LONG-RANGE PLAN
Primary Division: Grades 1-3, Mathematics
Organized by Topics

What is a long-range plan and why is it important?

A long-range plan outlines a year-long plan for learning mathematics. It is a living document that is revised as educators become increasingly aware of the abilities, strengths, needs and interests of their students. A thoughtfully developed long-range plan:

● ensures that instruction is sequenced in a manner that aligns with research about learning mathematics;

● allocates the appropriate time for concepts and skills so that students have multiple opportunities to focus on the overall expectations within the grade;

● ensures that all specific expectations are addressed at least once within the school year; and

● recognizes that some expectations need to be revisited several times throughout the year.

Note: These sample long-range plans outline possible sequences of instruction for the school year. There are many ways to structure an effective plan for learning.

How are these long-range plans structured?

Deep learning occurs when specific expectations are connected, are continuously expanded upon, and are revisited in a variety of contexts throughout the year.

This long-range plan is structured into learning clusters or topics to support students in making connections within a cluster of specific expectations. Topics are carefully ordered to create a flow of learning to strengthen student understanding. In turn, learning can be expanded and applied in subsequent topics.

Suggested timing for each topic is specified, but there should be room for flexibility. Educators should make adjustments to timing if additional days are required to address student learning needs that emerge as the plan is implemented.

Considerations

- Sample long-range plans for each grade level include all overall and specific expectations from strands B through F.

- The overall expectation from Strand A (Social-Emotional Learning Skills and the Mathematical Processes) is integrated and taught in connection with the other strands throughout the school year.

- In developing long-range and daily plans, consider opportunities to teach and reinforce social-emotional learning skills and mathematical processes, as well as transferable skills, in order to help students develop confidence, cope with challenges, think critically and creatively, and develop a positive identity as a math learner.

- Mathematical modelling (Algebra, C4) provides opportunities for students to authentically engage in learning with everyday situations that involve mathematics. Tasks that require the process of mathematical modelling can be strategically situated throughout the year to support students in making connections among mathematical concepts, strands, and disciplines, and to provide opportunities for assessing the integration and application of learning.

- Coding (Algebra, C3) can be used to solve problems and help deepen students' understanding of mathematical concepts; it is strategically addressed and assessed throughout the year, as appropriate.

- Some concepts and skills require ongoing attention so that students can develop proficiency and deep, lasting learning. Number Talks, Number Strings, and other math talk prompts can be used at the beginning of math classes to reinforce and strengthen number relationships, spatial relationships, math facts, mental math strategies, and problem-solving skills.

Reflective questions when planning

- What key concepts, models, and strategies do students need more time to develop?

- Does the long-range plan revisit expectations later? If not, how might I adjust the plan so it does? What prior learning is assumed in order for other expectations to be addressed?

- How can I create opportunities for students to continue to practise and consolidate learning when they are engaged in new learning?

Long-Range Plan: Primary Division (Grades 1-3)

The Social-Emotional Learning (SEL) Skills and the Mathematical Processes are to be integrated throughout each of the topics below as appropriate.

Grade 1	Grade 2	Grade 3
Attributes & Numbers **(10 days)** Number, Algebra, Data, Spatial Sense, Financial Literacy	**Attributes & Numbers** **(10 days)** Number, Algebra, Data, Spatial Sense, Financial Literacy	**Attributes & Numbers** **(10 days)** Number, Algebra, Data, Spatial Sense, Financial Literacy
Number Patterns, Relationships & Equivalency **(20 days)** Number, Algebra	**Number Patterns, Relationships & Equivalency** **(20 days)** Number, Algebra, Financial Literacy	**Number Patterns, Relationships & Equivalency** **(20 days)** Number, Algebra
Comparison of Measures & Quantities **(25 days)** Number, Spatial Sense, Financial Literacy	**Comparison of Measures & Quantities** **(25 days)** Number, Spatial Sense	**Comparison of Measures & Quantities** **(25 days)** Number, Spatial Sense
Data & Introduction to Mathematical Modelling **(30 days)** Number, Algebra. Data	**Data & Introduction to Mathematical Modelling** **(30 days)** Number. Data	**Data & Introduction to Mathematical Modelling** **(30 days)** Number. Data
Represent & Solve Problems Involving Addition & Subtraction **(30 days)** Number, Algebra, Spatial Sense	**Represent & Solve Problems Involving Addition & Subtraction** **(30 days)** Number, Algebra, Spatial Sense	**Represent & Solve Problems Involving Addition & Subtraction** **(35 days)** Number, Algebra, Spatial Sense, Financial Literacy
Parts & Wholes **(20 days)** Number, Spatial Sense	**Parts & Wholes** **(20 days)** Number, Spatial Sense	**Parts & Wholes** **(25 days)** Number, Spatial Sense
Patterns & Likelihood of Events **(20 days)** Algebra, Data	**Patterns & Likelihood of Events** **(20 days)** Algebra, Data	**Patterns & Likelihood of Events** **(20 days)** Algebra, Data
Mathematical Modelling **(15 days)** Algebra	**Mathematical Modelling** **(15 days)** Algebra	**Mathematical Modelling** **(15 days)** Algebra

