g., 6% of 0.78) Solves problems involving percents (analysis)

 Calculates a percent of a number (e.g., 6% of 30) Calculates a number from a percent (e.g., 4 is 9% of what) Adds and subtracts percent Solves problems involving percents Solves problems involving tax and tips Solves problems involving simple interest rates with the formula Solves problems comparing percents, fractions, and decimals* 	 Calculates the percent one number is of another (e.g., 20 is what % of 90) Solves problems involving percents Solves problems involving percents (analysis) Solves problems involving simple percent discounts (e.g., finding sale price) Solves problems involving percent increase and decrease* Solves problems involving tax and tips Calculates commission/deductions and total pay 	 Solves problems involving simple percent discounts (e.g., finding sale price) Solves problems involving complex percent discounts (e.g., finding percent discount, regular price)* Calculates commission/deductions and total pay Solves problems involving simple interest rates without the formula
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
 Models algorithms using place value concepts (addition and subtraction with whole numbers)* Predicts the relative size of the answer when adding whole numbers* Predicts the relative size of the answer when subtracting whole numbers* Adds fractions with like denominators with reducing or converting to a mixed fraction Adds fractions with unlike denominators without reducing Adds fractions with unlike denominators with reducing or converting to a mixed fraction Adds whole numbers, fractions, and mixed fractions without reducing Adds mixed fractions where converting from improper fractions is necessary Subtracts fractions with unlike denominators with reducing Subtracts fractions with unlike denominators with reducing* Subtracts mixed fractions with unlike denominators with reducing* Subtracts mixed fractions with unlike denominators with reducing subtracts mixed fractions with unlike denominators with reducing* Subtracts mixed fractions with unlike denominators with reducing with regrouping Solves real-world problems involving addition and subtraction of fractions where converting one denominator is necessary Adds decimals to the hundredths place in horizontal format (not same number of digits) Adds decimals to the hundredths place (not same 	 Models algorithms using place value concepts (addition and subtraction with whole numbers)* Adds fractions with unlike denominators with reducing or converting to a mixed fraction Adds whole numbers, fractions, and mixed fractions without reducing Adds mixed fractions where converting from improper fractions is necessary Subtracts whole numbers, fractions, and mixed fractions with regrouping Solves real-world problems involving addition and subtraction of fractions where converting both denominators is necessary Subtracts a decimal from a whole number, horizontally Adds several positive and negative integers Subtracts integers* Solves real-world problems involving addition and subtraction of integers (analysis)* Subtracts rational expressions in decimal form* 	 Uses a number line to determine the distance between a positive and negative number Subtracts integers* Solves real-world problems involving addition and subtraction of integers (analysis)*

