

Continuum of Curriculum Expectations: Number Sense and Numeration



DISTRICT SCHOOL BOARD OF NIAGARA
Achieving Success Together

Overall Expectations

Subheadings	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	
Quantity Relationships	1m8 • read, represent, compare, and order whole numbers to 50, and use concrete materials to investigate fractions and money amounts;	2m8 • read, represent, compare, and order whole numbers to 100, and use concrete materials to represent fractions and money amounts to 100¢;	3m8 • read, represent, compare, and order whole numbers to 1000, and use concrete materials to represent fractions and money amounts to \$10;	4m8 • read, represent, compare, and order whole numbers to 10 000, decimal numbers to tenths, and simple fractions, and represent money amounts to \$100;	5m8 • read, represent, compare, and order whole numbers to 100 000, decimal numbers to hundredths, proper and improper fractions, and mixed numbers;	6m8 • read, represent, compare, and order whole numbers to 1 000 000, decimal numbers to thousandths, proper and improper fractions, and mixed numbers;	7m8 • read, represent, compare, and order numbers, including integers;	8m8 • read, represent, compare, and order equivalent representations of numbers, including those involving positive exponents;	
Counting	1m9 • demonstrate an understanding of magnitude by counting forward to 100 and backwards from 20;	2m9 • demonstrate an understanding of magnitude by counting forward to 200 and backwards from 50, using multiples of various numbers as starting points;	3m9 • demonstrate an understanding of magnitude by counting forward and backwards by various numbers and from various starting points;	4m9 • demonstrate an understanding of magnitude by counting forward and backwards by 0.1 and by fractional amounts;	5m9 • demonstrate an understanding of magnitude by counting forward and backwards by 0.01;				
Operational Sense	1m10 • solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of strategies.	2m10 • solve problems involving the addition and subtraction of one- and two-digit whole numbers, using a variety of strategies, and investigate multiplication and division.	3m10 • solve problems involving the addition and subtraction of single- and multi-digit whole numbers, using a variety of strategies, and demonstrate an understanding of multiplication and division.	4m10 • solve problems involving the addition, subtraction, multiplication, and division of single- and multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to tenths and money amounts, using a variety of strategies;	5m10 • solve problems involving the multiplication and division of multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to hundredths, using a variety of strategies;	6m9 • solve problems involving the multiplication and division of whole numbers, and the addition and subtraction of decimal numbers to thousandths, using a variety of strategies;	7m9 • demonstrate an understanding of addition and subtraction of fractions and integers, and apply a variety of computational strategies to solve problems involving whole numbers and decimal numbers;	8m9 • solve problems involving whole numbers, decimal numbers, fractions, and integers, using a variety of computational strategies;	
Proportional Relationships				4m11 • demonstrate an understanding of proportional reasoning by investigating whole-number unit rates.	5m11 • demonstrate an understanding of proportional reasoning by investigating whole-number rates.	6m10 • demonstrate an understanding of relationships involving percent, ratio, and unit rate.	7m10 • demonstrate an understanding of proportional relationships using percent, ratio, and rate.	8m10 • solve problems by using proportional reasoning in a variety of meaningful contexts.	

Specific Expectations

Subheadings	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Quantity Relationships Whole Numbers / Integers	1m11 – represent, compare, and order whole numbers to 50, using a variety of tools and contexts 1m13 – demonstrate, using concrete materials, the concept of conservation of number	2m11 – represent, compare, and order whole numbers to 100, including money amounts to 100¢, using a variety of tools	3m11 – represent, compare, and order whole numbers to 1000, using a variety of tools	4m12 – represent, compare, and order whole numbers to 10 000, using a variety of tools	5m12 – represent, compare, and order whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools	6m11 – represent, compare, and order whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools	7m13 – identify and compare integers found in real-life contexts 7m14 – represent and order integers, using a variety of tools;	8m12 – represent whole numbers in expanded form using powers of ten
Read / Print	1m12 – read and print in words whole numbers to ten, using meaningful contexts	2m12 – read and print in words whole numbers to twenty, using meaningful contexts	3m12 – read and print in words whole numbers to one hundred, using meaningful contexts	4m14 – read and print in words whole numbers to one thousand, using meaningful contexts	5m14 – read and print in words whole numbers to ten thousand, using meaningful contexts	6m13 – read and print in words whole numbers to one hundred thousand, using meaningful contexts		
Place Value	1m14 – relate numbers to the anchors of 5 and 10	2m14 – determine, using concrete materials, the ten that is nearest to a given two-digit number, and justify the answer	3m13 – identify and represent the value of a digit in a number according to its position in the number 3m16 – represent and explain, using concrete materials, the relationship among the numbers 1, 10, 100, and 1000	4m13 – demonstrate an understanding of place value in whole numbers and decimal numbers from 0.1 to 10 000, using a variety of tools and strategies	5m13 – demonstrate an understanding of place value in whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools and strategies	6m12 – demonstrate an understanding of place value in whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools and strategies		