Grade 1 Long-Range Plan

170 days + 20 days discretionary

NOTE: The **Social-Emotional Learning Skills** and the **Mathematical Processes** are introduced, applied, and integrated throughout the year as appropriate.

Time	Topics and Expectations
10 days	**Attributes and Numbers** **Introduce and apply throughout the year as appropriate** B1.1 read and represent whole numbers up to and including 50, and describe various ways they are used in everyday life E2.3 read the date on a calendar, and use a calendar to identify days, weeks, months, holidays, and seasons **Developing an understanding of attributes** D1.1 sort sets of data about people or things according to one attribute, and describe rules used for sorting E1.1 three-dimensional objects and two-dimensional shapes according to one attribute at a time, and identify the sorting rule being used C1.1 identify and describe the regularities in a variety of patterns, including patterns found in real-life contexts F1.1 identify the various Canadian coins up to 50¢ and coins and bills up to $50, and compare their values **Counting collections and subsets of collections based on attributes** B1.4 estimate the number of objects in collections of up to 50, and verify their estimates by counting B1.5 count to 50 by 1s, 2s, 5s, and 10s, using a variety of tools and strategies
20 days	**Number Patterns, Relationships and Equivalency** **Using patterns to develop an understanding of relationships among numbers, and addition and subtraction facts** C1.4 create and describe patterns to illustrate relationships among whole numbers up to 50 B2.2 recall and demonstrate addition facts for numbers up to 10, and related subtraction facts **Determining equivalency** C2.2 determine whether given pairs of addition and subtraction expressions are equivalent or not **Demonstrating and using equivalency to represent, compose, and decompose whole numbers in different ways** B1.1 read and represent whole numbers up to and including 50, and describe various ways they are used in everyday life B1.2 compose and decompose whole numbers up to and including 50, using a variety of tools and strategies, in various contexts C2.3 identify and use equivalent relationships for whole numbers up to 50, in various contexts

25 days	**Comparison of Measures and Quantities**

Comparing measures using attributes

E1.3   construct and describe two-dimensional shapes and three-dimensional objects that have matching halves

E2.1   identify measurable attributes of two-dimensional shapes and three-dimensional objects, including length, area, mass, capacity, and angle

E2.2   compare several everyday objects and order them according to length, area, mass, and capacity

Comparing quantities

B1.1   read and represent whole numbers up to and including 50, and describe various ways they are used in everyday life

B1.3   compare and order whole numbers up to and including 50, in various contexts

F1.1   identify the various Canadian coins up to 50¢ and coins and bills up to $50, and compare their values

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30 days	**Collection, Organization, Representation, and Analysis of Data, and Introduction to Mathematical Modelling**

Collecting, organizing, and representing data

D1.2   collect data through observations, experiments, or interviews to answer questions of interest that focus on a single piece of information; record the data using methods of their choice; and organize the data in tally tables

D1.3   display sets of data, using one-to-one correspondence, in concrete graphs and pictographs with proper sources, titles, and labels

Analysing data using counts

B1.5   count to 50 by 1s, 2s, 5s, and 10s, using a variety of tools and strategies

D1.4   order categories of data from greatest to least frequency for various data sets displayed in tally tables, concrete graphs, and pictographs

D1.5   analyse different sets of data presented in various ways, including in tally tables, concrete graphs, and pictographs, by asking and answering questions about the data and drawing conclusions, then make convincing arguments and informed decisions

D2.2   make and test predictions about the likelihood that the categories in a data set from one population will have the same frequencies in data collected from a different population of the same size

Posing a real-life situation that requires the process of mathematical modelling and involves the collection, organization, representation, and analysis of data*

C4   apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations

C2.1   identify quantities that can change and quantities that always remain the same in real-life contexts**

*   Depending on the situation it may be appropriate to complete the mathematical modelling task now or continue as new learning is acquired

**   One aspect of the mathematical modelling process is to identify things that change (variable) and things that remain the same

30 days	**Represent and Solve Problems Involving Addition and Subtraction**
	Developing mental math skills related to estimating, adding, and subtracting
	Representing and using addition and subtraction, and the commutative property for addition
	Using mental math strategies to create and predict the outcome of code that moves an agent from one location to another and models addition and subtraction

