Yearly Plan
Mathematics 4

Yearly Plan
Mathematics 4

The following is a yearly plan for Mathematics 4. The plan is divided into twelve units of varying lengths. Daily mental mathematics and number routines for each unit are provided in
plan. The second column identifies the unit number and focus. The third column identifies the suggested time for the unit. Specific outcomes to be addressed in the unit are provided
detailed description of the unit is provided in column five. Column six provides a list of resources to help you plan your unit and lessons. It should be noted that the curriculum docun
describes learning opportunities and assessment tasks for each of the outcomes in the unit. This yearly plan also provides connections to the units, lessons, and learning opportunities
for grade, Math Makes Sense 4. These connections can be found in the last column.

The Year at a Glance		
Unit # and Title	**Time Frame**	**Outcomes**
Unit 1 Numbers to 10 000	3 weeks	N01, N02, N03, PR04
Unit 2 Patterning and Time	3 weeks	PR01, PR02, PR03, M01, M02
Unit 3 Multiplication and Division – Basic Facts	4 weeks	N04, N05, N06, N07, PR01, PR02, PR03, PR04, PR05
Unit 4 Statistics	2 weeks	SP01, SP02, N05
Unit 5 Addition and Subtraction of Whole Numbers (to 10 000)	4 weeks	N03, N01, N02, PR05, PR06
Unit 6 Geometry	2 weeks	G01, G02, G03, PR04
Unit 7 Multiplication and Division (one-digit multipliers and one-digit divisors)	4 weeks	N06, N07, PR05, PR06, N01, N04, N05
Unit 8 Measurement - Area	2 weeks	M03, N06, N07
Unit 9 Fractions	2 weeks	N08
Unit 10 Fractions, Decimals, and Addition and Subtraction of Decimal Numbers	4 weeks	N08, N09, N10, N11
Unit 11 Division and Multiplication (one-digit multipliers and one-digit divisors)	4 weeks	N07, N04, N05, N06, PR01, PR02, PR03, PR05, PR06
Unit 12 Patterns and Relations with a Focus on Multiplication and Division	2 weeks	PR01, PR02, PR03, PR04, PR05, PR06, N04, N05, N06,

Unit 1					
Daily Mental Mathematics and Number Routines	**Unit # and Focus**	**Time Frame**	**Description of the Unit**	**Specific Curriculum Outcomes**	**Planning Learni Opportunities**
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 ▪ using personal strategies for adding and subtracting ▪ estimating sums and differences ▪ solving problems involving addition and subtraction **Indicators (3.05, 3. 07, and 3.08)**	Unit 1 Numbers to 10 000	3 weeks	In this first unit focused on numbers to 10 000, students will explore big ideas about number using concrete materials, pictures, oral and written language, and symbols. They will explore real life contexts in which numbers to 10 000 are used. They will recognize and correct errors or omissions in a given number sequence, number chart, or number line. When given a number sequence, they will identify and explain the pattern. Students will begin to develop meaning for numbers to 10 000. They will name the number in a given representation and record the number using numerals, expressions, expanded notation, or words. They will read and represent numbers to 10 000 in a variety of ways with manipulatives, pictures, expressions, expanded notation, place-value charts, and numerals. They will explore number relationships and will partition numbers. They will represent the partitions as expressions or as expanded notation. As students explore relationships and representations of numbers, they will compare and order numbers in a variety of ways using number lines, number charts, and other models, and using benchmark numbers and place value. Students will use Venn Diagrams and Carroll Diagrams to identify and explain mathematics relationships for numbers to 10 000.	**N01** Students will be expected to represent and partition whole numbers to 10 000. **N02** Students will be expected to compare and order numbers to 10 000. **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 ▪ using personal strategies for adding and subtracting ▪ estimating sums and differences ▪ solving problems involving addition and subtraction **PR04** Students will be expected to identify and explain mathematical relationships, using charts and diagrams, to solve problems.	Use the Learni Opportunities Assessment Ta described in th curriculum documents for Mathematics 4 develop lesson for this unit. Additional suggestions fo instruction and assessment ca be found in: *Teaching Student-Center Mathematics, Grades 3-5* (Va de Walle and Lovin 2006), a in *Making Mat Meaningful to Canadian Students K-8* (Small 2009)

