

Mathematics Outcomes Progression 3-7

Supplementary Document

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Prepared by the Department of Education and Early Childhood Development

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MATHEMATICS PROGRESSION: Grade 3 to 7

The **Foundational Outcomes** identified in this document represent outcomes determined to be relevant for future learning in mathematics. Decisions about foundational outcomes were made in consultation with teachers, provincial mathematics team, Board and Regional Centre staff. In response to feedback, some changes have been made to the 2020-21 foundational outcomes to ensure continuity of learning within and across grade levels. The foundational outcomes are meant to guide teachers in making decisions about creating learning experiences that will prepare and engage their learners in a responsive way. However, a teacher's professional judgment remains the most important guide to effectively responding to the needs of their learners.

Colour coding has been used to identify outcomes and indicators as foundational (**green**), optional (**orange**) or non-foundational (**red**) for the 2021-2022 school year.

NUMBER PROGRESSION: WHOLE NUMBERS					
TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
SAYING NUMBER SEQUENCES, MEANINGFUL COUNTING, AND SKIP COUNTING	<p>N01 Students will be expected to say the number sequence forward and backward by</p> <ul style="list-style-type: none"> 1s through transitions to 1000 2s, 5s, 10s, or 100s, using any starting point to 1000 3s, using starting points that are multiples of 3 up to 100 4s, using starting points that are multiples of 4 up to 100 25s, using starting points that are multiples of 25 up to 200. <p>N03 Students will be expected to compare and order numbers up to 1000.</p> <p>N03.01: Place a given set of numbers in ascending or descending order and verify the result using a number chart or other models.</p> <p>N03.02: Create as many different 3-digit numerals as possible, given three different digits. Place the numbers in ascending or descending order.</p> <p>N03.03: Identify errors in a given ordered sequence.</p>	<p>N02 Students will be expected to compare and order numbers to 10 000.</p>	<p>N01 Students will be expected to represent and partition whole numbers to 1 000 000.</p>	<p>N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.</p>	<p>N07 Students will be expected to compare, order, and position, positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.</p>

	<p>N03.04: Identify missing numbers in parts of a given number chart and on a number line.</p> <p>N03.05: Identify errors in a given number chart and on a number line.</p> <p>N03.06: Place numbers on a number line containing benchmark numbers for the purpose of comparison.</p> <p>N03.07 : Compare numbers based on a variety of methods, and record the comparison using words and symbols (=, > and <).</p>				
REPRESENTING AND PARTITIONING WHOLE NUMBERS	<p>N02 Students will be expected to represent and partition numbers to 1000.</p> <p>N04: Students will be expected to estimate quantities less than 1000 using referents.</p> <p>N04.01: Estimate the number of groups of ten in a given quantity using 10 as a referent(known quantity).</p> <p>N04.02: Estimate the number of groups of a hundred in a given quantity using 100 as a referent.</p> <p>N04.03: Estimate a given quantity by comparing it to a referent.</p> <p>N04.04: Select an estimate for a given quantity by choosing among three possible choices.</p> <p>N04.05: Select and justify a referent for determining an estimate for a given quantity.</p>	N01 Students will be expected to represent and partition whole numbers to 10 000.	N01 Students will be expected to represent and partition whole numbers to 1 000 000.	N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.	N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.
COMPARING AND ORDERING WHOLE NUMBERS	<p>N01 Students will be expected to say the number sequence forward and backward by</p> <ul style="list-style-type: none"> 1s through transitions to 1000 2s, 5s, 10s, or 100s, using any starting point to 1000 3s, using starting points that are multiples of 3 up to 100 	N02 Students will be expected to compare and order numbers to 10 000.	N01 Students will be expected to represent and partition whole numbers to 1 000 000.	N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.	N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.

	<ul style="list-style-type: none"> • 4s, using starting points that are multiples of 4 up to 100 • 25s, using starting points that are multiples of 25 up to 200. <p>N03 Students will be expected to compare and order numbers up to 1000.</p> <p>N03.01: Place a given set of numbers in ascending or descending order and verify the result using a number chart or other models.</p> <p>N03.02: Create as many different 3-digit numerals as possible, given three different digits. Place the numbers in ascending or descending order.</p> <p>N03.03: Identify errors in a given ordered sequence.</p> <p>N03.04: Identify missing numbers in parts of a given number chart and on a number line.</p> <p>N03.05: Identify errors in a given number chart and on a number line.</p> <p>N03.06: Place numbers on a number line containing benchmark numbers for the purpose of comparison.</p> <p>N03.07: Compare numbers based on a variety of methods, and record the comparison using words and symbols ($=$, $>$ and $<$).</p>				
PLACE VALUE – WHOLE NUMBERS	<p>N05 Students will be expected to illustrate, concretely and pictorially, the meaning of place value for numerals to 1000.</p>	<p>N01 Students will be expected to represent and partition whole numbers to 10 000.</p>	<p>N01 Students will be expected to represent and partition whole numbers to 1 000 000.</p>	<p>N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.</p>	<p>N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.</p>

NUMBER PROGRESSION: DECIMAL NUMBERS					
TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
REPRESENTING DECIMAL NUMBERS	NA	<p>N09 Students will be expected to describe and represent decimals (tenths and hundredths) concretely, pictorially, and symbolically.</p> <p>N10 Students will be expected to relate decimals to fractions and fractions to decimals (to hundredths).</p>	<p>N08 Students will be expected to describe and represent decimals (tenths, hundredths, and thousandths) concretely, pictorially, and symbolically.</p> <p>N09 Students will be expected to relate decimals to fractions and fractions to decimals (to thousandths).</p> <p>N10 Students will be expected to compare and order decimals (to thousandths) by using benchmarks, place value, and equivalent decimals.</p>	<p>N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.</p>	<p>N04 Students will be expected to demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals (with one or two repeating digits) and positive fractions.</p> <p>N04.01 Predict the decimal representation of a given fraction using patterns.</p> <p>N04.02 Match a given set of fractions to their decimal representations.</p> <p>N04.03 Sort a given set of fractions as repeating or terminating decimals.</p> <p>N04.04 Express a given fraction as a terminating or repeating decimal.</p> <p>N04.05 Express a given repeating decimal as a fraction.</p> <p>N04.06 Express a given terminating decimal as a fraction.</p> <p>N04.07 Provide an example where the decimal representation of a fraction is an approximation of its exact value.</p> <p>N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.</p>
COMPARING AND ORDERING DECIMAL NUMBERS	NA	<p>N09 Students will be expected to describe and represent decimals (tenths and hundredths) concretely, pictorially, and symbolically.</p>	<p>N08 Students will be expected to describe and represent decimals (tenths, hundredths, and thousandths) concretely, pictorially, and symbolically.</p>	<p>N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.</p>	<p>N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using</p>