Subheadings	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Quantity Relationships Compose and Decompose	1m18 – compose and decompose numbers up to 20 in a variety of ways, using concrete materials	2m13 – compose and decompose two-digit numbers in a variety of ways, using concrete materials	3m14 – compose and decompose three-digit numbers into hundreds, tens, and ones in a variety of ways, using concrete materials			6m17 – identify composite numbers, and prime numbers, and explain the relationship between them (i.e., any composite number can be factored into prime factors)	7m12 – generate multiples and factors, using a variety of tools and strategies	8m15 – determine common factors and using the prime factorization of numbers.
Magnitude			3m20 – solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1000	4m22 – solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 10 000	5m20 – solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 100 000	6m16 – solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1 000 000		
Exponents							7m17 – explain the relationship between exponential notation and the measurement of area and volume	8m11 – express repeated multiplication using exponential notation;

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Quantity Relationships Estimation / Rounding	1m17 – estimate the number of objects in a set, and check by counting	2m14 – <i>determine, using concrete materials, the ten that is nearest to a given two-digit number, and justify the answer</i>	3m15 – round two-digit numbers to the nearest ten, in problems arising from real-life situations;	4m15 – round four-digit whole numbers to the nearest ten, hundred, and thousand, in problems arising from real-life situations	5m15 – round decimal numbers to the nearest tenth, in problems arising from real-life situations	6m15 – estimate quantities using benchmarks of 10%, 25%, 50%, 75%, and 100% 6m24 – use estimation when solving problems involving the addition and subtraction of whole numbers and decimals, to help judge the reasonableness of a solution		
Represent Fractions	1m19 – divide whole objects into parts and identify and describe, through investigation, equal-sized parts of the whole, using fractional names	2m15 – determine, through investigation using concrete materials, the relationship between the number of fractional parts of a whole and the size of the fractional parts 2m16 – regroup fractional parts into wholes, using concrete materials	3m17 – divide whole objects and sets of parts, and identify the parts using fractional names, without using numbers in standard fractional notation;	4m17 – represent fractions using concrete materials, words, and standard fractional notation, and explain the meaning of the denominator as the fractional parts of a whole or a set, and the number of fractional parts being considered	5m16 – represent, compare, and order fractional amounts with like denominators, including proper and improper fractions and mixed numbers, using a variety of tools and using standard fractional notation	6m14 – represent, compare, and order fractional amounts with unlike denominators, including proper and improper fractions and mixed numbers, using a variety of tools and using standard fractional notation	7m11 – represent, compare, and order decimals to hundredths and fractions, using a variety of tool	8m13 – represent, compare, and order rational numbers (i.e., positive and negative fractions and decimals to thousandths);

Subheadings	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Quantity Relationships Compare / Order Fractions		2m17 – compare fractions using concrete materials, without using standard fractional notation		4m18 – compare and order fractions (i.e., halves, thirds, fourths, fifths, tenths) by considering the size and the number of fractional parts 4m19 - compare fractions to the benchmarks of 0, 1/2, and 1	5m16 – represent, compare, and order fractional amounts with like denominators, including proper and improper fractions and mixed numbers, using a variety of tools and using standard fractional notation	6m14 – represent, compare, and order fractional amounts with unlike denominators, including proper and improper fractions and mixed numbers, using a variety of tools and using standard fractional notation	7m11 – represent, compare, and order decimals to hundredths and fractions, using a variety of tool	8m13 – represent, compare, and order rational numbers (i.e., positive and negative fractions and decimals to thousandths);
Equivalent Fractions				4m20 - demonstrate and explain the relationship between equivalent fractions, using concrete materials	5m17 – demonstrate and explain the concept of equivalent fractions, using concrete materials			
Decimal Place Value					5m13 – demonstrate an understanding of place value in whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools and strategies	6m12 – demonstrate an understanding of place value in whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools and strategies		