Subtracts desimals to the themes dthe place		
• Subtracts decimals to the thousandths place,		
norizontary, with and without regrouping		
• Subtracts decimals through the hundred-thousandths		
place, norizontally		
• Subtracts a decimal from a whole number, horizontally		
Adds integers with unlike signs		
 Adds several positive and negative integers 		
 Solves real-world problems involving addition and 		
subtraction of integers*		
 Solves problems involving addition and subtraction of 		
integers*		
 Adds rational expressions in decimal form 		
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
• Uses multiplication strategies to explain computation	 Models algorithms using place value concepts 	 Solves real-world problems involving multiplication
(e.g., doubles, 9-patterns, decomposing, partial	(multiplication and division with whole numbers)*	and division of integers (analysis)*
products)*	 Divides multiple-digit numbers 	 Simplifies rational expressions with exponents*
 Multiplies multiple-digit numbers 	 Uses appropriate algorithms to represent 	• Estimates the square roots of numbers
 Models algorithms using place value concepts 	multiplication or division with whole numbers*	• Simplifies rational expressions with scientific notation
(multiplication and division with whole numbers)*	• Predicts the relative size of the answer when dividing a	 Solves problems with scientific notation*
 Divides a 4-digit number by a 2-digit number 	smaller whole number by a larger whole number	-
 Divides multiple-digit numbers 	 Uses models to multiply and divide fractions and 	
 Divides numbers by powers of 10* 	connect the actions to algorithms*	
 Solves complex word problems involving whole 	 Multiplies mixed fractions 	
number division with remainder (e.g., 2-step, 2-digit	• Uses models to multiply and divide fractions and	
divisor)	mixed fractions and connect the actions to algorithms*	
• Uses division for multiple-step real-world problems	• Divides a fraction by a fraction	
(whole numbers)*	• Divides a fraction by a whole number	
 Solves real-world multiple-step problems involving 	 Divides a whole number by a fraction* 	
whole numbers*	 Divides a mixed fraction by a whole number* 	
 Predicts the relative size of the answer when dividing 	• Divides a whole number by a mixed fraction*	
whole numbers	• Divides a mixed fraction by a fraction	
• Multiplies a fraction by a fraction without reducing to	• Divides a fraction by a mixed fraction*	
simplest form (complex problem)	• Divides a mixed fraction by a mixed fraction	
• Multiplies a fraction by a fraction where reducing to	• Solves 2- or more step real-world problems involving	
simplest form is necessary	fractions with multiplication and division	
 Multiplies a fraction by a whole number 	• Solves problems involving fractions (e.g., multiple	
 Multiplies mixed fractions 	operations, conversions)*	
• Divides a fraction by a fraction	• Multiplies a decimal by 10, 100, 1000	
• Divides a mixed fraction by a fraction	• Solves real-world problems involving rate of pay	
Solves 1-step real-world problems involving fractions	• Solves real-world problems involving rate of pay with	
with multiplication and division	time and a half*	
• Solves 2- or more step real-world problems involving fractions with multiplication and division	• Divides a whole number by a decimal	

 Solves problems involving fractions (e.g., multiple operations, conversions)* Multiplies a decimal by a decimal, vertical form (factors to tenths or hundredths) Multiplies a decimal by a decimal (factors to hundredths) Multiplies a decimal by 10, 100, 1000 Multiplies a decimal by a decimal (factors to thousandths) Solves real-world problems involving rate of pay Divides a decimal by a decimal 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) Multiplies integers with unlike signs* Uses a number line to determine the midpoint between a positive and negative number* Divides integers with unlike signs* Calculates the value of a power (e.g., 2^3 = 8) 	 Divides a decimal by 10, 100, 1000 Divides a decimal by a decimal Solves difficult real-world problems involving decimals (e.g., multiple multiplications, conversions) Describes the effects of multiplying a number by a number between 0 and 1* Multiplies integers with like signs* Divides integers with like signs* Solves real-world problems involving multiplication and division of integers (analysis)* Multiplies rational expressions in a/b form* Calculates the power of a number (e.g., 8 = 2^3) Evaluates expressions containing powers (e.g., 3^2 x 2^3) Applies rules for multiplying and dividing powers Calculates the positive square root of a perfect square Solves problems with scientific notation* Simplifies rational expressions with absolute value 	
 Uses rounding to estimate answers to real-world problems involving multiplication and division of numbers less than 100 (whole numbers only)* Uses rounding to estimate answers to real-world problems involving numbers less than 1000 with multiplication and division (whole numbers only)* 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 real-world problems involving numbers 1000 or greater using multiplication and division (whole numbers only)* Uses rounding to estimate answers to real-world problems involving fractions and mixed numbers* Uses estimation to solve problems involving fractions and mixed numbers 	 Uses estimation to solve problems involving decimals Determines the most accurate answer (fractions only)* Uses estimation to solve problems involving proportional reasoning (decimals only) 	Uses estimation to solve problems involving decimals
<i>New Vocabulary:</i> absolute value, borrow, common denominator, compute, cord, expanded notation, experimental probability, exponent, half hour, heaviest, least common denominator, lightest, lowest common denominator, net, odd, real number, short, tax, ten	<i>New Vocabulary:</i> commission, cubed, discount, equality, prime factor, prime factorization, representative sample, scientific notation, square region, tenth power, time-and-a-half	<i>New Vocabulary:</i> least common multiple

million, ten thousandth, tenths, theoretical probability,		
thousandths, whole		
New Signs and Symbols: gal gallon, I interest, m	New Signs and Symbols: absolute value, BC, km	New Signs and Symbols: [] square brackets, LCM lowest
meter/metre, • multiplication symbol, # number, : ratio,	kilometer/kilometre, • point, segment overbar, square	common multiple
× multiplication, < less than, = is equal to, > greater than	root symbol, – subtraction	