			<p>N10 Students will be expected to compare and order decimals (to thousandths) by using benchmarks, place value, and equivalent decimals.</p>		<p>benchmarks, place value, and equivalent fractions and/or decimals.</p> <p>N04 Students will be expected to demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals (with one or two repeating digits) and positive fractions.</p> <p>N04.01 Predict the decimal representation of a given fraction using patterns. N04.02 Match a given set of fractions to their decimal representations. N04.03 Sort a given set of fractions as repeating or terminating decimals. N04.04 Express a given fraction as a terminating or repeating decimal. N04.05 Express a given repeating decimal as a fraction. N04.06 Express a given terminating decimal as a fraction. N04.07 Provide an example where the decimal representation of a fraction is an approximation of its exact value.</p>
<p>PLACE VALUE – DECIMAL NUMBERS</p>	<p>NA</p>	<p>N09 Students will be expected to describe and represent decimals (tenths and hundredths) concretely, pictorially, and symbolically.</p>	<p>N08 Students will be expected to describe and represent decimals (tenths, hundredths, and thousandths) concretely, pictorially, and symbolically.</p> <p>N10 Students will be expected to compare and order decimals (to thousandths) by using benchmarks, place value, and equivalent decimals.</p>	<p>N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.</p>	<p>N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.</p> <p>N04 Students will be expected to demonstrate an</p>

					<p>understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals (with one or two repeating digits) and positive fractions.</p> <p>N04.01 Predict the decimal representation of a given fraction using patterns.</p> <p>N04.02 Match a given set of fractions to their decimal representations.</p> <p>N04.03 Sort a given set of fractions as repeating or terminating decimals.</p> <p>N04.04 Express a given fraction as a terminating or repeating decimal.</p> <p>N04.05 Express a given repeating decimal as a fraction.</p> <p>N04.06 Express a given terminating decimal as a fraction.</p> <p>N04.07 Provide an example where the decimal representation of a fraction is an approximation of its exact value.</p>
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NUMBER PROGRESSION: FRACTIONS					
TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
REPRESENTING FRACTIONS	<p>N13 Students will be expected to demonstrate an understanding of fractions by</p> <ul style="list-style-type: none"> explaining that a fraction represents a part of a whole describing situations in which fractions are used comparing fractions of the same whole with like denominators 	<p>N08 Students will be expected to demonstrate an understanding of fractions less than or equal to 1 by using concrete, pictorial, and symbolic representations to</p> <ul style="list-style-type: none"> name and record fractions for the parts of one whole or a set compare and order fractions model and explain that for different wholes, two identical fractions may not 	<p>N07 Students will be expected to demonstrate an understanding of fractions by using concrete, pictorial, and symbolic representations to</p> <ul style="list-style-type: none"> create sets of equivalent fractions compare and order fractions with like and unlike denominators <p>N09 Students will be expected to relate decimals to fractions</p>	<p>N04 Students will be expected to relate improper fractions to mixed numbers and mixed numbers to improper fractions.</p> <p>N06 Students will be expected to demonstrate an understanding of percent (limited to whole numbers) concretely, pictorially, and symbolically.</p> <p>N05 Students will be expected to demonstrate an understanding of ratio,</p>	<p>N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.</p> <p>N04 Students will be expected to demonstrate an understanding of the relationship between</p>

		<p>represent the same quantity</p> <ul style="list-style-type: none"> provide examples of where fractions are used 	and fractions to decimals (to thousandths).	concretely, pictorially, and symbolically.	<p>positive terminating decimals and positive fractions and between positive repeating decimals (with one or two repeating digits) and positive fractions.</p> <p>N04.01 Predict the decimal representation of a given fraction using patterns. N04.02 Match a given set of fractions to their decimal representations. N04.03 Sort a given set of fractions as repeating or terminating decimals. N04.04 Express a given fraction as a terminating or repeating decimal. N04.05 Express a given repeating decimal as a fraction. N04.06 Express a given terminating decimal as a fraction. N04.07 Provide an example where the decimal representation of a fraction is an approximation of its exact value.</p> <p>SP04 Students will be expected to express probabilities as ratios, fractions, and percents.</p>
COMPARING AND ORDERING FRACTIONS	<p>N13 Students will be expected to demonstrate an understanding of fractions by</p> <ul style="list-style-type: none"> explaining that a fraction represents a part of a whole describing situations in which fractions are used comparing fractions of the same whole with like denominators 	<p>N08 Students will be expected to demonstrate an understanding of fractions less than or equal to 1 by using concrete, pictorial, and symbolic representations to</p> <ul style="list-style-type: none"> name and record fractions for the parts of one whole or a set compare and order fractions model and explain that for different wholes, two identical fractions may not represent the same quantity provide examples of where fractions are used 	<p>N07 Students will be expected to demonstrate an understanding of fractions by using concrete, pictorial, and symbolic representations to</p> <ul style="list-style-type: none"> create sets of equivalent fractions compare and order fractions with like and unlike denominators 	<p>N04 Students will be expected to relate improper fractions to mixed numbers and mixed numbers to improper fractions.</p>	<p>N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.</p> <p>N04 Students will be expected to demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals (with one or two</p>

					repeating digits) and positive fractions. N04.01 Predict the decimal representation of a given fraction using patterns. N04.02 Match a given set of fractions to their decimal representations. N04.03 Sort a given set of fractions as repeating or terminating decimals. N04.04 Express a given fraction as a terminating or repeating decimal. N04.05 Express a given repeating decimal as a fraction. N04.06 Express a given terminating decimal as a fraction. N04.07 Provide an example where the decimal representation of a fraction is an approximation of its exact value.
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NUMBER PROGRESSION: OPERATIONS ADDITION AND SUBTRACTION					
TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
ADDITION AND SUBTRACTION – BASIC FACTS	N10 Students will be expected to apply mental mathematics strategies and number properties to develop quick recall of basic addition facts to 18 and related basic subtraction facts.	Basic addition and subtraction facts should be under control and students are expected to recall them when performing addition and subtraction of larger numbers.	Basic addition and subtraction facts should be under control and students are expected to recall them when performing addition and subtraction of larger numbers.	Basic addition and subtraction facts should be under control and students are expected to recall them when performing addition and subtraction of larger numbers.	Basic addition and subtraction facts should be under control and students are expected to recall them when performing addition and subtraction of larger numbers.
ADDITION AND SUBTRACTION MENTAL MATHEMATICS AND ESTIMATION	N06 Students will be expected to describe and apply mental mathematics strategies for adding 2 two-digit numerals. N06.01: Explain mental mathematics strategies that could be used to determine a sum. <ul style="list-style-type: none"> Ten and some more Tens and some more Quick addition 	N03 Students will be expected to demonstrate an understanding of addition and subtraction of numbers with answers to 10 000 (limited to three- and four-digit numerals) by <ul style="list-style-type: none"> using personal strategies for adding and subtracting estimating sums and differences solving problems involving addition and subtraction 	N02 Students will be expected to use estimation strategies, including front-end, front-end adjusted, rounding, and compatible numbers in problem-solving contexts.	N02 Students will be expected to solve problems involving whole numbers and decimal numbers.	N02 Students will be expected to demonstrate an understanding of the addition, subtraction, multiplication, and division of decimals to solve problems (for more than one-digit divisors or more than two-digit multipliers, the use of technology is expected).