B1.2	compose and decompose whole numbers up to and including 50, using a variety of tools and strategies, in various contexts
B2.1	use the properties of addition and subtraction, and the relationship between addition and subtraction, to solve problems and check calculations
B2.2	recall and demonstrate addition facts for numbers up to 10, and related subtraction facts
B2.3	use mental math strategies, including estimation, to add and subtract whole numbers that add up to no more than 20, and explain the strategies used
B2.4	use objects, diagrams, and equations to represent, describe, and solve situations involving addition and subtraction of whole numbers that add up to no more than 50
C3.1	solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential events
C3.2	read and alter existing code, including code that involves sequential events, and describe how changes to the code affect the outcomes
E1.4	describe the relative locations of objects or people, using positional language
E1.5	give and follow directions for moving from one location to another

20 days	**Parts and Wholes**
	Developing an understanding that "wholes" can be decomposed into "parts" and "parts" can be recomposed to make "wholes"

E1.2	construct three-dimensional objects, and identify two-dimensional shapes contained within structures and objects
E1.3	construct and describe two-dimensional shapes and three-dimensional objects that have matching halves
B1.6	use drawings to represent and solve fair-share problems that involve 2 and 4 sharers, respectively, and have remainders of 1 or 2
B1.7	recognize that one half and two fourths of the same whole are equal, in fair-sharing contexts
B1.8	use drawings to compare and order unit fractions representing the individual portions that result when a whole is shared by different numbers of sharers, up to a maximum of 10
B2.5	represent and solve equal-group problems where the total number of items is no more than 10, including problems in which each group is a half, using tools and drawings

20 days	**Patterns and Likelihood of Events** **Creating patterns and code, and making predictions about them** C1.1 identify and describe the regularities in a variety of patterns, including patterns found in real-life contexts C1.2 create and translate patterns using movements, sounds, objects, shapes, letters, and numbers C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in patterns C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential events C3.2 read and alter existing code, including code that involves sequential events, and describe how changes to the code affect the outcomes **Predicting the likelihood of an event** D2.1 use mathematical language, including the terms "impossible", "possible", and "certain", to describe the likelihood of events happening, and use that likelihood to make predictions and informed decisions
15 days	**Mathematical Modelling** **This is an opportunity to apply mathematical concepts and skills from this grade to solve real-life problems that require the process of mathematical modelling*** **Depending on the real-life situation, coding may be a tool in mathematical modelling** C2.1 identify quantities that can change and quantities that always remain the same in real-life contexts C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential events C3.2 read and alter existing code, including code that involves sequential events, and describe how changes to the code affect the outcomes * One aspect of the mathematical modelling process is to identify things that change (variable) and things that remain the same.

Grade 2 Long-Range Plan

170 days + 20 days discretionary

NOTE: The **Social-Emotional Learning Skills** and the **Mathematical Processes** are introduced, applied, and integrated throughout the year as appropriate.

Time	Topics and Expectations
10 days	**Attributes and Numbers** **Introduce and apply throughout the year as appropriate** B1.1 read, represent, compose, and decompose whole numbers up to and including 200, using a variety of tools and strategies, and describe various ways they are used in everyday life E2.4 use units of time, including seconds, minutes, hours, and non-standard units, to describe the duration of various events **Developing an understanding of attributes** D1.1 sort sets of data about people or things according to two attributes, using tables and logic diagrams, including Venn and Carroll diagrams E1.1 sort and identify two-dimensional shapes by comparing number of sides, side lengths, angles, and number of lines of symmetry C1.1 identify and describe a variety of patterns involving geometric designs, including patterns found in real-life contexts **Counting collections and subsets of collections based on attributes** B1.3 estimate the number of objects in collections of up to 200 and verify their estimates by counting B1.4 count to 200, including by 20s, 25s, and 50s, using a variety of tools and strategies
20 days	**Number Patterns, Relationships and Equivalency** **Using patterns to develop an understanding of relationships among numbers, and addition and subtraction facts** C1.4 create and describe patterns to illustrate relationships among whole numbers up to 100 B1.5 describe what makes a number even or odd B2.2 recall and demonstrate addition facts for numbers up to 20, and related subtraction facts **Demonstrating and using equivalency to represent, compose, and decompose whole numbers in different ways** B1.1 read, represent, compose, and decompose whole numbers up to and including 200, using a variety of tools and strategies, and describe various ways they are used in everyday life C2.1 identify when symbols are being used as variables, and describe how they are being used C2.2 determine what needs to be added to or subtracted from addition and subtraction expressions to make them equivalent C2.3 identify and use equivalent relationships for whole numbers up to 100, in various contexts F1.1 identify different ways of representing the same amount of money up to Canadian 200¢ using various combinations of coins, and up to $200 using various combinations of $1 and $2 coins and $5, $10, $20, $50, and $100 bills