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Unit 2					
Daily Mental Mathematics and Number Routines	Unit # and Focus	Time Frame	Description of the Unit	Specific Curriculum Outcomes	Planning Learning Opportunities
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 ▪ using personal strategies for adding and subtracting ▪ estimating sums and differences ▪ solving problems involving addition and subtraction **Indicators (3.05, 3. 07, and 3.08)** **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.	Unit 2 Patterning And Time	3 weeks	This unit focuses on patterns involving whole numbers, and addition and subtraction. As such, it may provide opportunities to revisit numbers to 10 000 from Unit 1. Students will identify and describe patterns found in tables and charts. They will identify errors and omissions in tables and charts and will explain the strategy they used to determine the missing element. Students will translate different representations of a pattern, for example from a concrete pattern or a context to a table or chart and vice versa. They will translate the information in a given problem into a table or a chart. They will explain why the same relationship exists between the pattern in a table and its concrete representation. Students will represent, describe and extend patterns and relationships using charts and tables to solve problems. (Please note: Patterns with multiplication charts will be explored in Unit 3.) Students will read and record time using digital and analog clocks including 12-hour and 24-hour clocks. They will read time as "minutes to" and "minutes after" the hour and as a.m. and p.m. Students will state the number of hours in a day. Students will read and record calendar dates in a variety of formats.	**PR01** Students will be expected to identify and describe patterns found in tables and charts, including a multiplication chart. **PR02** Students will be expected to translate among different representations of a pattern (a table, a chart, or concrete materials). **PR03** Students will be expected to represent, describe, and extend patterns and relationships, using charts and tables, to solve problems. **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.	Use the Learning Opportunities and Assessment Tasks described in the curriculum documents for Mathematics 4 to develop lessons for this unit. Additional suggestions for instruction and assessment can be found in: *Teaching Student-Centered Mathematics, Grades 3-5* (Van de Walle and Lovin 2006), and in *Making Math Meaningful to Canadian Students K-8* (Small 2009)

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Unit 3					
Daily Mental Mathematics and Number Routines	**Unit # and Focus**	**Time Frame**	**Description of the Unit**	**Specific Curriculum Outcomes**	**Planning Learning Opportunities**
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 ▪ using personal strategies for adding and subtracting ▪ estimating sums and differences ▪ solving problems involving addition and subtraction **Indicators (3.05, 3. 07, and 3.08)** **N04** Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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. **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.	Unit 3 Multiplication and Division -Basic Facts	4 weeks	This unit will provide a focused four-week investigation of multiplication and division facts with the understanding that this work will continue throughout the year as students develop, practice, and implement mental mathematics strategies to recall their basic multiplication facts by the end of the year. During this unit, students will represent and solve problems involving basic multiplication facts (to 9 x 9) and related division facts using concrete materials, arrays, equal groups, number lines, pictures, and symbols. In this way, they will develop visualization strategies for multiplication and division. Students will identify and use patterns to create and apply strategies for recalling basic facts. Students will begin to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. They will begin to apply mental mathematics strategies to recall basic multiplication facts to 9 x 9 and determine related division facts. Although begun in this unit, basic facts will be reinforced throughout the year. Students will relate multiplication and division. Students will identify and explain patterns found in multiplication charts. They will represent multiplication facts concretely, contextually, and pictorially, and will translate between those representations and tables and charts. They will identify and describe patterns found in the multiplication chart. The distributive property will be used when developing mental mathematics strategies for recalling multiplication facts. Students will use symbols to represent the unknown number in a multiplication or division equation when solving problems. They will create a problem in context for a given equation with one unknown. Students will use Carroll diagrams and Venn diagrams to identify and explain mathematical relationships involving multiplication and division facts.	**N04** Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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. **N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by ▪ 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 **N07** Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by ▪ using personal strategies for dividing, with and without concrete materials ▪ estimating quotients ▪ relating division to multiplication **PR01** Students will be expected to identify and describe patterns found in tables and charts, including a multiplication chart. **PR02** Students will be expected to translate among different representations of a pattern (a table, a chart, or concrete materials). **PR03** Students will be expected to represent, describe, and extend patterns and relationships, using charts and tables, to solve problems. **PR04** Students will be expected to identify and explain mathematical relationships, using charts and diagrams, to solve problems. **PR05** Students will be expected to express a given problem as an equation in which a symbol is used to represent an unknown number.	Use the Learni Opportunities Assessment Ta described in th curriculum documents for Mathematics 4 develop lesson for this unit. Additional suggestions fo instruction and assessment ca be found in: *Teaching Student-Center Mathematics, Grades 3-5* (Va de Walle and Lovin 2006), an in *Making Mat Meaningful to Canadian Students K-8* (Small 2009)
Unit 4					

