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 models to calculate whole number sums through 99* • Adds two 1-digit numbers with sums to 10 in	• 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

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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, with no regrouping • Adds money vertically with no regrouping*
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
Number Computation -Estimate and Reasonableness	**Number Computation -Estimate and Reasonableness**
New Vocabulary: none	*New Vocabulary:* add, numeral
New Signs and Symbols: + addition, = is equal to, □ variable	*New Signs and Symbols:* ÷ division, $ dollar sign, > greater than, < less than, × multiplication, – subtraction

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

Skills and Concepts to Enhance Below 161	Skills and Concepts to Develop 161 - 170	Skills and Concepts to Introduce 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 through100* • Compares whole numbers through 999 • Orders sets of objects 0-10* • Orders sets of objects 0-20*
Number Concepts -Count and Number Theory Concepts	**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)	• 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 • Adds 3-digit numbers, with regrouping, with sums

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	• 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, with no regrouping • Adds money vertically with no regrouping*	under 1000 • 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 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 1-digit number from a multiple-digit number* • Subtracts a 2-digit number from a 2-digit number, with no regrouping • Subtracts 2- and/or 3-digit numbers with no regrouping • Solves real-world whole number problems involving subtraction with numbers under 20 • Adds 1-digit numbers with sums to 18 (with parentheses) • Adds money 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	*New Vocabulary:* before, between, count, counting order, diamond, dollar sign, eighth, eleventh, fifth, greater,

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		greater than, hundred, ninth, ones, penny, ray, seventh, tens, tenth, thousand
New Signs and Symbols: + addition, = is equal to, □ variable	*New Signs and Symbols:* ÷ division, $ dollar sign, > greater than, < less than, × multiplication, – subtraction	*New Signs and Symbols:* ( ) 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 161 - 170	Skills and Concepts to Develop 171 - 180	Skills and Concepts to Introduce 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 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 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* • 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 hundred thousands

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		• 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* • Represents 3/4 with a diagram or model* • Identifies equal parts by using models • Identifies 1/2 from a region or set • Identifies 1/4 from a region or set • Identifies 2/3 or 3/3 from a region or set* • Identifies tenths from a region or set* • Identifies eighths from a region or set • Identifies a fraction (denominators other than 2, 3, 4, 8, 10) from a region or set
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 through100* • 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)

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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 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 • Adds 3-digit numbers, with regrouping, with sums under 1000 • 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	• 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 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

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• 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, 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 20 (change unknown)* • Solves real-world whole number addition problems with sums to 100 (result unknown)* • Solves real-world whole number addition problems with sums to 1000 • 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 1-digit number from a multiple-digit number* • Subtracts a 2-digit number from a 2-digit number, with no regrouping • Subtracts 2- and/or 3-digit numbers with no regrouping • Solves real-world whole number problems involving subtraction with numbers under 20 • Adds 1-digit numbers with sums to 18 (with parentheses) • Adds money vertically with no regrouping*	• 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 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 2- and/or 3-digit numbers with no regrouping • Subtracts 3- or 4-digit numbers with regrouping • Performs mental subtraction with numbers under 1000 • Subtracts multiple-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 100 and under • 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 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

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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	*New Vocabulary:* before, between, count, counting order, diamond, dollar sign, eighth, eleventh, fifth, greater, greater than, hundred, ninth, ones, penny, ray, seventh, tens, tenth, thousand	*New Vocabulary:* 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
New Signs and Symbols: ÷ division, $ dollar sign, > greater than, < less than, × multiplication, – subtraction	*New Signs and Symbols:* ( ) 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 171 - 180	Skills and Concepts to Develop 181 - 190	Skills and Concepts to Introduce 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 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* • 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., "add more" becomes "plus")* • 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 • 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 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

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	• 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 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* • Represents 3/4 with a diagram or model* • Identifies equal parts by using models • Identifies 1/2 from a region or set • Identifies 1/4 from a region or set • Identifies 2/3 or 3/3 from a region or set* • Identifies tenths from a region or set* • Identifies eighths 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 one-half 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* • 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