Subheadings	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Quantity Relationships Represent, Compare, and Order Decimals				4m16 – represent, compare, and order decimal numbers to tenths, using a variety of tools	5m12 – represent, compare, and order whole numbers and decimal numbers from 0.01 to 100, using a variety of tools	6m11 – represent, compare, and order whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools	7m11 – represent, compare, and order decimals to hundredths and fractions, using a variety of tools	8m13 – represent, compare, and order rational numbers (i.e., positive and negative fractions and decimals to thousandths);
Equivalency (See also Patterning and Algebra: Expressions and Equality)				5m18 – demonstrate and explain equivalent representations of a decimal number, using concrete materials and drawings	5m18 – demonstrate and explain equivalent representations of a decimal number, using concrete materials and drawings			8m14 – translate between equivalent forms of a number (i.e., decimals, fractions, percents)
Miscellaneous						6m24 – use estimation when solving problems involving the addition and subtraction of whole numbers and decimals, to help judge the reasonableness of a solution	7m15 – select and justify the most appropriate representation of a quantity (i.e., fraction, decimal, percent) for a given context 7m16 – represent perfect squares and square roots, using a variety of tools	

Subheadings	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Quantity Relationships Money	<p>1m16 – represent money amounts to 20¢, through investigation using coin manipulatives</p> <p>1m15 – identify and describe various coins (i.e., penny, nickel, dime, quarter, \$1 coin, \$2 coin), using coin manipulatives or drawings, and state their value</p>	<p>2m18 – estimate, count, and represent (using the ¢ symbol) the value of a collection of coins with a maximum value of one dollar.</p>	<p>3m19 – estimate, count, and represent (using the \$ symbol) the value of a collection of coins and bills with a maximum value of \$10</p> <p>3m18 – represent and describe the relationships between coins and bills up to \$10</p>	<p>4m21 – read and represent money amounts to \$100</p>	<p>5m19 – read and write money amounts to \$1000</p>			
Counting Counting Forward	<p>1m21 – count forward by 1’s, 2’s, 5’s, and 10’s to 100, using a variety of tools and strategies</p>	<p>2m19 – count forward by 1’s, 2’s, 5’s, 10’s, and 25’s to 200, using number lines and hundreds charts, starting from multiples of 1, 2, 5, and 10</p>	<p>3m21 – count forward by 1’s, 2’s, 5’s, 10’s, and 100’s to 1000 from various starting points, and by 25’s to 1000 starting from multiples of 25, using a variety of tools and strategies</p>	<p>4m23 – count forward by halves, thirds, fourths, and tenths to beyond one whole, using concrete materials and number lines</p> <p>4m24 – count forward by tenths from any decimal number expressed to one decimal place, using concrete materials and number lines</p>	<p>5m21 – count forward by hundredths from any decimal number expressed to two decimal places, using concrete materials and number lines</p>			

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<p>Counting</p> <p>Counting Backward</p>	<p>1m22 – count backwards by 1’s from 20 and any number less than 20 with and without the use of concrete materials and number lines</p> <p>1m23 – count backwards from 20 by 2’s and 5’s, using a variety of tools</p>	<p>2m20 – count backwards by 1’s from 50 and any number less than 50, and count backwards by 10’s from 100 and any number less than 100, using number lines and hundreds charts</p>	<p>3m22 – count backwards by 2’s, 5’s, and 10’s from 100 using multiples of 2, 5, and 10 as starting points, and count backwards by 100’s from 1000 and any number less than 1000, using a variety of tools and strategies.</p>					
<p>Miscellaneous</p>	<p>1m24 – use ordinal numbers to thirty-first in meaningful contexts</p> <p>1m20 – demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting</p>	<p>2m21 – locate whole numbers to 100 on a number line and on a partial number line</p>						

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<p>Operational Sense</p> <p>Addition and Subtraction</p>	<p><i>1m26 – solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of mental strategies</i></p> <p><i>1m25 – solve a variety of problems involving the addition and subtraction of whole numbers to 20, using concrete materials and drawings</i></p>	<p><i>2m23 – describe relationships between quantities by using whole-number addition and subtraction</i></p> <p><i>2m22 – solve problems involving the addition and subtraction of whole numbers to 18, using a variety of mental strategies</i></p>	<p><i>3m24 – add and subtract three-digit numbers, using concrete materials, student-generated algorithms, and standard algorithms</i></p> <p><i>3m25 – use estimation when solving problems involving addition and subtraction, to help judge the reasonableness of a solution</i></p> <p><i>3m23 – solve problems involving the addition and subtraction of two-digit numbers, using a variety of mental strategies</i></p>	<p><i>4m25 – add and subtract two-digit numbers, using a variety of mental strategies</i></p> <p><i>4m26 – solve problems involving the addition and subtraction of four-digit numbers, using student-generated algorithms and standard algorithms</i></p>				