	<ul style="list-style-type: none"> ● Addition facts to 10 applied to multiples of 10 ● Addition on the hundred chart ● Adding on ● Make ten ● Compensation ● Compatible numbers <p>N06.02: Use and describe a personal strategy for determining a sum.</p> <p>N06.03: Determine a sum of two 2-digit numerals efficiently, using mental mathematics strategies.</p> <p>N07 Students will be expected to describe and apply mental mathematics strategies for subtracting 2 two-digit numerals.</p> <p>N07.01: Explain mental mathematics strategies that could be used to determine a difference.</p> <ul style="list-style-type: none"> ● Facts with minuends of 10 or less applied to multiples of 10 ● Quick subtraction ● Subtraction on the hundred chart ● Compensation ● Back through ten <p>N07.02: Use and describe a personal strategy for determining a difference.</p> <p>N07.03: Determine a difference of two 2-digit numerals efficiently, using mental mathematics strategies</p> <p>N08 Students will be expected to apply estimation strategies to predict sums and differences of one-, two-, and three-digit numerals in a problem-solving context.</p> <p>N08.01: Explain estimation strategies that could be used to</p>	<p>N11 Students will be expected to demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by</p> <ul style="list-style-type: none"> ● estimating sums and differences ● using mental mathematics strategies to solve problems ● using personal strategies to determine sums and differences 			
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	<p>determine an approximate sum or difference.</p> <p>N08.02: Use and describe a strategy for determining an estimate.</p> <p>N08.03: Estimate the solution for a given story problem involving the sum or difference of up to two 3-digit numerals.</p> <p>N10 Students will be expected to apply mental mathematics strategies and number properties to develop quick recall of basic addition facts to 18 and related basic subtraction facts.</p>				
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TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
ADDITION AND SUBTRACTION –CALCULATIONS	<p>N09 Students will be expected to demonstrate an understanding of addition and subtraction of numbers (limited to one-, two-, and three-digit numerals) with answers to 1000 by</p> <ul style="list-style-type: none"> • using personal strategies for adding and subtracting with and without the support of manipulatives • creating and solving problems in context that involve addition and subtraction of numbers concretely, pictorially, and symbolically <p>N09.01: Model the addition of two or more given numbers using concrete or visual representations and record the process symbolically.</p> <p>N09.02: Model the subtraction of two given numbers using concrete or visual representations and record the process symbolically.</p>	<p>N03 Students will be expected to demonstrate an understanding of addition and subtraction of numbers with answers to 10 000 (limited to three- and four-digit numerals) by</p> <ul style="list-style-type: none"> • using personal strategies for adding and subtracting • estimating sums and differences • solving problems involving addition and subtraction <p>N11 Students will be expected to demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by</p> <ul style="list-style-type: none"> • estimating sums and differences • using mental mathematics strategies to solve problems • using personal strategies to determine sums and differences 	<p>N02 Students will be expected to use estimation strategies, including front-end, front-end adjusted, rounding, and compatible numbers in problem-solving contexts.</p> <p>N11 Students will be expected to demonstrate an understanding of addition and subtraction of decimals (limited to thousandths).</p>	<p>N02 Students will be expected to solve problems involving whole numbers and decimal numbers.</p> <p>N09 Students will be expected to explain and apply the order of operations, excluding exponents, with and without technology (limited to whole numbers).</p>	<p>N02 Students will be expected to demonstrate an understanding of the addition, subtraction, multiplication, and division of decimals to solve problems (for more than one-digit divisors or more than two-digit multipliers, the use of technology is expected).</p> <p>N05 Students will be expected to demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially, and symbolically (limited to positive sums and differences).</p> <p>N06 Students will be expected to demonstrate an understanding of addition and subtraction of integers, concretely, pictorially, and symbolically.</p>

	<p>N09.03: Create an addition or subtraction story problem for a given solution.</p> <p>N09.04: Determine the sum of two given numbers using a personal strategy, e.g., for $326 + 48$, record $300 + 60 + 14$.</p> <p>N09.05: Determine the difference of two given numbers using a personal strategy, e.g., for $127 - 38$, record $2 + 80 +$ or $127 - 20 - 10 - 8$.</p> <p>N09.06: Solve a given problem involving the sum or difference of two given numbers.</p>				
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NUMBER PROGRESSION: OPERATIONS MULTIPLICATION AND DIVISION

TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
MULTIPLICATION AND DIVISION – BASIC FACTS	<p>N01 Students will be expected to say the number sequence forward and backward by</p> <ul style="list-style-type: none"> 1s through transitions to 1000 2s, 5s, 10s, or 100s, using any starting point to 1000 3s, using starting points that are multiples of 3 up to 100 4s, using starting points that are multiples of 4 up to 100 25s, using starting points that are multiples of 25 up to 200. <p>N11 Students will be expected to demonstrate an understanding of multiplication to 5×5 by</p> <ul style="list-style-type: none"> representing and explaining multiplication using equal grouping and arrays creating and solving problems in context that involves multiplication 	<p>N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division.</p> <p>N05 Students will be expected to describe and apply mental mathematics strategies, to recall basic multiplication facts to 9×9, and to determine related division facts.</p>	<p>N03 Students will be expected to describe and apply mental mathematics strategies and number properties to recall, with fluency, answers for basic multiplication facts to 81 and related division facts.</p>	<p>Basic multiplication and division facts should be under control and students are expected to recall them when performing multiplication and division.</p> <p>N02 Students will be expected to solve problems involving whole numbers and decimal numbers.</p>	<p>Basic multiplication and division facts should be under control and students are expected to recall them when performing multiplication and division.</p>