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		• Identifies a decimal on a number line to the tenths place*
Number Concepts -Compare and Order Real Numbers	**Number Concepts -Compare and Order Real Numbers**	**Number Concepts -Compare and Order Real Numbers**
• Compares whole numbers through100* • 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)	• 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)*
Number Concepts -Count and Number Theory Concepts	**Number Concepts -Count and Number Theory Concepts**	**Number Concepts -Count and Number Theory Concepts**
• 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)*	• Identifies numbers as composite
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	• 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%)
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 999*	• 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 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,

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- 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
- Adds 3-digit numbers, with regrouping, with sums under 1000
- 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 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 1-digit number from a multiple-digit number*
- Subtracts a 2-digit number from a 2-digit number, with no regrouping
- Subtracts 2- and/or 3-digit numbers with no regrouping
- Solves real-world whole number problems involving subtraction with numbers under 20
- Adds 1-digit numbers with sums to 18 (with parentheses)
- Adds money vertically with no 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 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 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 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 2- and/or 3-digit numbers with no regrouping
- Subtracts 3- or 4-digit numbers with regrouping
- Performs mental subtraction with numbers under 1000
- Subtracts multiple-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 100 and under
- Solves real-world whole number problems involving subtraction with numbers under 1000
- Solves real-world whole number problems involving 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)*
- 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 a 2-digit number from a 3-digit number with a single regrouping
- Subtracts 3- or 4-digit numbers with regrouping
- Performs mental subtraction with numbers under 1000
- Performs mental subtraction with numbers 1000 and over
- Subtracts multiple-digit numbers with no regrouping*
- Solves real-world whole number problems involving subtraction with numbers 100 and under
- Solves real-world whole number problems involving subtraction with numbers under 1000
- Solves whole number subtraction word problems with numbers over 1000
- Solves 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

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	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 • 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	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* • 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

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	• 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.,

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		$1.20 + $2.75)
New Vocabulary: before, between, count, counting order, diamond, dollar sign, eighth, eleventh, fifth, greater, greater than, hundred, ninth, ones, penny, ray, seventh, tens, tenth, thousand	*New Vocabulary:* 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	*New Vocabulary:* billion, capacity, composite number, deposit, hundred million, hundredths, longer, prime number, quintillion, regroup, standard numeral, symbol, thousands, trillion, zero
New Signs and Symbols: ( ) order of operations, ¢ cent sign, lb pound	*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

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

Skills and Concepts to Enhance 181 - 190	Skills and Concepts to Develop 191 - 200	Skills and Concepts to Introduce 201 - 210
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* • 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., "add more" becomes "plus")* • 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 manipulatives and models to demonstrate thinking processes* • Solves real-world problems using reasoning strategies • 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)

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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 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 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* • Represents 3/4 with a diagram or model* • Identifies equal parts by using models • Identifies 1/2 from a region or set • Identifies 1/4 from a region or set • Identifies 2/3 or 3/3 from a region or set* • Identifies tenths 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 one-half 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*	• 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 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*

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• Identifies eighths from a region or set • Identifies a fraction (denominators other than 2, 3, 4, 8, 10) from a region or set	• 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*	
Number Concepts -Compare and Order Real Numbers	**Number Concepts -Compare and Order Real Numbers**	**Number Concepts -Compare and Order Real Numbers**
• 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)	• 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*
Number Concepts -Count and Number Theory Concepts	**Number Concepts -Count and Number Theory Concepts**	**Number Concepts -Count and Number Theory Concepts**
• 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)*	• 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
Number Concepts -Money, Percent, Proportions	**Number Concepts -Money, Percent, Proportions**	**Number Concepts -Money, Percent, Proportions**
• 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	• 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
Number Computation -Addition and Subtraction	**Number Computation -Addition and Subtraction**	**Number Computation -Addition and Subtraction**
• 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	• 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	• 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