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Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 241 - 250

Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce
231 - 240	241 - 250	251 - 260
Mathematical Process	Mathematical Process	Mathematical Process
 Uses equivalent representations to understand new mathematical content* Uses pictures to represent problems* Applies the most appropriate problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ideas* Organizes information from a paragraph to solve a problem* Analyzes complex problems to separate into simpler parts* Uses the components of mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, interpretation of solution within the model, validation in original real-world problem situation)* Uses correct terminology for powers* 	 Uses equivalent representations to understand new mathematical content* Uses algebraic representations to model and interpret mathematical and real-world situations* Applies the most appropriate problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ideas* Verifies reasonableness of results of complex problems* Uses the components of mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, interpretation of solution within the model, interpretation of solution within the model, validation in original real-world problem situation)* 	 Uses equivalent representations to understand new mathematical content* Uses algebraic representations to model and interpret mathematical and real-world situations* Uses graphic representations to model and interpret mathematical and real-world situations* Applies the most appropriate problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ideas* Verifies reasonableness of results of complex problems* Uses the components of mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, interpretation of solution within the model, validation in original real-world problem situation)*
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts - Place-Value - Real Numbers
• Writes whole numbers in standard and exponential form		
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
 Rounds decimals to the nearest hundredth Rounds decimals to nearest thousandth* Rounds decimals to nearest ten-thousandth* Writes a ratio as a decimal and vice versa* Writes a fraction as a decimal and vice versa Writes a fraction as a mixed decimal and vice versa* Expresses a decimal as a whole number (e.g., 1.3 thousand = ?)* Expresses a percent as a fraction and vice versa 	 Expresses the equivalent form of a fraction, decimal, and/or percent (complex fraction)* Writes a number expressed in scientific notation in standard form* Writes a whole number in scientific notation Writes a decimal in scientific notation* 	 Expresses a percent over 100 or under 1 as a fraction in lowest terms and vice versa* Uses fractional and negative exponents as optional ways of representing problem situations (e.g., 27^2/3 = (27^1/3)^2 = 9)* Writes a rational number in scientific notation*

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 Writes a ratio as a percent and vice versa* Uses powers of 10 to represent numbers (e.g., 8 x 10^3 = 8000) Writes a number expressed in scientific notation in standard form* Writes a whole number in scientific notation Writes a decimal in scientific notation* Represents absolute value using positive and negative numbers* 	Number Concerts Compare and Order Peel	Number Concepts Compare and Order Pool
Numbers	Numbers	Numbers
 Compares fractions (e.g., comparing numerators and denominators) Orders rational numbers, in a/b form* Compares and orders decimal and fractional coordinates on a number line* Estimates relative magnitude of fractions, decimals, and percents* Orders fractions, decimals, and percents Orders fractions, decimals, and integers on a number line* Compares numbers written exponentially 		
Number Concepts, Count and Number Theory		New Law Concerns Count and New Law Theorem
Concepts	Number Concepts -Count and Number Theory Concepts	Concepts
 Concepts Determines the prime factorization of a number Applies rules of divisibility by 3's* Applies rules of divisibility 	 Number Concepts -Count and Number Theory Concepts Determines the prime factorization of a number using powers Uses factor and multiple concepts to solve difficult problems Identifies the least common multiple of whole numbers* Identifies the greatest common factor and least common multiple of multiple whole numbers* 	 Vumber Concepts -Count and Number Theory Concepts Uses factor and multiple concepts to solve difficult problems Uses prime and relatively prime concepts to solve problems* Solves problems using multiple number theory concepts (e.g., prime, GCF and LCM, multiples, factors)
 Concepts Determines the prime factorization of a number Applies rules of divisibility by 3's* Applies rules of divisibility 	 Number Concepts -Count and Number Theory Concepts Determines the prime factorization of a number using powers Uses factor and multiple concepts to solve difficult problems Identifies the least common multiple of whole numbers* Identifies the greatest common factor and least common multiple of multiple whole numbers* Number Concepts -Money, Percent, Proportions 	 Number Concepts -Count and Number Theory Concepts Uses factor and multiple concepts to solve difficult problems Uses prime and relatively prime concepts to solve problems* Solves problems using multiple number theory concepts (e.g., prime, GCF and LCM, multiples, factors) Number Concepts -Money, Percent, Proportions