	<ul style="list-style-type: none"> ● modelling multiplication using concrete and visual representations and recording the process symbolically ● relating multiplication to repeated addition ● relating multiplication to division <p>N12 Students will be expected to demonstrate an understanding of division by</p> <ul style="list-style-type: none"> ● representing and explaining division using equal sharing and equal grouping ● creating and solving problems in context that involve equal sharing and equal grouping ● modelling equal sharing and equal grouping using concrete and visual representations, and recording the process symbolically ● relating division to repeated subtraction ● relating division to multiplication <p>(Limited to division related to multiplication facts up to 5×5.)</p>				
MULTIPLICATION AND DIVISION – MENTAL MATHEMATICS AND ESTIMATIONS		<p>N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division.</p> <p>N05 Students will be expected to describe and apply mental mathematics strategies, to recall basic multiplication facts to 9×9, and to determine related division facts.</p> <p>N06 Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by</p>	<p>N03 Students will be expected to describe and apply mental mathematics strategies and number properties to recall, with fluency, answers for basic multiplication facts to 81 and related division facts.</p> <p>N04 Students will be expected to apply mental mathematics strategies for multiplication, including</p> <ul style="list-style-type: none"> ● multiplying by multiples of 10, 100, and 1000 ● halving and doubling ● using the distributive property 	<p>N02 Students will be expected to solve problems involving whole numbers and decimal numbers.</p> <p>N08 Students will be expected to demonstrate an understanding of multiplication and division of decimals (one-digit whole number multipliers and one-digit natural number divisors).</p>	<p>N01 Students will be expected to determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10, and why a number cannot be divided by 0.</p> <p>N01.01 Determine if a given number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10, and explain why. N01.02 Sort a given set of numbers based upon their divisibility using organizers such as Venn and Carroll diagrams. N01.03 Determine the factors of a given number using the divisibility rules.</p>

		<ul style="list-style-type: none"> ● using personal strategies for multiplication, with and without concrete materials ● using arrays to represent multiplication ● connecting concrete representations to symbolic representations ● estimating products ● applying the distributive property <p>N07 Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by</p> <ul style="list-style-type: none"> ● using personal strategies for dividing, with and without concrete materials ● estimating quotients ● relating division to multiplication 	<p>N05 Students will be expected to demonstrate, with and without concrete materials, an understanding of multiplication (two-digit by two-digit) to solve problems.</p> <p>N06 Students will be expected to demonstrate, with and without concrete materials, an understanding of division (three-digit by one-digit), and interpret remainders to solve problems.</p>		<p>N01.04 Explain, using an example, why numbers cannot be divided by 0.</p> <p>N02 Students will be expected to demonstrate an understanding of the addition, subtraction, multiplication, and division of decimals to solve problems (for more than one-digit divisors or more than two-digit multipliers, the use of technology is expected).</p> <p>N04 Students will be expected to demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals (with one or two repeating digits) and positive fractions.</p> <p>N04.01 Predict the decimal representation of a given fraction using patterns.</p> <p>N04.02 Match a given set of fractions to their decimal representations.</p> <p>N04.03 Sort a given set of fractions as repeating or terminating decimals.</p> <p>N04.04 Express a given fraction as a terminating or repeating decimal.</p> <p>N04.05 Express a given repeating decimal as a fraction.</p> <p>N04.06 Express a given terminating decimal as a fraction.</p> <p>N04.07 Provide an example where the decimal representation of a fraction is an approximation of its exact value.</p>
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<p>MULTIPLICATION AND DIVISION - CALCULATIONS</p>	<p>N11 Students will be expected to demonstrate an understanding of multiplication to 5×5 by</p> <ul style="list-style-type: none"> representing and explaining multiplication using equal grouping and arrays creating and solving problems in context that involves multiplication modelling multiplication using concrete and visual representations and recording the process symbolically relating multiplication to repeated addition relating multiplication to division <p>N12 Students will be expected to demonstrate an understanding of division by</p> <ul style="list-style-type: none"> representing and explaining division using equal sharing and equal grouping creating and solving problems in context that involve equal sharing and equal grouping modelling equal sharing and equal grouping using concrete and visual representations, and recording the process symbolically relating division to repeated subtraction relating division to multiplication <p>(Limited to division related to multiplication facts up to 5×5.)</p>	<p>N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division.</p> <p>N05 Students will be expected to describe and apply mental mathematics strategies, to recall basic multiplication facts to 9×9, and to determine related division facts.</p> <p>N06 Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by</p> <ul style="list-style-type: none"> using personal strategies for multiplication, with and without concrete materials using arrays to represent multiplication connecting concrete representations to symbolic representations estimating products applying the distributive property <p>N07 Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by</p> <ul style="list-style-type: none"> using personal strategies for dividing, with and without concrete materials estimating quotients relating division to multiplication 	<p>N03 Students will be expected to describe and apply mental mathematics strategies and number properties to recall, with fluency, answers for basic multiplication facts to 81 and related division facts.</p> <p>N04 Students will be expected to apply mental mathematics strategies for multiplication, including</p> <ul style="list-style-type: none"> multiplying by multiples of 10, 100, and 1000 halving and doubling using the distributive property <p>N05 Students will be expected to demonstrate, with and without concrete materials, an understanding of multiplication (two-digit by two-digit) to solve problems.</p> <p>N06 Students will be expected to demonstrate, with and without concrete materials, an understanding of division (three-digit by one-digit), and interpret remainders to solve problems.</p>	<p>N02 Students will be expected to solve problems involving whole numbers and decimal numbers.</p> <p>N03 Students will be expected to demonstrate an understanding of factors and multiples by</p> <ul style="list-style-type: none"> determining multiples and factors of numbers less than 100 identifying prime and composite numbers solving problems using multiples and factors <p>N09 Students will be expected to explain and apply the order of operations, excluding exponents, with and without technology (limited to whole numbers).</p> <p>N08 Students will be expected to demonstrate an understanding of multiplication and division of decimals (one-digit whole number multipliers and one-digit natural number divisors).</p>	<p>N01 Students will be expected to determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10, and why a number cannot be divided by 0</p> <p>N01.01 Determine if a given number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10, and explain why.</p> <p>N01.02 Sort a given set of numbers based upon their divisibility using organizers such as Venn and Carroll diagrams.</p> <p>N01.03 Determine the factors of a given number using the divisibility rules.</p> <p>N01.04 Explain, using an example, why numbers cannot be divided by 0.</p> <p>N02 Students will be expected to demonstrate an understanding of the addition, subtraction, multiplication, and division of decimals to solve problems (for more than one-digit divisors or more than two-digit multipliers, the use of technology is expected).</p> <p>N03 Students will be expected to solve problems involving percents from 1% to 100% (limited to whole numbers).</p>
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**NUMBER PROGRESSION:
RATIO, PERCENT, AND INTEGERS**

TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
RATIO	<p>N11 Students will be expected to demonstrate an understanding of multiplication to 5×5 by</p> <ul style="list-style-type: none"> representing and explaining multiplication using equal grouping and arrays creating and solving problems in context that involves multiplication modelling multiplication using concrete and visual representations and recording the process symbolically relating multiplication to repeated addition relating multiplication to division <p>N13 Students will be expected to demonstrate an understanding of fractions by</p> <ul style="list-style-type: none"> explaining that a fraction represents a part of a whole describing situations in which fractions are used comparing fractions of the same whole with like 	<p>N05 Students will be expected to describe and apply mental mathematics strategies, to recall basic multiplication facts to 9×9, and to determine related division facts.</p> <p>N06 Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by</p> <ul style="list-style-type: none"> using personal strategies for multiplication, with and without concrete materials using arrays to represent multiplication connecting concrete representations to symbolic representations estimating products applying the distributive property <p>N08 Students will be expected to demonstrate an understanding of fractions less than or equal to 1 by using concrete, pictorial, and symbolic representations to</p> <ul style="list-style-type: none"> name and record fractions for the parts of one whole or a set compare and order fractions model and explain that for different wholes, two identical fractions may not represent the same quantity provide examples of where fractions are used 	<p>N05 Students will be expected to demonstrate, with and without concrete materials, an understanding of multiplication (two-digit by two-digit) to solve problems.</p> <p>N07 Students will be expected to demonstrate an understanding of fractions by using concrete, pictorial, and symbolic representations to</p> <ul style="list-style-type: none"> create sets of equivalent fractions compare and order fractions with like and unlike denominators <p>N09 Students will be expected to relate decimals to fractions and fractions to decimals (to thousandths)</p>	<p>N05 Students will be expected to demonstrate an understanding of ratio, concretely, pictorially, and symbolically.</p>	<p>SP04 Students will be expected to express probabilities as ratios, fractions, and percents.</p>

PERCENT		<p>N09 Students will be expected to describe and represent decimals (tenths and hundredths) concretely, pictorially, and symbolically.</p> <p>N10 Students will be expected to relate decimals to fractions and fractions to decimals (to hundredths).</p>	<p>N08 Students will be expected to describe and represent decimals (tenths, hundredths, and thousandths) concretely, pictorially, and symbolically.</p> <p>N09 Students will be expected to relate decimals to fractions and fractions to decimals (to thousandths).</p> <p>N10 Students will be expected to compare and order decimals (to thousandths) by using benchmarks, place value, and equivalent decimals.</p>	<p>N06 Students will be expected to demonstrate an understanding of percent (limited to whole numbers) concretely, pictorially, and symbolically.</p>	<p>N03 Students will be expected to solve problems involving percents from 1% to 100% (limited to whole numbers).</p> <p>SP04 Students will be expected to express probabilities as ratios, fractions, and percents.</p>
INTEGERS				<p>N07 Students will be expected to demonstrate an understanding of integers contextually, concretely, pictorially, and symbolically.</p>	<p>N06 Students will be expected to demonstrate an understanding of addition and subtraction of integers, concretely, pictorially, and symbolically.</p>

PATTERNS AND RELATIONS PROGRESSION					
TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
REPEATING PATTERNS					
INCREASING PATTERNS	<p>PR01 Students will be expected to demonstrate an understanding of increasing patterns by describing, extending, comparing, and creating numerical (numbers to 1000) patterns and non-numerical patterns using manipulatives, diagrams, sounds, and actions.</p>	<p>PR01 Students will be expected to identify and describe patterns found in tables and charts, including a multiplication chart.</p> <p>PR02 Students will be expected to translate among different representations of a pattern (a table, a chart, or concrete materials).</p> <p>PR03 Students will be expected to represent, describe, and extend patterns and relationships, using charts and tables, to solve problems.</p> <p>PR04 Students will be expected to identify and explain mathematical relationships,</p>	<p>PR01 Students will be expected to determine the pattern rule to make predictions about subsequent terms.</p>	<p>PR01 Students will be expected to demonstrate an understanding of the relationships within tables of values to solve problems.</p> <p>PR02 Students will be expected to represent and describe patterns and relationships, using graphs and tables.</p>	<p>PR01 Students will be expected to demonstrate an understanding of oral and written patterns and their equivalent linear relations.</p> <p>PR02 Students will be expected to create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.</p>

		<p>using charts and diagrams, to solve problems.</p> <p>PR04.01 Complete a given Carroll diagram to solve a problem.</p> <p>PR04.02 Determine where new elements belong in a given Carroll diagram.</p> <p>PR04.03 Solve a given problem using a Carroll diagram.</p> <p>PR04.04 Identify a sorting rule for a given Venn diagram.</p> <p>PR04.05 Describe the relationship shown in a given Venn diagram when the circles overlap, when one circle is contained in the other, and when the circles are separate.</p> <p>PR04.06 Determine where new elements belong in a given Venn diagram.</p> <p>PR04.07 Solve a given problem by using a chart or diagram to identify mathematical relationships.</p>			
DECREASING PATTERNS	<p>PR02 Students will be expected to demonstrate an understanding of decreasing patterns by describing, extending, comparing, and creating numerical (numbers to 1000) patterns and non-numerical patterns using manipulatives, diagrams, sounds, and actions.</p>	<p>PR01 Students will be expected to identify and describe patterns found in tables and charts, including a multiplication chart.</p> <p>PR02 Students will be expected to translate among different representations of a pattern (a table, a chart, or concrete materials).</p> <p>PR03 Students will be expected to represent, describe, and extend patterns and relationships, using charts and tables, to solve problems.</p>	<p>PR01 Students will be expected to determine the pattern rule to make predictions about subsequent terms</p>	<p>PR01 Students will be expected to demonstrate an understanding of the relationships within tables of values to solve problems.</p> <p>PR02 Students will be expected to represent and describe patterns and relationships, using graphs and tables.</p>	<p>PR01 Students will be expected to demonstrate an understanding of oral and written patterns and their equivalent linear relations.</p> <p>PR02 Students will be expected to create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.</p>

		<p>PR04 Students will be expected to identify and explain mathematical relationships, using charts and diagrams, to solve problems.</p> <p>PR04.01 Complete a given Carroll diagram to solve a problem.</p> <p>PR04.02 Determine where new elements belong in a given Carroll diagram.</p> <p>PR04.03 Solve a given problem using a Carroll diagram.</p> <p>PR04.04 Identify a sorting rule for a given Venn diagram.</p> <p>PR04.05 Describe the relationship shown in a given Venn diagram when the circles overlap, when one circle is contained in the other, and when the circles are separate.</p> <p>PR04.06 Determine where new elements belong in a given Venn diagram.</p> <p>PR04.07 Solve a given problem by using a chart or diagram to identify mathematical relationships.</p>			
EQUALITY	<p>PR03 Students will be expected to solve one-step addition and subtraction equations involving symbols representing an unknown number.</p>	<p>PR05 Students will be expected to express a given problem as an equation in which a symbol is used to represent an unknown number.</p> <p>PR06 Students will be expected to solve one-step equations involving a symbol to represent an unknown number.</p>	<p>PR02 Students will be expected to solve problems involving single-variable, one-step equations with whole number coefficients and whole number solutions.</p>	<p>PR01 Students will be expected to demonstrate an understanding of the relationships within tables of values to solve problems.</p> <p>PR02 Students will be expected to represent and describe patterns and relationships, using graphs and tables.</p> <p>PR03 Students will be expected to represent generalizations arising from number relationships using equations with letter variables.</p>	<p>PR01 Students will be expected to demonstrate an understanding of oral and written patterns and their equivalent linear relations.</p> <p>PR02 Students will be expected to create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.</p> <p>PR03 Students will be expected to demonstrate an</p>