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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 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 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 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 2- and/or 3-digit numbers with no regrouping • Subtracts 3- or 4-digit numbers with regrouping • Performs mental subtraction with numbers under 1000 • Subtracts multiple-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 100 and under • Solves real-world whole number problems involving subtraction with numbers under 1000 • Solves real-world whole number problems involving addition and subtraction	• 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)* • 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 a 2-digit number from a 3-digit number with a single regrouping • Subtracts 3- or 4-digit numbers with regrouping • Performs mental subtraction with numbers under 1000 • Performs mental subtraction with numbers 1000 and over • Subtracts multiple-digit numbers with no regrouping* • Solves real-world whole number problems involving subtraction with numbers 100 and under • Solves real-world whole number problems involving subtraction with numbers under 1000 • Solves whole number subtraction word problems with numbers over 1000 • Solves 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)	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 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 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,

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• 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"* • 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)	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 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	• 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 multiplication facts to 10 x 10	• Uses a number line to model multiplication (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 regrouping

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facts with dividend and divisors less that 11 involving money • 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* • 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)	• 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 by a 1-digit number with no remainder • Divides a 2-digit number or a 3-digit number by a 1-digit number with a 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 a remainder* • Divides a 2-digit number by a 2-digit number with a remainder • 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

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		• 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)* • Uses rounding to estimate answers to 2-step problems involving money (using decimals)
New Vocabulary: 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	*New Vocabulary:* billion, capacity, composite number, deposit, hundred million, hundredths, longer, prime number, quintillion, regroup, standard numeral, symbol, thousands, trillion, zero	*New Vocabulary:* 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	*New Signs and Symbols:* ? a variable, °C degrees Celsius, □ missing operation, − negative number, ∅ null or empty set, p.m.

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

Skills and Concepts to Enhance 191 - 200	Skills and Concepts to Develop 201 - 210	Skills and Concepts to Introduce 211 - 220
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 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., "add more" becomes "plus")* • 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 manipulatives and models to demonstrate thinking processes* • Solves real-world problems using reasoning strategies • 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* • Uses manipulatives and models to demonstrate thinking processes* • 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 (multiplication/division)* • Evaluates number sense strategies used 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)*

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		• Uses correct terminology for integers*
Number Concepts -Place-Value - Real Numbers	**Number Concepts -Place-Value - Real Numbers**	**Number Concepts -Place-Value - Real Numbers**
• 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., 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 one-half 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*	• 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 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* • Rounds decimals to the nearest whole number*

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• 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 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*

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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 • 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)* • 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 a 2-digit number from a 3-digit number with a single regrouping • Subtracts 3- or 4-digit numbers with regrouping • Performs mental subtraction with numbers under 1000 • Performs mental subtraction with numbers 1000 and over • Subtracts multiple-digit numbers with no regrouping*	• 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 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	• 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 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 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

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- Solves real-world whole number problems involving subtraction with numbers 100 and under
- Solves real-world whole number problems involving subtraction with numbers under 1000
- Solves whole number subtraction word problems with numbers over 1000
- Solves 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*
- 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 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 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 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*

with and without regrouping
- 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* • 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 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)	• Uses a number line to model multiplication (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 regrouping • 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 by a 1-digit number with no remainder • Divides a 2-digit number or a 3-digit number by a 1-digit number with a 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 a remainder* • Divides a 2-digit number by a 2-digit number with a remainder	• Instantly recalls basic multiplication and division facts in a table • Multiplies a 2-digit number by a 2-digit number with regrouping • Multiplies a 3-digit number by a 2-digit number with regrouping • Performs mental computation with multiplication • Multiplies a 3-digit number by a 3-digit number • Multiplies a 4- or more digit number by multiples of 100 or 1000 • Multiplies multiple-digit numbers • Models whole number multiplication and division algorithms (e.g., uses physical materials to show 4 groups of 3 objects)* • Divides a 2-digit number or a 3-digit number by a 1-digit number with a remainder • Performs mental computation with division • 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 3-digit number by a 2-digit number • Divides a 4-digit number by a 2-digit number • Solves problems using the inverse relationship between multiplication and division • Divides a whole number by a whole number and expresses the remainder as a decimal* • Divides multiple-digit numbers • Uses strategies to determine 2 or more missing digits (multiplication/division only)* • Solves whole number word problems with division over 10 x 10 • Solves complex word problems involving whole number division with remainder (e.g., 2-step, 2-digit divisor) • Solves real-world problems involving 2-step multiple operations, whole numbers only • Solves real-world multiple-step problems involving whole numbers* • Predicts the relative size of the answer when computing with 10's, 100's, 1000's • Predicts the relative size of the answer when