 Solves problems involving percents Solves problems involving percents (analysis) Solves problems involving simple percent discounts (e.g., finding sale price) Solves problems involving percent increase and decrease* Solves problems involving tax and tips Calculates commission/deductions and total pay 	 Solves problems involving complex percent discounts (e.g., finding percent discount, regular price)* Calculates commission/deductions and total pay Solves problems involving simple interest rates without the formula 	
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
 Models algorithms using place value concepts (addition and subtraction with whole numbers)* Adds fractions with unlike denominators with reducing or converting to a mixed fraction Adds whole numbers, fractions, and mixed fractions without reducing Adds mixed fractions where converting from improper fractions is necessary Subtracts whole numbers, fractions, and mixed fractions with regrouping Solves real-world problems involving addition and subtraction of fractions where converting both denominators is necessary Subtracts a decimal from a whole number, horizontally Adds several positive and negative integers Subtracts integers* Solves real-world problems involving addition and subtraction of integers (analysis)* Subtracts rational expressions in decimal form* 	 Uses a number line to determine the distance between a positive and negative number Subtracts integers* Solves real-world problems involving addition and subtraction of integers (analysis)* 	
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
 Models algorithms using place value concepts (multiplication and division with whole numbers)* Divides multiple-digit numbers Uses appropriate algorithms to represent multiplication or division with whole numbers* Predicts the relative size of the answer when dividing a smaller whole number by a larger whole number Uses models to multiply and divide fractions and connect the actions to algorithms* Multiplies mixed fractions Uses models to multiply and divide fractions and mixed fractions and connect the actions to algorithms* Divides a fraction by a fraction 	 Solves real-world problems involving multiplication and division of integers (analysis)* Simplifies rational expressions with exponents* Estimates the square roots of numbers Simplifies rational expressions with scientific notation Solves problems with scientific notation* 	 Simplifies rational expressions with exponents* Solves problems with scientific notation*

Divides a fraction by a whole number		
• Divides a whole number by a fraction*		
• Divides a mixed fraction by a whole number*		
• Divides a whole number by a mixed fraction*		
• Divides a mixed fraction by a fraction		
• Divides a fraction by a mixed fraction*		
• Divides a mixed fraction by a mixed fraction		
• Solves 2- or more step real-world problems involving fractions with multiplication and division		
 Solves problems involving fractions (e.g. multiple 		
operations, conversions)*		
Multiplies a decimal by 10, 100, 1000		
Solves real-world problems involving rate of pay		
 Solves real-world problems involving rate of pay with time and a half* 		
• Divides a whole number by a decimal		
• Divides a decimal by 10, 100, 1000		
• Divides a decimal by a decimal		
• Solves difficult real-world problems involving decimals		
(e.g., multiple multiplications, conversions)		
• Describes the effects of multiplying a number by a		
number between 0 and 1*		
• Multiplies integers with like signs*		
• Divides integers with like signs*		
• Solves real-world problems involving multiplication and division of integers (analysis)*		
 Multiplies rational expressions* 		
 Divides rational expressions in a/b form* 		
• Calculates the power of a number (e.g., $8 = 2^3$)		
• Evaluates expressions containing powers (e.g., 3^2 x 2^3)		
• Applies rules for multiplying and dividing powers		
• Calculates the positive square root of a perfect square		
 Solves problems with scientific notation* 		
Simplifies rational expressions with absolute value		
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
• Uses estimation to solve problems involving decimals	• Uses estimation to solve problems involving decimals	
• Determines the most accurate answer (fractions only)*		
• Uses estimation to solve problems involving		
proportional reasoning (decimals only)		
New Vocabulary: commission, cubed, discount, equality,	New Vocabulary: least common multiple	New Vocabulary: none
prime factor, prime factorization, representative sample,		
scientific notation, square region, tenth power,		

time-and-a-half		
New Signs and Symbols: absolute value, BC, km	New Signs and Symbols: [] square brackets, LCM lowest	New Signs and Symbols: none
kilometer/kilometre, • point, segment overbar, square	common multiple	
root symbol, – subtraction		