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Daily Mental Mathematics and Number Routines	Unit # and Focus	Time Frame	Description of the Unit	Specific Curriculum Outcomes	Planning Learning Opportunities
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 ▪ using personal strategies for adding and subtracting ▪ estimating sums and differences ▪ solving problems involving addition and subtraction **Indicators (3.05, 3. 07, and 3.08)** **N04** Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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. **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.	Unit 4 Statistics	2 weeks	This unit will focus on pictographs and bar graphs and will introduce many-to-one correspondence. Students will explain why many-to-one correspondence, rather than one-to-one correspondence is used. They will compare graphs in which the same data has been displayed using one-to-one and many-to-one correspondences and will explain how the graphs are the same and how they are different. They will find examples of graphs in print and electronic media, and they will explain the many-to-one correspondences used in those graphs. They will read and interpret bar graphs and pictographs that are presented to them in order to answer given questions. They will construct, create, correctly label, and interpret bar graphs and pictographs, and will identify the interval and correspondence for displaying a given set of data in a graph. They will justify the choice of interval and correspondence used. Students will have opportunities to use multiplication facts to create many-to-one correspondence in the context of creating and reading graphs.	**SP01** Students will be expected to demonstrate an understanding of many-to-one correspondence. **SP02** Students will be expected to construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions. **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.	Use the Learni Opportunities Assessment Ta described in th curriculum documents for Mathematics 4 develop lesson for this unit. Additional suggestions fo instruction and assessment ca be found in: *Teaching Student-Center Mathematics, Grades 3-5* (Va de Walle and Lovin 2006), a in *Making Mat Meaningful to Canadian Students K-8* (Small 2009)

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Unit 5					
Daily Mental Mathematics and Number Routines	**Unit # and Focus**	**Time Frame**	**Description of the Unit**	**Specific Curriculum Outcomes**	**Planning Learn Opportunities**
N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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. **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.	Unit 5 Addition and Subtraction of Whole Numbers (to 10 000)	4 weeks	The focus for this unit is addition and subtraction (up to three- and four-digit numbers). Students will explain and use mental mathematics strategies and personal strategies to estimate and determine a sum or a difference of two three- and four-digit numbers. They will explain estimation strategies that could be used to determine an approximate sum or difference. They will use and describe a strategy for determining an estimate and will estimate the solution for a given story problem. They will describe situations in which an estimate, rather than an exact answer, would be sufficient. They will determine a sum or difference of 2 one-, two-, and three-digit numbers efficiently using mental mathematics strategies. Working with three- and four-digit numbers, students will demonstrate understanding of the story structures for addition and subtraction (join, separate, part-part-whole, and comparison) by acting out, modeling, and solving story problems using concrete materials, pictures, words, and symbols. They will create and solve addition and subtraction story problems involving the sum or difference of two given numbers that are meaningful to them and using contexts of interest to them. Students will use and describe personal strategies for determining sums and difference using concrete materials, pictures, mental mathematics strategies, and symbols. They will model addition and subtraction using concrete materials and visual representations and will record the process symbolically. They will determine the sum or difference of two given numbers using a personal strategy. Students will solve one-step addition and subtraction equations involving symbols to represent an unknown number. They will explain the purpose of the symbol and will record addition and subtraction equations with one unknown using a symbol for the unknown. They will create equations to match a given story problem. They will solve a given addition or subtraction equation with one unknown using manipulatives and using a variety of strategies. They	**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 ▪ using personal strategies for adding and subtracting ▪ estimating sums and differences ▪ solving problems involving addition and subtraction **N01** Students will be expected to represent and partition whole numbers to 10 000. **N02** Students will be expected to compare and order numbers to 10 000. **PR05** Students will be expected to express a given problem as an equation in which a symbol is used to represent an unknown number. **PR06** Students will be expected to solve one-step equations involving a symbol to represent an unknown number.	Use the Learni Opportunities Assessment Ta described in th curriculum documents for Mathematics 4 develop lesson for this unit. Additional suggestions fo instruction and assessment ca be found in: *Teaching Student-Center Mathematics, Grades 3-5* (Va de Walle and Lovin 2006), a in *Making Mat Meaningful to Canadian Students K-8* (Small 2009)

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			will create an addition or subtraction story problem for an equation with one unknown. Modeling and solving addition and subtraction problems will provide opportunity for students to continue to continue to develop meaning for numbers to 10 000 as they represent, and model numbers in a variety of ways. Students will utilize their understanding of place value, partitioning, expanded notation, number lines to support the development and use of personal strategies for addition and subtraction.		