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• 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) • 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* • 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**
• 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 2-step problems	• 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 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

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	involving money (using decimals)	adding and subtracting fractions and mixed numbers*
New Vocabulary: billion, capacity, composite number, deposit, hundred million, hundredths, longer, prime number, quintillion, regroup, standard numeral, symbol, thousands, trillion, zero	*New Vocabulary:* 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 Vocabulary:* 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
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	*New Signs and Symbols:* ? a variable, °C degrees Celsius, □ missing operation, − negative number, ∅ 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 201 - 210	Skills and Concepts to Develop 211 - 220	Skills and Concepts to Introduce 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 manipulatives and models to demonstrate thinking processes* • Solves real-world problems using reasoning strategies • 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* • Uses manipulatives and models to demonstrate thinking processes* • 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 (multiplication/division)* • Evaluates number sense strategies used 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 number sense strategies to judge the reasonableness of given answers (multiplication/division only) • Uses alternative algorithms to explain the meaning of "fraction"*

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	• 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 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*	• 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. 00003)* • 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 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 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) • Uses powers of 10 to represent numbers (e.g., 8 x 10^3

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	• 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* • Expresses a 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 Numbers	**Number Concepts -Compare and Order Real Numbers**	**Number Concepts -Compare and Order Real Numbers**
• 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* • Compares two integers • 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 Concepts	**Number Concepts -Count and Number Theory Concepts**	**Number Concepts -Count and Number Theory Concepts**
• 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)*

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• 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 percents • 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 • Performs mental subtraction with numbers 1000 and	• 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	• 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

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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 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 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 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*	• Adds fractions with unlike denominators without 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 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 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*	• Adds mixed fractions where converting from improper fractions is necessary • Subtracts fractions with like denominators with reducing • Subtracts fractions with unlike denominators without reducing • Subtracts 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 through the hundred-thousandths place • Subtracts 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 problems involving addition and subtraction of integers* • Adds rational expressions in decimal form