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Operational Sense Multiplication and Division of Whole Numbers		<p>2m24 – represent and explain, through investigation using concrete materials and drawings, multiplication as the combining of equal groups</p> <p>2m25 – represent and explain, through investigation using concrete materials and drawings, division as the sharing of a quantity equally</p>	<p>3m28 – multiply to 7 x 7 and divide to 49 ÷ 7, using a variety of mental strategies</p> <p>3m27 – relate multiplication of one-digit numbers and division by one-digit divisors to real life situations, using a variety of tools and strategies</p>	<p>4m29 – multiply to 9 x 9 and divide to 81 ÷ 9, using a variety of mental strategies</p> <p>4m32 – multiply two-digit whole numbers by one-digit whole numbers, using a variety of tools, student-generated algorithms, and standard algorithms</p> <p>4m33 – divide two-digit whole numbers by one-digit whole numbers, using a variety of tools and student-generated algorithms</p>	<p>5m24 – multiply two-digit whole numbers by two-digit whole numbers, using estimation, student-generated algorithms, and standard algorithms</p> <p>5m25 – divide three-digit whole numbers by one-digit whole numbers, using concrete materials, estimation, student-generated algorithms, and standard algorithms</p>	<p>6m19 – solve problems involving the multiplication and division of whole numbers (four-digit by two-digit), using a variety of tools and strategies</p>		
Using Mental Strategies	<p>1m26 – solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of mental strategies</p>	<p>2m22 – solve problems involving the addition and subtraction of whole numbers to 18, using a variety of mental strategies</p>	<p>3m23 – solve problems involving the addition and subtraction of two-digit numbers, using a variety of mental strategies</p>	<p>4m31 – multiply whole numbers by 10, 100, and 1000, and divide whole numbers by 10 and 100, using mental strategies</p>	<p>5m22 – solve problems involving the addition, subtraction, and multiplication of whole numbers, using a variety of mental strategies</p>	<p>6m18 – use a variety of mental strategies to solve addition, subtraction, multiplication, and division problems involving whole numbers</p>		

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Operational Sense Order of Operations						6m25 – explain the need for a standard order for performing operations, by investigating the impact that changing the order has when performing a series of operations	7m23 – evaluate expressions that involve whole numbers and decimals, including expressions that contain brackets, using order of operations	8m23 – evaluate expressions that involve integers, including expressions that contain brackets and exponents, using order of operations;
Square Roots								8m25 – estimate, and verify using a calculator, the positive square roots of whole numbers, and distinguish between whole numbers that have whole-number square roots (i.e., perfect square numbers) and those that do not
Integers							7m26 – add and subtract integers, using a variety of tools.	8m21 – represent the multiplication and division of integers, using a variety of tools 8m22 – solve problems involving operations with integers, using a variety of tools;

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Operational Sense Fractions							<p>7m24 – add and subtract fractions with simple like and unlike denominators, using a variety of tools and algorithms</p> <p>7m19 – <i>use a variety of mental strategies to solve problems involving the addition and subtraction of fractions and decimals</i></p> <p>7m25 – demonstrate, using concrete materials, the relationship between the repeated addition of fractions and the multiplication of that fraction by a whole number</p> <p>7m18 – <i>divide whole numbers by simple fractions and by decimal numbers to hundredths, using concrete materials</i></p>	<p>8m19 – represent the multiplication and division of fractions, using a variety of tools and strategies</p> <p>8m20 – solve problems involving addition, subtraction, multiplication, and division with simple fractions</p>

Subheadings	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Operational Sense Addition and Subtraction of Decimals			3m26 – add and subtract money amounts, using a variety of tools, to make simulated purchases and change for amounts up to \$10	4m27 – add and subtract decimal numbers to tenths, using concrete materials and student-generated algorithms	5m23 – add and subtract decimal numbers to hundredths, including money amounts, using concrete materials, estimation, and algorithms	6m20 – add and subtract decimal numbers to thousandths, using concrete materials, estimation, algorithms, and calculators	7m19 – use a variety of mental strategies to solve problems involving the addition and subtraction of fractions and decimals;	
Multiplication and Division of Decimals					5m26 – multiply decimal numbers by 10, 100, 1000, and 10 000, and divide decimal numbers by 10 and 100, using mental strategies	6m21 – multiply and divide decimal numbers to tenths by whole numbers, using concrete materials, estimation, algorithms, and calculators 6m22 – multiply whole numbers by 0.1, 0.01, and 0.001 using mental strategies 6m23 – multiply and divide decimal numbers by 10, 100, 1000, and 10 000 using mental strategies	7m18 – divide whole numbers by simple fractions and by decimal numbers to hundredths, using concrete materials;	8m24 – multiply and divide decimal numbers by various powers of ten