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Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 251 - 260

241 - 250 251 - 260 261 - 270 Mathematical Process Mathematical Process Mathematical Process • Uses equivalent representations to understand new mathematical content" • Uses equivalent representations to understand new mathematical and real-world situations' • Uses equivalent representations to model and interpret mathematical and real-world situations' • Uses equivalent representations to model and interpret mathematical ist, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* • Uses technology to organize, record, and communicate mathematical ideas • Uses (e.g., draws a picture, looks for patterns, makes a table or organize (e.g., draws a picture, looks for patterns, problems* • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate mathematical ideas • Uses technology to organize, record, and communicate m	Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce	
Mathematical Process Mathematical Process Mathematical Process Uses equivalent representations to understand new mathematical content* Uses textinology to organize, record, and communicate mathematical and real-world situations* • Uses textinology to arganize, record, and communicate mathematical and real-world situations. • Uses textinology to arganize, record, and communicate mathematical and real-world situations. • Uses textinology to arganize, record, and communicate mathematical and real-world situations. • Uses textinology to arganize, record, and communicate mathematical and real-world situations. • Uses textinology to arganize, record, and communicate mathematical ideas* • Uses textinology to arganize, record, and communicate mathematical ideas* • Uses textinology to arganize, record, and communicate mathematical ideas* • Uses textinology to arganize, record, and communicate mathematical ideas* • Verifies reasonableness of results of complex problems* • Uses textinology to arganize, record, and communicate mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, validation in original real-world problem situation)* • Verifies reasonableness of results of complex problems* Number Concepts -Place-Value - Real Numbers Number Concepts -Place-Value - Real Numbers Number Concepts -Place-Value - Real Numbers Number Concepts -Read, Write, Represent Number Concepts -Read, Write, Represent Number Concepts -Place-Value - Real Number Number Concepts -Read, Write, Represent Number Concepts -Read	241 - 250	251 - 260	261 - 270	
 Uses equivalent representations to understand new mathematical content* Uses algebraic representations to understand new mathematical content* Uses algebraic representations to model and interpret mathematical and real-world situations* Uses algebraic representations to model and interpret mathematical ist, makes a problem simpler, uses process of elimination, uses trial and ereal-world situations, uses models)* Uses technology to organize, record, and communicate mathematical ist, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ist, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ist, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ist, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ist, and teca seconableness of results of complex problems* Uses the components of mathematical model, solution within the model, interpretation of solution within the model, interpretation of solution within the model, validation in original real-world problem situation)* Number Concepts -Read, Write, Represent Vertise a wohe number in scientific notation in standard form* Writes a number in scientific notation in standard form* Writes a rational number in scientific notation * Writes a ratio	Mathematical Process	Mathematical Process	Mathematical Process	
Number Concepts -Place-Value - Real Numbers Number Concepts -Place-Value - Real Numbers Number Concepts -Place-Value - Real Numbers Number Concepts -Read, Write, Represent • Expresses the equivalent form of a fraction, decimal, and/or percent (complex fraction)* • Expresses a percent over 100 or under 1 as a fraction in lowest terms and vice versa* • Uses fractional and negative exponents as optional ways of representing problem situations (e.g., $27 \wedge 2/3 = (27 \wedge 1/3) \wedge 2 = 9)^*$ • Writes a vhole number in scientific notation • Writes a rational number in scientific notation* Number Concepts -Compare and Order Real Numbers Number Concepts -Compare and Order Real Numbers Number Concepts -Compare and Order Real Numbers	 Uses equivalent representations to understand new mathematical content* Uses algebraic representations to model and interpret mathematical and real-world situations* Applies the most appropriate problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ideas* Verifies reasonableness of results of complex problems* Uses the components of mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, interpretation of solution within the model, validation in original real-world problem situation)* 	 Uses equivalent representations to understand new mathematical content* Uses algebraic representations to model and interpret mathematical and real-world situations* Uses graphic representations to model and interpret mathematical and real-world situations* Applies the most appropriate problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ideas* Verifies reasonableness of results of complex problems* Uses the components of mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, interpretation of solution within the model, validation in original real-world problem situation)* 	 Uses technology to organize, record, and communicate mathematical ideas* Defines "irrational numbers"* 	
Number Concepts -Read, Write, RepresentNumber Concepts -Read, Write, RepresentNumber Concepts -Read, Write, Represent• Expresses the equivalent form of a fraction, decimal, and/or percent (complex fraction)*• Expresses a percent over 100 or under 1 as a fraction in lowest terms and vice versa*• Expresses a percent over 100 or under 1 as a fraction in lowest terms and vice versa*• Writes a number expressed in scientific notation in standard form*• Uses fractional and negative exponents as optional ways of representing problem situations (e.g., 27^2/3 = (27^1/3)^2 = 9)*• Writes a rational number in scientific notation*• Writes a decimal in scientific notation• Writes a rational number in scientific notation*• Number Concepts -Compare and Order Real Numbers• Number Concepts -Compare and Order Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	
Number Concepts -Read, Write, Represent Number Concepts -Read, Write, Represent Number Concepts -Read, Write, Represent • Expresses the equivalent form of a fraction, decimal, and/or percent (complex fraction)* • Expresses a percent over 100 or under 1 as a fraction in lowest terms and vice versa* • Uses fractional and negative exponents as optional ways of representing problem situations (e.g., 27^2/3 = (27^1/3)^2 = 9)* • Writes a whole number in scientific notation • Writes a decimal in scientific notation* • Writes a rational number in scientific notation* • Writes a rational number in scientific notation*				
 Expresses the equivalent form of a fraction, decimal, and/or percent (complex fraction)* Writes a number expressed in scientific notation in standard form* Writes a whole number in scientific notation Writes a decimal in scientific notation* Writes a decimal in scientific notation* Writes a number concepts -Compare and Order Real Numbers Numbers 	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	
Number Concepts -Compare and Order Real Number Concepts -Compare and Order Real Number Concepts -Compare and Order Real Numbers Numbers Numbers Numbers	 Expresses the equivalent form of a fraction, decimal, and/or percent (complex fraction)* Writes a number expressed in scientific notation in standard form* Writes a whole number in scientific notation Writes a decimal in scientific notation* 	 Expresses a percent over 100 or under 1 as a fraction in lowest terms and vice versa* Uses fractional and negative exponents as optional ways of representing problem situations (e.g., 27^2/3 = (27^1/3)^2 = 9)* Writes a rational number in scientific notation* 		
Numbers Numbers Numbers	Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	
	Numbers	Numbers	Numbers	