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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 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 regrouping • 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 by a 1-digit number with no remainder • Divides a 2-digit number or a 3-digit number by a 1-digit number with a 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 a remainder* • Divides a 2-digit number by a 2-digit number with a remainder • Divides a 3-digit number by a multiple of 10	• Instantly recalls basic multiplication and division facts in a table • Multiplies a 2-digit number by a 2-digit number with regrouping • Multiplies a 3-digit number by a 2-digit number with regrouping • Performs mental computation with multiplication • Multiplies a 3-digit number by a 3-digit number • Multiplies a 4- or more digit number by multiples of 100 or 1000 • Multiplies multiple-digit numbers • Models whole number multiplication and division algorithms (e.g., uses physical materials to show 4 groups of 3 objects)* • Divides a 2-digit number or a 3-digit number by a 1-digit number with a remainder • Performs mental computation with division • 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 3-digit number by a 2-digit number • Divides a 4-digit number by a 2-digit number • Solves problems using the inverse relationship between multiplication and division • Divides a whole number by a whole number and expresses the remainder as a decimal* • Divides multiple-digit numbers • Uses strategies to determine 2 or more missing digits (multiplication/division only)* • Solves whole number word problems with division over 10 x 10 • Solves complex word problems involving whole number division with remainder (e.g., 2-step, 2-digit divisor) • Solves real-world problems involving 2-step multiple operations, whole numbers only • Solves real-world multiple-step problems involving whole numbers* • Predicts the relative size of the answer when computing with 10's, 100's, 1000's • Predicts the relative size of the answer when multiplying whole numbers	• Uses multiplication strategies to explain computation (e.g., doubles, 9-patterns, decomposing, partial products)* • Multiplies multiple-digit numbers • Models algorithms using place value concepts (multiplication and division with whole numbers)* • Divides a 4-digit number by a 2-digit number • Divides multiple-digit numbers • Divides numbers by powers of 10* • Solves complex word problems involving whole number division with remainder (e.g., 2-step, 2-digit divisor) • Uses division for multiple-step real-world problems (whole numbers)* • Solves real-world multiple-step problems involving whole numbers* • Predicts the relative size of the answer when dividing whole numbers • Multiplies a fraction by a fraction without reducing to simplest form (complex problem) • Multiplies a fraction by a fraction where reducing to simplest form is necessary • Multiplies a fraction by a whole number • Multiplies mixed fractions • Divides a fraction by a fraction • Divides a mixed fraction by a fraction • Solves 1-step real-world problems involving fractions with multiplication and division • Solves 2- or more step real-world problems involving fractions with multiplication and division • Solves problems involving fractions (e.g., multiple operations, conversions)* • 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 10, 100, 1000 • Divides a decimal by a decimal

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• 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* • 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)	• 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**
• 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 2-step problems involving money (using decimals)	• 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 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*	• 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 fractions and mixed numbers* • Uses estimation to solve problems involving fractions and mixed numbers

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New Vocabulary: 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 Vocabulary:* 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	*New Vocabulary:* 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
New Signs and Symbols: ? a variable, °C degrees Celsius, □ missing operation, − negative number, ∅ 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	*New Signs and Symbols:* 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 211 - 220	Skills and Concepts to Develop 221 - 230	Skills and Concepts to Introduce 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* • Uses manipulatives and models to demonstrate thinking processes* • 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 (multiplication/division)* • Evaluates number sense strategies used 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 number sense strategies to judge the reasonableness of given answers (multiplication/division only) • 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*

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• 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 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* • Rounds decimals to the nearest whole number* • Rounds decimals to the nearest tenth	• 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. 00003)* • 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 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 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) • 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	• 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 whole number in scientific notation • Writes a decimal in scientific notation* • Represents absolute value using positive and negative numbers*

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• 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 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 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 • 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
Number Concepts -Count and Number Theory Concepts	**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

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• 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*	• 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**
• 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 percents • Solves problems involving tax and tips • Solves problems involving simple interest rates with the formula • Solves problems comparing percents, fractions, and decimals*	• 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) • 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
Number Computation -Addition and Subtraction	**Number Computation -Addition and Subtraction**	**Number Computation -Addition and Subtraction**
• 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	• 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	• 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 integers with unlike signs • Adds several positive and negative integers

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• 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 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 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*	• Subtracts fractions with like denominators with reducing • Subtracts fractions with unlike denominators without reducing • Subtracts 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 through the hundred-thousandths place • Subtracts 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 problems involving addition and subtraction of integers* • Adds rational expressions in decimal form	• Subtracts integers* • Solves real-world problems involving addition and subtraction of integers (analysis)* • Subtracts rational expressions in decimal form*
Number Computation -Multiplication and Division	**Number Computation -Multiplication and Division**	**Number Computation -Multiplication and Division**
• Instantly recalls basic multiplication and division facts in a table • Multiplies a 2-digit number by a 2-digit number with regrouping • Multiplies a 3-digit number by a 2-digit number with regrouping • Performs mental computation with multiplication • Multiplies a 3-digit number by a 3-digit number • Multiplies a 4- or more digit number by multiples of	• Uses multiplication strategies to explain computation (e.g., doubles, 9-patterns, decomposing, partial products)* • Multiplies multiple-digit numbers • Models algorithms using place value concepts (multiplication and division with whole numbers)* • Divides a 4-digit number by a 2-digit number • Divides multiple-digit numbers • Divides numbers by powers of 10*	• 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*