Unit 6					
Daily Mental Mathematics and Number Routines	**Unit # and Focus**	**Time Frame**	**Description**	**Specific Curriculum Outcomes**	**Planning Learni Opportunities**
N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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. **N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by ▪ 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	Unit 6 Geometry	2 weeks	During this unit, students will focus on 2-D and 3-D geometry. They will identify and name the common attributes of rectangular and triangular prisms. They will sort rectangular and triangular prisms according to the shape of the base. They will construct and describe models of rectangular and triangular prisms using concrete materials and nets. They will identify examples of rectangular and triangular prisms in the environment. Students will be introduced to line symmetry and congruency involving 2-D shapes. Students will determine if two given 2-D shapes are congruent and will explain the strategy used. They will identify congruent 2-D shapes from a given set of shapes in different positions in space. They will create a shape that is congruent to a given 2-D shape and will explain why the two shapes are congruent. Students will identify the characteristics of symmetrical and non-symmetrical 2-D shapes and explain the connection between congruence and symmetry. They will determine whether a 2-D shape is symmetrical using an image reflector, folding, and/orsuperimposing. They will identify the lines of symmetry in a given 2-D shape and provide examples of symmetrical shapes found in the environment. They will identify and create symmetrical 2-D shapes and will draw lines of symmetry in 2-D shapes. Students will complete a symmetrical 2-D shape when given half of the	**G01** Students will be expected to describe and construct rectangular and triangular prisms. **G02** Students will be expected to demonstrate an understanding of congruency, concretely and pictorially. **G03** Students will be expected to demonstrate an understanding of line symmetry by ▪ identifying symmetrical 2-D shapes ▪ creating symmetrical 2-D shapes ▪ drawing one or more lines of symmetry in a 2-D shape **PR04** Students will be expected to identify and explain mathematical relationships, using charts and diagrams, to solve problems.	Use the Learni Opportunities Assessment Ta described in th curriculum documents for Mathematics 4 develop lesson for this unit. Additional suggestions fo instruction and assessment ca be found in: *Teaching Student-Center Mathematics, Grades 3-5* (Va de Walle and Lovin 2006), ar in *Making Mat Meaningful to Canadian Students K-8* (Small 2009)

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Daily Mental Mathematics and Number Routines	Unit # and Focus	Time Frame	Description	Specific Curriculum Outcomes	Planning Learning Opportunities
N07 Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by ▪ using personal strategies for dividing, with and without concrete materials ▪ estimating quotients ▪ relating division to multiplication **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.			shape and the line of symmetry and they will explain the process. They will use Venn diagrams and Carroll diagrams to sort a given set of 2-D shapes according to the number of lines of symmetry in each shape.		

Unit 7

Daily Mental Mathematics and Number Routines	Unit # and Focus	Time Frame	Description	Specific Curriculum Outcomes	Planning Learn Opportunities
N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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. **N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by ▪ using personal strategies for multiplication, with and without concrete materials ▪ using arrays to represent multiplication	Unit 7 Multiplication and Division (one-digit multipliers and one-digit divisors)	4 weeks	The focus for this unit is multiplication with one-digit multipliers. The relationship between multiplication and division will be explored in the context of problem solving. Note that further development of division involving one-digit divisors and the relationship between division and multiplication will take place in Unit 11. Students will explain and use mental mathematics strategies to recall basic multiplication facts. They will apply partitioning to two- and three-digit numbers and will mentally multiply multiples of 10 and 100 by one-digit numbers to estimate and calculate products. They will use and describe a strategy for determining an estimate and will estimate the solution for a given story problem. An emphasis should be placed on using estimation to assess the reasonableness of the calculated solution. Students will use personal strategies for multiplication, with and without the use of concrete materials. They will apply the distributive property to model given multiplication problems involving two- and three-digit numbers. They will model multiplication of these numbers	**N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by ▪ 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 **N07** Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by ▪ using personal strategies for dividing, with and without concrete materials ▪ estimating quotients ▪ relating division to multiplication **PR05** Students will be expected to express a given problem as an equation in which a symbol is used to represent an unknown number.	Use the Learni Opportunities Assessment Ta described in th curriculum documents for Mathematics 3 develop lesson for this unit. Additional suggestions fo instruction and assessment ca be found in: *Teaching Student-Center Mathematics, Grades 3-5* (Va Walle and Lovi 2006), and in *Making Math*