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Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory
 Determines the prime factorization of a number using powers Uses factor and multiple concepts to solve difficult problems Identifies the least common multiple of whole numbers* Identifies the greatest common factor and least common multiple of multiple whole numbers* 	 Uses factor and multiple concepts to solve difficult problems Uses prime and relatively prime concepts to solve problems* Solves problems using multiple number theory concepts (e.g., prime, GCF and LCM, multiples, factors) 	
Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions
 Identifies the ratio from a given real-world situation* Solves multiple-step problems involving proportions Solves problems involving a fractional increase* Calculates the percent one number is of another (e.g., 20 is what % of 90) Calculates a percent of a rational number (e.g., 6% of 0.78) Solves problems involving percents (analysis) Solves problems involving simple percent discounts (e.g., finding sale price) Solves problems involving complex percent discounts (e.g., finding percent discount, regular price)* Calculates commission/deductions and total pay Solves problems involving simple interest rates without the formula 	 Solves problems involving complex percent discounts (e.g., finding percent discount, regular price)* 	
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
 Uses a number line to determine the distance between a positive and negative number Subtracts integers* Solves real-world problems involving addition and subtraction of integers (analysis)* 		
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
 Solves real-world problems involving multiplication and division of integers (analysis)* Simplifies rational expressions with exponents* Estimates the square roots of numbers Simplifies rational expressions with scientific notation Solves problems with scientific notation* 	 Simplifies rational expressions with exponents* Solves problems with scientific notation* 	Simplifies rational expressions with negative exponents
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
Uses estimation to solve problems involving decimals		
New Vocabulary: least common multiple	New Vocabulary: none	New Vocabulary: none
New Signs and Symbols: [] square brackets, LCM lowest	New Signs and Symbols: none	New Signs and Symbols: none

	common multiple		
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Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: 261 - 270