				<p>PR04 Students will be expected to demonstrate and explain the meaning of preservation of equality concretely, pictorially, and symbolically.</p>	<p>understanding of preservation of equality by</p> <ul style="list-style-type: none"> ▪ modelling preservation of equality, concretely, pictorially, and symbolically ▪ applying preservation of equality to solve equations <p>PR03.01 Model the preservation of equality for each of the four operations, using concrete materials and/or pictorial representations; explain the process orally; and record the process symbolically.</p> <p>PR03.02 Write equivalent forms of a given equation by applying the preservation of equality, and verify using concrete materials (e.g., $3b = 12$ is equivalent to $3b + 5 = 12 + 5$ or $2r = 7$ is equivalent to $3(2r) = 3(7)$).</p> <p>PR03.03 Solve a given problem by applying preservation of equality.</p> <p>PR04 Students will be expected to explain the difference between an expression and an equation.</p> <p>PR05 Students will be expected to evaluate an expression given the value of the variable(s).</p>
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VARIABLES	<p>PR03 Students will be expected to solve one-step addition and subtraction equations involving symbols representing an unknown number.</p>	<p>PR05 Students will be expected to express a given problem as an equation in which a symbol is used to represent an unknown number.</p> <p>PR06 Students will be expected to solve one-step equations involving a symbol to represent an unknown number.</p>	<p>PR02 Students will be expected to solve problems involving single-variable, one-step equations with whole number coefficients and whole number solutions.</p>	<p>PR01 Students will be expected to demonstrate an understanding of the relationships within tables of values to solve problems.</p> <p>PR02 Students will be expected to represent and describe patterns and relationships, using graphs and tables.</p>	<p>PR01 Students will be expected to demonstrate an understanding of oral and written patterns and their equivalent linear relations.</p> <p>PR02 Students will be expected to create a table of values from a linear relation, graph the table of values, and analyze the</p>
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				<p>PR03 Students will be expected to represent generalizations arising from number relationships using equations with letter variables.</p> <p>PR04 Students will be expected to demonstrate and explain the meaning of preservation of equality concretely, pictorially, and symbolically.</p>	<p>graph to draw conclusions and solve problems.</p> <p>PR03 Students will be expected to demonstrate an understanding of preservation of equality by</p> <ul style="list-style-type: none"> ● modelling preservation of equality, concretely, pictorially, and symbolically ● applying preservation of equality to solve equations <p>PR03.01 Model the preservation of equality for each of the four operations, using concrete materials and/or pictorial representations; explain the process orally; and record the process symbolically.</p> <p>PR03.02 Write equivalent forms of a given equation by applying the preservation of equality, and verify using concrete materials (e.g., $3b = 12$ is equivalent to $3b + 5 = 12 + 5$ or $2r = 7$ is equivalent to $3(2r) = 3(7)$).</p> <p>PR03.03 Solve a given problem by applying preservation of equality.</p> <p>PR04 Students will be expected to explain the difference between an expression and an equation.</p> <p>PR05 Students will be expected to evaluate an expression given the value of the variable(s).</p> <p>PR06 Students will be expected to model and solve, concretely, pictorially, and symbolically, problems that can be represented by one-step linear equations of the form $x + a = b$, where a and b are integers.</p>
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					PR07 Students will be expected to model and solve, concretely, pictorially, and symbolically, where a, b, and c are whole numbers, problems that can be represented by linear equations of the form $ax + b = c$; $ax = b$; $x \div a = b$, $a \neq 0$
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MEASUREMENT PROGRESSION					
TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
MEASUREMENT - LENGTH	<p>M03 Students will be expected to demonstrate an understanding of measuring length (cm, m) by</p> <ul style="list-style-type: none"> selecting and justifying referents for the units centimetre or metre (cm, m) modelling and describing the relationship between the units centimetre or metre (cm, m) estimating length using referents measuring and recording length, width, and height <p>M05 Students will be expected to demonstrate an understanding of perimeter of regular, irregular, and composite shapes by</p> <ul style="list-style-type: none"> estimating perimeter using referents for centimetre or metre (cm, m) measuring and recording perimeter (cm, m) create different shapes for a given perimeter (cm, m) to demonstrate that many shapes are possible for a perimeter 		<p>M02 Students will be expected to demonstrate an understanding of measuring length (mm) by</p> <ul style="list-style-type: none"> selecting and justifying referents for the unit millimetre (mm) modelling and describing the relationship between millimetre (mm) and centimetre (cm) units, and between millimetre (mm) and metre (m) units 		

	<p>M05.01: Measure and record the perimeter of a given regular shape and explain the strategy used.</p> <p>M05.02: Measure and record the perimeter of a given irregular or composite shape and explain the strategy used.</p> <p>M05.03: Construct a shape for a given perimeter (cm, m).</p> <p>M05.04: Construct or draw more than one shape for the same given perimeter.</p> <p>M05.05: Estimate the perimeter of a given shape (cm, m) using personal referents.</p>				
MEASUREMENT – PERIMETER			<p>M01 Students will be expected to design and construct different rectangles, given a perimeter or an area or both (whole numbers), and make generalizations.</p>	<p>M03 Students will be expected to develop and apply a formula for determining the</p> <ul style="list-style-type: none"> ● perimeter of polygons ● area of rectangles ● volume of right rectangular prisms 	
MEASUREMENT - MASS	<p>M04 Students will be expected to demonstrate an understanding of measuring mass (g, kg) by</p> <ul style="list-style-type: none"> ● selecting and justifying referents for the units gram and kilogram (g, kg) ● modelling and describing the relationship between the units gram and kilogram (g, kg) ● estimating mass using referents ● measuring and recording mass <p>M04.01: Provide a personal referent for one gram and explain the choice.</p> <p>M04.02: Provide a personal referent for one kilogram and explain the choice.</p> <p>M04.03: Match a given standard unit to a given referent.</p> <p>M04.04: Explain the relationship between 1000</p>				