Daily Mental Mathematics and Number Routines	Unit # and Focus	Time Frame	Description	Specific Curriculum Outcomes	Planning Learning Opportunities
• connecting concrete representations to symbolic representations • estimating products • applying the distributive property **N07** Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by • using personal strategies for dividing, with and without concrete materials • estimating quotients • relating division to multiplication **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.			using concrete or visual representations and will record the process symbolically. They will model and solve given multiplication problems using and array and will record the process pictorially and symbolically. They will determine the product of a two-digit or three-digit number and a one-digit multiplier using a personal strategy and will record the process symbolically. Students will develop and explain their personal strategies by creating and solving problems involving different story structures. They will act out, model, and solve story problems using concrete materials, pictures, words, and symbols and will explain the connections between them. Students will solve one-step equations involving symbols to represent an unknown number. They will explain the purpose of the symbol and will record multiplication and division equations with one unknown using a symbol for the unknown. They will create equations to match a given story problem. They will solve a multiplication equation with one unknown using manipulatives and using a variety of strategies. Modeling and solving multiplication problems will provide opportunity for students to continue to develop meaning for numbers and for place value as they represent, and model numbers in a variety of ways.	**PR06** Students will be expected to solve one-step equations involving a symbol to represent an unknown number. **N01** Students will be expected to represent and partition whole numbers to 10 000. **N04** Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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.	*Meaningful to Canadian Students K-8* (Small 2009)

Unit 8

Daily Mental Mathematics and Number Routines	Unit # and Focus	Time Frame	Description	Specific Curriculum Outcomes	Planning Learning Opportunities
N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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. **N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit	Unit 8 Measurement - Area	2 weeks	This measurement unit will focus on area of regular and irregular 2-D shapes. Students will describe area as the measure of surface recorded in square units and will explain why the square is the most efficient unit for measuring area. Students will provided referents for square centimetres and square metres and explain the choice. They will estimate the area of a given 2-D shape using personal referents. They will determine the area of regular and irregular 2-D shapes and explain their strategies. They will construct rectangles for a given area and will demonstrate that many rectangles are possible for a given area. As students construct rectangles for a given area and demonstrate that many rectangles are possible for a	**M03** Students will be expected to demonstrate an understanding of area of regular and irregular 2-D shapes by • 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 **N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by	Use the Learning Opportunities and Assessment Tasks described in the curriculum documents for Mathematics 4 to develop lessons for this unit. Additional suggestions for instruction and assessment can be found in:

by one-digit numerals) to solve problems by			given area, they will have the opportunity to revisit the relationship between multiplication and division.	- using personal strategies for multiplication, with and without concrete materials	*Teaching Student-Center Mathematics,*
- using personal strategies for multiplication, with and without concrete materials				- using arrays to represent multiplication	*Grades 3-5* (Va de Walle and
- using arrays to represent multiplication				- connecting concrete representations to symbolic representations	Lovin 2006), a in *Making Mat*
- connecting concrete representations to symbolic representations				- estimating products	*Meaningful to*
- **estimating products**				- applying the distributive property	*Canadian*
- applying the distributive property					*Students K-8*
				N07 Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by	(Small 2009)
N07 Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by				- using personal strategies for dividing, with and without concrete materials	
- using personal strategies for dividing, with and without concrete materials				- estimating quotients	
- estimating quotients				- relating division to multiplication	
- relating division to multiplication					
M01 Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks.					
M02 Students will be expected to read and record calendar dates in a variety of formats					

Unit 9					
Daily Mental Mathematics and Number Routines	**Unit # and Focus**	**Time Frame**	**Description**	**Specific Curriculum Outcomes**	**Planning Learn Opportunities**
N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division.	Unit 9 Fractions	2 weeks	This unit will focus on proper fractions less than or equal to one whole. Students will represent and model fractions of one whole, a set or a region using concrete materials. They will provide, from everyday contexts, a fraction that represents part of a set or part of a whole. They will	**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 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	Use the Learni Opportunities Assessment Ta described in th curriculum