Skills and Concepts to Enhance	Skills and Concepts to Develop	Skills and Concepts to Introduce
251 - 260	261 - 270	Above 270
Mathematical Process	Mathematical Process	Mathematical Process
 Uses equivalent representations to understand new mathematical content* Uses algebraic representations to model and interpret mathematical and real-world situations* Uses graphic representations to model and interpret mathematical and real-world situations* Applies the most appropriate problem solving strategies (e.g., draws a picture, looks for patterns, makes a table or organized list, makes a problem simpler, uses process of elimination, uses trial and error, works backwards, uses models)* Uses technology to organize, record, and communicate mathematical ideas* Verifies reasonableness of results of complex problems* Uses the components of mathematical modeling (e.g., problem formulation, mathematical model, solution within the model, interpretation of solution within the model, validation in original real-world problem situation)* 	 Uses technology to organize, record, and communicate mathematical ideas* Defines "irrational numbers"* 	 Uses geometric constructions to solve problems*
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
 Expresses a percent over 100 or under 1 as a fraction in lowest terms and vice versa* Uses fractional and negative exponents as optional ways of representing problem situations (e.g., 27^2/3 = (27^1/3)^2 = 9)* Writes a rational number in scientific notation* 		
Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real
Numbers	Numbers	Numbers

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Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory
Concepts	Concepts	Concepts
• Uses factor and multiple concepts to solve difficult		• Identifies the least common multiple of numbers in
problems		their prime factored state*
• Uses prime and relatively prime concepts to solve		
problems*		
Solves problems using multiple number theory		
concepts (e.g., prime, GCF and LCM, multiples,		
factors)		
Number Concepts -Money, Percent, Proportions	Number Concepts -Money, Percent, Proportions	Number Concepts - Money, Percent, Proportions
Solves problems involving complex percent discounts		
(e.g., finding percent discount, regular price)*		
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
• Simplifies rational expressions with exponents*	• Simplifies rational expressions with negative exponents	
 Solves problems with scientific notation* 		
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
New Vocabulary: none	New Vocabulary: none	New Vocabulary: bisector
New Signs and Symbols: none	New Signs and Symbols: none	New Signs and Symbols: ∠ angle

Subject: Mathematics Goal Strand: Mathematical Process, Operations, Relationships RIT Score Range: Above 270

Skills and Concepts to Enhance 261 - 270	Skills and Concepts to Develop Above 270
Mathematical Process	Mathematical Process
 Uses technology to organize, record, and communicate mathematical ideas* Defines "irrational numbers"* 	• Uses geometric constructions to solve problems*
Number Concepts -Place-Value - Real Numbers	Number Concepts -Place-Value - Real Numbers
Number Concepts -Read, Write, Represent	Number Concepts -Read, Write, Represent
Number Concepts -Compare and Order Real	Number Concepts -Compare and Order Real
Numbers	Numbers
Number Concepts -Count and Number Theory	Number Concepts -Count and Number Theory
Concepts	Concepts
	• Identifies the least common multiple of numbers in their prime factored state*
Number Concepts -Money, Percent, Proportions	Number Concepts - Money, Percent, Proportions
Number Computation -Addition and Subtraction	Number Computation -Addition and Subtraction
Number Computation -Multiplication and Division	Number Computation -Multiplication and Division
• Simplifies rational expressions with negative exponents	
Number Computation -Estimate and Reasonableness	Number Computation -Estimate and Reasonableness
New Vocabulary: none	New Vocabulary: bisector
New Signs and Symbols: none	<i>New Signs and Symbols:</i> ∠ angle

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