	<p>grams and 1 kilogram using a model.</p> <p>M04.05: Estimate the mass of a given object using personal referents.</p> <p>M04.06: Measure, using a balance scale, and record the mass of given everyday objects using the units gram (g) and kilogram (kg).</p> <p>M04.07: Provide examples of 3-D objects that have a mass of approximately 1 g, 100 g, and 1 kg.</p> <p>M04.08: Determine the mass of two given similar objects with different masses and explain the results.</p> <p>M04.09: Determine the mass of an object, change its shape, re-measure its mass and explain the results</p>				
MEASUREMENT - VOLUME			<p>M03 Students will be expected to demonstrate an understanding of volume by</p> <ul style="list-style-type: none"> ● selecting and justifying referents for cubic centimetre (cm³) or cubic metre (m³) units ● estimating volume using referents for cubic centimetre (cm³) or cubic metre (m³) ● measuring and recording volume (cm³ or m³) ● constructing rectangular prisms for a given volume 	<p>M03 Students will be expected to develop and apply a formula for determining the</p> <ul style="list-style-type: none"> ● perimeter of polygons ● area of rectangles ● volume of right rectangular prisms 	
MEASUREMENT - CAPACITY			<p>M04 Students will be expected to demonstrate an understanding of capacity by</p> <ul style="list-style-type: none"> ● describing the relationship between millilitre (mL) and litre (L) units ● selecting and justifying referents for millilitre (mL) and litre (L) units ● estimating capacity using referents for millilitre (mL) and litre (L) ● measuring and recording capacity (mL or L) 		

MEASUREMENT - AREA		<p>M03 Students will be expected to demonstrate an understanding of area of regular and irregular 2-D shapes by</p> <ul style="list-style-type: none"> ▪ recognizing that area is measured in square units ▪ selecting and justifying referents for the units square centimetre (cm²) or square metre (m²) ▪ estimating area using referents for cm² or m² ▪ determining and recording area (cm² or m²) ▪ constructing different rectangles for a given area (cm² or m²) in order to demonstrate that many different rectangles may have the same area 	<p>M01 Students will be expected to design and construct different rectangles, given a perimeter or an area or both (whole numbers), and make generalizations.</p>	<p>M03 Students will be expected to develop and apply a formula for determining the</p> <ul style="list-style-type: none"> ▪ perimeter of polygons ▪ area of rectangles ▪ volume of right rectangular prisms 	<p>M02 Students will be expected to develop and apply a formula for determining the area of triangles, parallelograms, and circles.</p>
MEASUREMENT - TIME	<p>M01 Students will be expected to relate the passage of time to common activities using non-standard and standard units (minutes, hours, days, weeks, months, years).</p> <p>M01.01: Select and use a non-standard unit of measure, such as television shows or pendulum swings, to measure the passage of time and explain the choice.</p> <p>M01.02: Identify activities that can or cannot be accomplished in minutes, hours, days, weeks, months, and years.</p> <p>M01.03: Provide personal referents for minutes and hours.</p> <p>M01.04: Select and use a standard unit of measure, such as minutes, hours, days, weeks, and months to measure the passage of time and explain the choice.</p>	<p>M01 Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks.</p> <p>M02 Students will be expected to read and record calendar dates in a variety of formats.</p>			

	<p>M02 Students will be expected to relate the number of seconds to a minute, the numbers of minutes to an hour, the numbers of hours to a day, and the number of days to a month in a problem-solving context.</p> <p>M02.01: Determine the number of days in any given month using a calendar.</p> <p>M02.02: Solve a given problem involving the number of seconds in a minute, the number of minutes in an hour, the number of hours in a day, or the number of days in a given month.</p> <p>M02.03: Create a calendar that includes days of the week, dates, and personal events.</p>				
MEASUREMENT - CIRCLES					<p>M01 Students will be expected to demonstrate an understanding of circles by</p> <ul style="list-style-type: none"> describing the relationships among radius, diameter, and circumference relating circumference to pi determining the sum of the central angles constructing circles with a given radius or diameter solving problems involving the radii, diameters, and circumferences of circles.
MEASUREMENT - TRIANGLES					

GEOMETRY PROGRESSION

TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
3-D OBJECTS	<p>G01 Students will be expected to describe 3-D objects according to the shape of the faces and the number of edges and vertices.</p>	<p>G01 Students will be expected to describe and construct rectangular and triangular prisms.</p>	<p>G01 Students will be expected to describe and provide examples of edges and faces of 3-D objects, and sides of 2-D shapes that are parallel, intersecting, perpendicular, vertical, and horizontal.</p>	<p>M03 Students will be expected to develop and apply a formula for determining the</p> <ul style="list-style-type: none"> perimeter of polygons area of rectangles volume of right rectangular prisms 	

	<p>G01.01: Identify the faces, edges, and vertices of given 3-D objects, including spheres, cones, cylinders, pyramids, cubes and other prisms.</p> <p>G01.02: Identify the shape of the faces of a given 3-D object.</p> <p>G01.03: Determine the number of faces, edges, and vertices of a given 3-D object.</p> <p>G01.04: Sort a given set of 3-D objects according to the number of faces, edges, or vertices.</p>				
2-D SHAPES	<p>G02 Students will be expected to name, describe, compare, create, and sort regular and irregular polygons, including triangles, quadrilaterals, pentagons, hexagons, and octagons according to the number of sides.</p> <p>G01 Students will be expected to describe 3-D objects according to the shape of the faces and the number of edges and vertices.</p>	<p>G02 Students will be expected to demonstrate an understanding of congruency, concretely and pictorially.</p> <p>G03 Students will be expected to demonstrate an understanding of line symmetry by</p> <ul style="list-style-type: none"> identifying symmetrical 2-D shapes creating symmetrical 2-D shapes drawing one or more lines of symmetry in a 2-D shapes 	<p>G01 Students will be expected to describe and provide examples of edges and faces of 3-D objects, and sides of 2-D shapes that are parallel, intersecting, perpendicular, vertical, and horizontal.</p> <p>G02 Students will be expected to name, identify, and sort quadrilaterals, including rectangles, squares, trapezoids, parallelograms, and rhombi, according to their attributes.</p>	<p>M03 Students will be expected to develop and apply a formula for determining the</p> <ul style="list-style-type: none"> perimeter of polygons area of rectangles volume of right rectangular prisms <p>G01 Students will be expected to construct and compare triangles, including scalene, isosceles, equilateral, right, obtuse, or acute in different orientations.</p> <p>G02 Students will be expected to describe and compare the sides and angles of regular and irregular polygons.</p>	<p>G01 Students will be expected to perform geometric constructions, including</p> <ul style="list-style-type: none"> perpendicular line segments parallel line segments perpendicular bisectors angle bisectors <p>M02 Students will be expected to develop and apply a formula for determining the area of triangles, parallelograms, and circles.</p>
ANGLES			<p>G05 Students will be expected to identify right angles.</p>	<p>M01 Students will be expected to demonstrate an understanding of angles by</p> <ul style="list-style-type: none"> identifying examples of angles in the environment classifying angles according to their measure estimating the measure of angles using 45°, 90°, and 180° as reference angles determining angle measures in degrees drawing and labelling angles when the measure is specified 	