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. **N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by ■ 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 **N07** Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by ■ using personal strategies for dividing, with and without concrete materials ■ estimating quotients ■ relating division to multiplication **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.			identify a fraction from its given concrete representation, and they will name and record the fraction represented by the shaded and non-shaded parts of a given whole, set, or region. They will represent given fractions pictorially by shading parts of given whole, set, or region. Students will identify instances when, and will model and explain that, for two different wholes, two fractions may not represent the same quantity. Students will compare and order fractions by placing them on a number line with benchmarks, and identify whether benchmarks of 0, ½ or 1 is closer to a given fractions. Students will also compare and order fractions that have the same numerators or same denominators. Students will explain how denominators can be used to compare two given unit fractions with a numerator of 1.	fractions may not represent the same quantity provide examples of where fractions are used.	documents for Mathematics 4 develop lesson for this unit. Additional suggestions fo instruction and assessment ca be found in: *Teaching Student-Center Mathematics, Grades 3-5* (Va de Walle and Lovin 2006), a in *Making Mat Meaningful to Canadian Students K-8* (Small 2009)

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Unit 10					
Daily Mental Mathematics and Number Routines	**Unit # and Focus**	**Time Frame**	**Description**	**Specific Curriculum Outcomes**	**Planning Learning Opportunities**
N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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. **N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by ▪ 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 **N07** Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by ▪ using personal strategies for dividing, with and without concrete materials ▪ estimating quotients ▪ relating division to multiplication	Unit 10 Fractions, Decimals, and Addition and Subtraction of Decimal Numbers	4 weeks	This unit will introduce students to decimal numbers (tenths and hundredths), and relating decimals to fractions (tenths and hundredths) and vice versa. As well, students will demonstrate understanding of addition and subtraction of decimal numbers. Students will represent, concretely, pictorially, and symbolically, decimal tenths and hundredths as part of set, part of a region, or part of a unit of measure. They will provide examples of everyday contexts in which hundredths and tenths are used. They will model, using manipulatives and pictures, that a given tenth can be represented as a hundredth. They will explain the meaning of digits within a given decimal number. They will read and write decimal numbers and will read decimals as fractions. They will represent a given decimal using money values (dimes and pennies) and will record money values using decimals. Students will express orally and symbolically a given fraction with a denominator of 10 or 100 as a decimal number. Students will express orally and symbolically a given decimal in fraction form with a denominator of 10 or 100. As an extension of their work with decimals, students will add and subtract decimal numbers (limited to hundredths). They will estimate sums and differences and determine which problems do not require an exact solution. They will use mental mathematics strategies to solve problems and will use personal strategies to determine sums and differences. They will solve problems, including money problems using personal strategies. As well, they will count back change for a given purchase.	**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 ● 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 N09 Students will be expected to describe and represent decimals (tenths and hundredths) concretely, pictorially, and symbolically. **N10** Students will be expected to relate decimals to fractions and fractions to decimals (to hundredths). **N11** Students will be expected to demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by ● estimating sums and differences ● using mental mathematics strategies to solve problems ● using personal strategies to determine sums and differences	Use the Learning Opportunities Assessment Task described in the curriculum documents for Mathematics 4 develop lesson for this unit. Additional suggestions for instruction and assessment can be found in: *Teaching Student-Centered Mathematics, Grades 3-5* (Van de Walle and Lovin 2006), and in *Making Math Meaningful to Canadian Students K-8* (Small 2009)

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Daily Mental Mathematics and Number Routines	Unit # and Focus	Time Frame	Description	Specific Curriculum Outcomes	Planning Learni Opportunities
M01 Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.					