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100 or 1000
- Multiplies multiple-digit numbers
- Models whole number multiplication and division algorithms (e.g., uses physical materials to show 4 groups of 3 objects)*
- Divides a 2-digit number or a 3-digit number by a 1-digit number with a remainder
- Performs mental computation with division
- 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 3-digit number by a 2-digit number
- Divides a 4-digit number by a 2-digit number
- Solves problems using the inverse relationship between multiplication and division
- Divides a whole number by a whole number and expresses the remainder as a decimal*
- Divides multiple-digit numbers
- Uses strategies to determine 2 or more missing digits (multiplication/division only)*
- Solves whole number word problems with division over 10 x 10
- Solves complex word problems involving whole number division with remainder (e.g., 2-step, 2-digit divisor)
- Solves real-world problems involving 2-step multiple operations, whole numbers only
- Solves real-world multiple-step problems involving whole numbers*
- Predicts the relative size of the answer when computing with 10's, 100's, 1000's
- Predicts the relative size of the answer when 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)
- Solves real-world problems involving decimals (not

- Solves complex word problems involving whole number division with remainder (e.g., 2-step, 2-digit divisor)
- Uses division for multiple-step real-world problems (whole numbers)*
- Solves real-world multiple-step problems involving whole numbers*
- Predicts the relative size of the answer when dividing whole numbers
- Multiplies a fraction by a fraction without reducing to simplest form (complex problem)
- Multiplies a fraction by a fraction where reducing to simplest form is necessary
- Multiplies a fraction by a whole number
- Multiplies mixed fractions
- Divides a fraction by a fraction
- Divides a mixed fraction by a fraction
- Solves 1-step real-world problems involving fractions with multiplication and division
- Solves 2- or more step real-world problems involving fractions with multiplication and division
- Solves problems involving fractions (e.g., multiple operations, conversions)*
- 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 10, 100, 1000
- 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*
- Solves real-world problems involving multiplication

- 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
- 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

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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* • 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)	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**
• 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 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*	• 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 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)
New Vocabulary: 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	*New Vocabulary:* 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	*New Vocabulary:* commission, cubed, discount, equality, prime factor, prime factorization, representative sample, scientific notation, square region, tenth power, time-and-a-half
New Signs and Symbols: ( ) parenthesis around an integer, $ dollar sign, in. inch, mph miles per hour, − negative sign, ≠ not equal to, + positive number	*New Signs and Symbols:* gal gallon, I interest, m meter/metre, • multiplication symbol, # number, : ratio, × multiplication, < less than, = is equal to, > greater than	*New Signs and Symbols:* || absolute value, BC, km kilometer/kilometre, • point, segment overbar, square root symbol, − subtraction

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

Skills and Concepts to Enhance 221 - 230	Skills and Concepts to Develop 231 - 240	Skills and Concepts to Introduce 241 - 250
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* • 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 number sense strategies to judge the reasonableness of given answers (multiplication/division only) • 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 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 reasoning strategies to solve 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)*

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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	**Number Concepts -Read, Write, Represent**	**Number Concepts -Read, Write, Represent**
• 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. 00003)* • 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 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 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) • 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	• 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 whole number in scientific notation • Writes a decimal in scientific notation* • Represents absolute value using positive and negative 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*

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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
• 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 • 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	
Number Concepts -Count and Number Theory Concepts	**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)* • 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)

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• 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 like denominators with reducing • Subtracts fractions with unlike denominators without reducing • Subtracts 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 through the hundred-thousandths place • Subtracts 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 integers with unlike signs • 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)*