				M02 Students will be expected to demonstrate that the sum of interior angles is 180° in a triangle and 360° in a quadrilateral.	
SORTING 3-D OBJECTS AND 2-D SHAPES			G02 Students will be expected to name, identify, and sort quadrilaterals, including rectangles, squares, trapezoids, parallelograms, and rhombi, according to their attributes.		
TRANSFORMATIONAL GEOMETRY			<p>G03 Students will be expected to perform a single transformation (translation, rotation, or reflection) of a 2-D shape (with and without technology) and draw and describe the image.</p> <p>G04 Students will be expected to identify and describe a single transformation, including a translation, rotation, and reflection of 2-D shapes.</p>	<p>G03 Students will be expected to perform a combination of translation(s), rotation(s), and/or reflection(s) on a single 2-D shape, with and without technology, and draw and describe the image.</p> <p>G04 Students will be expected to perform a combination of successive transformations of 2-D shapes to create a design and identify and describe the transformations.</p> <p>G05 Students will be expected to identify and plot points in the first quadrant of a Cartesian plane using whole number ordered pairs.</p> <p>G06 Students will be expected to perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole number vertices).</p>	<p>G02 Students will be expected to identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs.</p> <p>G02.01 Label the axes of a four quadrant Cartesian plane and identify the origin. G02.02 Identify the location of a given point in any quadrant of a Cartesian plane using an integral ordered pair. G02.03 Plot the point corresponding to a given integral ordered pair on a Cartesian plane with units of 1, 2, 5, or 10 on its axes. G02.04 Draw shapes and designs in a Cartesian plane using given integral ordered pairs. G02.05 Create shapes and designs, and identify the points used to produce the shapes and designs, in any quadrant of a Cartesian plane.</p> <p>G03 Students will be expected to perform and describe transformations (translations, rotations, or reflections) of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices).</p>

STATISTICS AND PROBABILITY PROGRESSION					
TOPIC	MATHEMATICS 3	MATHEMATICS 4	MATHEMATICS 5	MATHEMATICS 6	MATHEMATICS 7
DATA MANAGEMENT	<p>SP01 Students will be expected to collect first-hand data and organize it using tally marks, line plots, charts, and lists to answer questions.</p>	<p>SP01 Students will be expected to demonstrate an understanding of many-to-one correspondence.</p>	<p>SP01 Students will be expected to differentiate between first-hand and second-hand data.</p>	<p>G05 Students will be expected to identify and plot points in the first quadrant of a Cartesian plane using whole number ordered pairs.</p>	<p>G02 Students will be expected to identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs.</p>
	<p>SP02 Students will be expected to construct, label, and interpret bar graphs to solve problems.</p>	<p>SP02 Students will be expected to construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions.</p>	<p>SP02 Students will be expected to construct and interpret double bar graphs to draw conclusions.</p> <p>SP02.01 Determine the attributes (title, axes, intervals, and legend) of double bar graphs by comparing a given set of double bar graphs.</p> <p>SP02.02 Represent a given set of data by creating a double bar graph, label the title and axes, and create a legend without the use of technology.</p> <p>SP02.03 Draw conclusions from a given double bar graph to answer questions.</p> <p>SP02.04 Identify examples of double bar graphs used in a variety of print and electronic media, such as newspapers, magazines, and the Internet.</p> <p>SP02.05 Solve a given problem by constructing and interpreting a double bar graph</p>	<p>SP01 Students will be expected to create, label, and interpret line graphs to draw conclusions.</p> <p>SP02 Students will be expected to select, justify, and use appropriate methods of collecting data, including questionnaires, experiments, databases, and electronic media.</p> <p>SP03 Students will be expected to graph collected data and analyze the graph to solve problems.</p>	<p>G02.01 Label the axes of a four quadrant Cartesian plane and identify the origin.</p> <p>G02.02 Identify the location of a given point in any quadrant of a Cartesian plane using an integral ordered pair.</p> <p>G02.03 Plot the point corresponding to a given integral ordered pair on a Cartesian plane with units of 1, 2, 5, or 10 on its axes.</p> <p>G02.04 Draw shapes and designs in a Cartesian plane using given integral ordered pairs.</p> <p>G02.05 Create shapes and designs, and identify the points used to produce the shapes and designs, in any quadrant of a Cartesian plane.</p> <p>SP03 Students will be expected to construct, label, and interpret circle graphs to solve problems.</p> <p>SP03.01 Identify common attributes of circle graphs, such as</p> <ul style="list-style-type: none"> ● title, label, or legend ● the sum of the central angles is 360° ● the data is reported as a percent of the total, and the sum of the percents is equal to 100% <p>SP03.02 Create and label a circle graph, with and without technology, to display a given set of data.</p>

					<p>SP03.03 Find and compare circle graphs in a variety of print and electronic media, such as newspapers, magazines, and the Internet.</p> <p>SP03.04 Translate percentages displayed in a circle graph into quantities to solve a given problem.</p> <p>SP03.05 Interpret a given or constructed circle graph to answer questions.</p>
STATISTICS					<p>SP01 Students will be expected to demonstrate an understanding of central tendency and range by</p> <ul style="list-style-type: none"> ● determining the measures of central tendency (mean, median, mode) and range ● determining the most appropriate measures of central tendency to report findings <p>SP02 Students will be expected to determine the effect on the mean, median, and mode when an outlier is included in a data set.</p>
PROBABILITY			<p>SP03 Students will be expected to describe the likelihood of a single outcome occurring, using words such as impossible, possible, and certain.</p> <p>SP04 Students will be expected to compare the likelihood of two possible outcomes occurring, using words such as less likely, equally likely, or more likely.</p>	<p>SP04 Students will be expected to demonstrate an understanding of probability by</p> <ul style="list-style-type: none"> ● identifying all possible outcomes of a probability experiment ● differentiating between experimental and theoretical probability ● determining the theoretical probability of outcomes in a probability experiment ● determining the experimental probability of outcomes in a probability experiment ● comparing experimental results with the theoretical probability for an experiment 	<p>SP04 Students will be expected to express probabilities as ratios, fractions, and percents.</p> <p>SP05 Students will be expected to identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events.</p> <p>SP06 Students will be expected to conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table, or other graphic organizer) and experimental probability of two independent events.</p>