Unit 11					
Daily Mental Mathematics and Number Routines	**Unit # and Focus**	**Time Frame**	**Description**	**Specific Curriculum Outcomes**	**Planning Learni Opportunities**
N11 Students will be expected to demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by ▪ estimating sums and differences ▪ using mental mathematics strategies to solve problems ▪ using personal strategies to determine sums and differences **N04** Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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. **N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by ▪ using personal strategies for multiplication, with and without concrete materials ▪ using arrays to represent multiplication	Unit 11 Division and Multiplication	4 weeks	During this unit, students will represent, model, and solve problems involving division (one-digit divisor and up to a two- digit dividend) including division with remainders using concrete materials, arrays, equal groups, number lines, pictures, and symbols. Story problems should include both equal grouping and partitioning (equal sharing). In this way they will develop visualization strategies for division and will relate division to multiplication. Students will use personal strategies to solve division problems and will record the process pictorially and symbolically. Students will continue to identify and use patterns to create and apply strategies for determining basic division facts. Students will apply and explain the property of 1 for division. They will represent division problems concretely, contextually, and pictorially, and will translate between those representations and tables and charts. Students will use symbols to represent the unknown number in a division equation when solving problems. They will create a problem in context for a given equation with one unknown. They should estimate quotients using a personal strategy and use estimation to assess the reasonable of their calculations.	**N07** Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by ● using personal strategies for dividing, with and without concrete materials ● estimating quotients ● relating division to multiplication **PR01** Students will be expected to identify and describe patterns found in tables and charts, including a multiplication chart. **PR02** Students will be expected to translate among different representations of a pattern (a table, a chart, or concrete materials). **PR03** Students will be expected to represent, describe, and extend patterns and relationships, using charts and tables, to solve problems. **PR05** Students will be expected to express a given problem as an equation in which a symbol is used to represent an unknown number. **PR06** Students will be expected to solve one-step equations involving a symbol to represent an unknown number. **N04** Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division. **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.	Use the Learni Opportunities Assessment Ta described in th curriculum documents for Mathematics 4 develop lesson for this unit. Additional suggestions fo instruction and assessment ca be found in: *Teaching Student-Center Mathematics, Grades 3-5* (Va de Walle and Lovin 2006), *Teaching Student-Center Mathematics,* in *Making Ma Meaningful to Canadian Students K-8* (Small 2009)

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Daily Mental Mathematics and Number Routines	Unit # and Focus	Time Frame	Description	Specific Curriculum Outcomes	Planning Learn Opportunities
- connecting concrete representations to symbolic representations - estimating products - applying the distributive property **N07** Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by - using personal strategies for dividing, with and without concrete materials - estimating quotients - relating division to multiplication **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.				**N06** Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by - 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	

Unit 12						

Daily Mental Mathematics and Number Routines	Unit # and Focus	Time Frame	Description	Specific Curriculum Outcomes	Planning Learn Opportunities
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. **M01** Students will be expected to read and record time using digital and analog clocks, including 24-hour clocks. **M02** Students will be expected to read and record calendar dates in a variety of formats.	Unit 12 Patterns and Relations with a Focus on Multiplication and Division	2 weeks	This final unit focuses on patterns involving whole numbers and multiplication and division. Students will identify and describe multiplication and division patterns found in tables and charts. They will identify errors and omissions in tables and charts and will explain the strategy they used to determine the missing element. Students will translate different representations of a pattern, for example from a concrete pattern or a context to a table or chart and vice versa. They will translate the information in a given problem into a table or a chart. They will explain why the same relationship exists between the pattern in a table and its concrete representation. Students will represent, describe and extend patterns	**N07** Students will be expected to demonstrate an understanding of division (one-digit divisor and up to two-digit dividend) to solve problems by - using personal strategies for dividing, with and without concrete materials - estimating quotients - relating division to multiplication **PR01** Students will be expected to identify and describe patterns found in tables and charts, including a multiplication chart. **PR02** Students will be expected to translate among different representations of a pattern (a table, a chart, or concrete materials).	Use the Learni Opportunities Assessment Ta described in th curriculum documents for Mathematics 4 develop lesson for this unit. Additional suggestions fo instruction and assessment ca

			and relationships using charts and tables to solve multiplication and division problems involving equal grouping and partitioning (equal sharing) using symbols to represent the unknown.	**PR03** Students will be expected to represent, describe, and extend patterns and relationships, using charts and tables, to solve problems.
				
				PR04 Students will be expected to identify and explain mathematical relationships, using charts and diagrams, to solve problems.
				
				PR05 Students will be expected to express a given problem as an equation in which a symbol is used to represent an unknown number.
				
				PR06 Students will be expected to solve one-step equations involving a symbol to represent an unknown number.
				
				N04 Students will be expected to apply and explain the properties of 0 and 1 for multiplication and the property of 1 for division.
				
				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.
				
				N06 Students will be expected to demonstrate an understanding of multiplication (one-, two-, or three-digit by one-digit numerals) to solve problems by
				    ● 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
					be found in:
					Teaching Student-Center Mathematics, Grades 3-5 (Va de Walle and Lovin 2006), *Teaching Student-Center Mathematics,* in *Making Mat Meaningful to Canadian Students K-8* (Small 2009)

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