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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 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 (e.g., doubles, 9-patterns, decomposing, partial products)* • Multiplies multiple-digit numbers • Models algorithms using place value concepts (multiplication and division with whole numbers)* • Divides a 4-digit number by a 2-digit number • Divides multiple-digit numbers • Divides numbers by powers of 10* • Solves complex word problems involving whole number division with remainder (e.g., 2-step, 2-digit divisor) • Uses division for multiple-step real-world problems (whole numbers)* • Solves real-world multiple-step problems involving whole numbers* • Predicts the relative size of the answer when dividing whole numbers • Multiplies a fraction by a fraction without reducing to simplest form (complex problem) • Multiplies a fraction by a fraction where reducing to simplest form is necessary • Multiplies a fraction by a whole number • Multiplies mixed fractions • Divides a fraction by a fraction • Divides a mixed fraction by a fraction • Solves 1-step real-world problems involving fractions with multiplication and division • Solves 2- or more step real-world problems involving fractions with multiplication and division	• 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 • 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	• 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*

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• 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 10, 100, 1000 • 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* • Solves real-world problems involving multiplication and division of integers* • 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* • 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 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 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
New Vocabulary: 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	*New Vocabulary:* commission, cubed, discount, equality, prime factor, prime factorization, representative sample, scientific notation, square region, tenth power, time-and-a-half	*New Vocabulary:* least common multiple

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

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

Skills and Concepts to Enhance 231 - 240	Skills and Concepts to Develop 241 - 250	Skills and Concepts to Introduce 251 - 260
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* • 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 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 reasoning strategies to solve 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 reasoning strategies to solve 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*

* Both data from test items and review by NWEA curriculum specialists are used to place learning continuum statements into appropriate RIT ranges.

Blank cells indicate data are limited or unavailable for this range or document version.

• 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 Concepts -Compare and Order Real Numbers	**Number Concepts -Compare and Order Real Numbers**	**Number Concepts -Compare and Order Real 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 Concepts	**Number Concepts -Count and Number Theory Concepts**	**Number Concepts -Count and Number Theory Concepts**
• 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*	• 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* • 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) • Calculates the percent one number is of another (e.g., 20 is what % of 90)	• 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)*

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• 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 integers with unlike signs • 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*

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• 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 • Determines the most accurate answer (fractions only)* • Uses estimation to solve problems involving proportional reasoning (decimals only)	• Uses estimation to solve problems involving decimals	
New Vocabulary: commission, cubed, discount, equality, prime factor, prime factorization, representative sample, scientific notation, square region, tenth power,	*New Vocabulary:* least common multiple	*New Vocabulary:* none

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

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

Skills and Concepts to Enhance 241 - 250	Skills and Concepts to Develop 251 - 260	Skills and Concepts to Introduce 261 - 270
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* • 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 reasoning strategies to solve 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 reasoning strategies to solve 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 -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)* • 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*	
Number Concepts -Compare and Order Real Numbers	**Number Concepts -Compare and Order Real Numbers**	**Number Concepts -Compare and Order Real Numbers**

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Number Concepts -Count and Number Theory Concepts	Number Concepts -Count and Number Theory Concepts	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*	• 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

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common multiple		

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

Skills and Concepts to Enhance 251 - 260	Skills and Concepts to Develop 261 - 270	Skills and Concepts to Introduce Above 270
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 reasoning strategies to solve 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 Numbers	**Number Concepts -Compare and Order Real Numbers**	**Number Concepts -Compare and Order Real Numbers**

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Number Concepts -Count and Number Theory Concepts	Number Concepts -Count and Number Theory Concepts	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)		• Identifies the least common multiple of numbers in their prime factored state*
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* • 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**
New Vocabulary: none	*New Vocabulary:* none	*New Vocabulary:* bisector
New Signs and Symbols: none	*New Signs and Symbols:* none	*New Signs and Symbols:* ∠ angle

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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 Numbers	**Number Concepts -Compare and Order Real Numbers**
Number Concepts -Count and Number Theory Concepts	**Number Concepts -Count and Number Theory 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	*New Signs and Symbols:* ∠ angle

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