Subheadings	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Operational Sense Application	<p>1m26 – solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of mental strategies</p> <p>1m25 – solve a variety of problems involving the addition and subtraction of whole numbers to 20, using concrete materials and drawings</p>	<p>2m22 – solve problems involving the addition and subtraction of whole numbers to 18, using a variety of mental strategies</p> <p>2m26 – solve problems involving the addition and subtraction of two-digit numbers, with and without regrouping, using concrete materials</p> <p>student-generated algorithms, and standard algorithms</p>	<p>3m23 – solve problems involving the addition and subtraction of two-digit numbers, using a variety of mental strategies</p>	<p>4m30 – solve problems involving the multiplication of one-digit whole numbers, using a variety of mental strategies</p> <p>4m26 – solve problems involving the addition and subtraction of four-digit numbers, using student-generated algorithms and standard algorithms</p>	<p>5m22 – solve problems involving the addition, subtraction, and multiplication of whole numbers, using a variety of mental strategies</p>	<p>6m19 – solve problems involving the multiplication and division of whole numbers (four-digit by two-digit), using a variety of tools and strategies</p>	<p>7m20 – solve problems involving the multiplication and division of decimal numbers to thousandths by one-digit whole numbers, using a variety of tools and strategies;</p> <p>7m21 – solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools and strategies;</p>	<p>8m16 – solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools and strategies;</p> <p>8m17 – solve problems involving percents expressed to one decimal place and whole-number percents greater than 100</p>
Money	<p>1m27 – add and subtract money amounts to 10¢, using coin manipulatives and drawings.</p>	<p>2m27 – add and subtract money amounts to 100¢, using a variety of tools and strategies</p>	<p>3m26 – add and subtract money amounts, using a variety of tools, to make simulated purchases and change for amounts up to \$10</p>	<p>4m28 – add and subtract money amounts by making simulated purchases and providing change for amounts up to \$100, using a variety of tools</p>	<p>5m23 – add and subtract decimal numbers to hundredths, including money amounts, using concrete materials, estimation, and algorithms</p>	operations with decimals may include money		

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Operational Sense Estimation			3m25 – use estimation when solving problems involving addition and subtraction, to help judge the reasonableness of a solution	4m34 – use estimation when solving problems involving the addition, subtraction, and multiplication of whole numbers, to help judge the reasonableness of a solution	5m27 – use estimation when solving problems involving the addition, subtraction, and multiplication of whole numbers, to help judge the reasonableness of a solution		7m22 – use estimation when solving problems involving operations with whole numbers, decimals, and percents, to help judge the reasonableness of a solution	8m18 – use estimation when solving problems involving operations with whole numbers, decimals, percents, integers, and fractions, to help judge the reasonableness of a solution;
Proportional Relationships Fractions, Decimals, and Percents				4m36 – determine and explain, through investigation, the relationship between fractions (i.e., halves, fifths, tenths) and decimals to tenths, using a variety of tools and strategies	5m29 – determine and explain, through investigation using concrete materials, drawings, and calculators, the relationship between fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100) and their equivalent decimal forms	6m27 – determine and explain, through investigation using concrete materials, drawings, and calculators, the relationships among fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100), decimal numbers, and percents	7m27 – determine, through investigation, the relationships among fractions, decimals, percents, and ratios ; 7m28 – solve problems that involve determining whole number percents, using a variety of tools	8m28 – solve problems involving percent that arise from real-life contexts

Subheadings	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Proportional Relationships Ratio				4m35 – describe relationships that involve simple whole-number multiplication	5m28 – describe multiplicative relationships between quantities by using simple fractions and decimals	6m26 – represent ratios found in real-life contexts, using concrete materials, drawings, and standard fractional notation	7m27 – <i>determine, through investigation, the relationships among fractions, decimals, percents, and ratios</i>	8m26 – identify and describe real-life situations involving two quantities that are directly proportional; 8m27 – solve problems involving proportions, using concrete materials, drawings, and variables
Rates				4m37 – demonstrate an understanding of simple multiplicative relationships involving unit rates, through investigation using concrete materials and drawings	5m30 – demonstrate an understanding of simple multiplicative relationships involving whole-number rates, through investigation using concrete materials and drawings	6m28 – represent relationships using unit rates	7m29 – demonstrate an understanding of rate as a comparison, or ratio, of two measurements with different units; 7m30 – solve problems involving the calculation of unit rates	8m29 – solve problems involving rates

Note: Italicized expectations are repeated in two categories.

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