	Using coding to show equivalent relationships
	C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential and concurrent events
	C3.2 read and alter existing code, including code that involves sequential and concurrent events, and describe how changes to the code affect the outcomes
25 days	**Comparison of Measures and Quantities**
	Comparing spatially and identifying congruence
	E1.4 create and interpret simple maps of familiar places
	E1.3 identify congruent lengths and angles in two-dimensional shapes by mentally and physically matching them, and determine if the shapes are congruent
	Comparing measures using non-standard units*
	E2.1 choose and use non-standard units appropriately to measure lengths, and describe the inverse relationship between the size of a unit and the number of units needed
	* Coding may be used to measure lengths in non-standard units such as number of steps.
	Comparing measures using standard units
	E2.2 explain the relationship between centimetres and metres as units of length, and use benchmarks for these units to estimate lengths
	E2.3 measure and draw lengths in centimetres and metres, using a measuring tool, and recognize the impact of starting at points other than zero
	Comparing quantities
	B1.1 read, represent, compose, and decompose whole numbers up to and including 200, using a variety of tools and strategies, and describe various ways they are used in everyday life
	B1.2 compare and order whole numbers up to and including 200, in various contexts
30 days	**Collection, Organization, Representation, and Analysis of Data, and Introduction to Mathematical Modelling**
	Collecting, organizing, and representing data
	D1.2 collect data through observations, experiments, or interviews to answer questions of interest that focus on two pieces of information, and organize the data in two-way tally tables
	D1.3 display sets of data, using one-to-one correspondence, in concrete graphs, pictographs, line plots, and bar graphs with proper sources, titles, and labels
	Analysing data using counts
	B1.4 count to 200, including by 20s, 25s, and 50s, using a variety of tools and strategies
	D1.4 identify the mode(s), if any, for various data sets presented in concrete graphs, pictographs, line plots, bar graphs, and tables, and explain what this measure indicates about the data
	D1.5 analyse different sets of data presented in various ways, including in logic diagrams, line plots, and bar graphs, by asking and answering questions about the data and drawing conclusions, then make convincing arguments and informed decisions
	D2.2 make and test predictions about the likelihood that the mode(s) of a data set from one population will be the same for data collected from a different population

Posing a real-life situation that requires the process of mathematical modelling and involves the collection, organization, representation, and analysis of data[*]

C4   apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations[**]

[*]   Depending on the situation it may be appropriate to complete the mathematical modelling task now or continue as new learning is acquired.

[**]   One aspect of the mathematical modelling process is to identify things that change (variable) and things that remain the same.

30 days	## Represent and Solve Problems Involving Addition and Subtraction **Developing mental math skills related to estimating, adding, and subtracting** **Representing and using addition and subtraction, and the commutative property for addition** **Using mental math strategies to create and predict the outcome of code that moves an agent from one location to another and models addition and subtraction** B1.1 read, represent, compose, and decompose whole numbers up to and including 200, using a variety of tools and strategies, and describe various ways they are used in everyday life B2.2 recall and demonstrate addition facts for numbers up to 20, and related subtraction facts B2.3 use mental math strategies, including estimation, to add and subtract whole numbers that add up to no more than 50, and explain the strategies used B2.4 use objects, diagrams, and equations to represent, describe, and solve situations involving addition and subtraction of whole numbers that add up to no more than 100 C2.1 identify when symbols are being used as variables, and describe how they are being used C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential and concurrent events C3.2 read and alter existing code, including code that involves sequential and concurrent events, and describe how changes to the code affect the outcomes E1.5 describe the relative positions of several objects and the movements needed to get from one object to another **Representing multiplication as repeated addition and division as repeated subtraction** B2.1 use the properties of addition and subtraction, and the relationships between addition and multiplication and between subtraction and division, to solve problems and check calculations

20 days	**Parts and Wholes** **Developing an understanding that "wholes" can be decomposed into "parts" and "parts" can be recomposed to make "wholes"** E1.2 compose and decompose two-dimensional shapes, and show that the area of a shape remains constant regardless of how its parts are rearranged B1.6 use drawings to represent, solve, and compare the results of fair-share problems that involve sharing up to 10 items among 2, 3, 4, and 6 sharers, including problems that result in whole numbers, mixed numbers, and fractional amounts B1.7 recognize that one third and two sixths of the same whole are equal, in fair-sharing contexts B2.5 represent multiplication as repeated equal groups, including groups of one half and one fourth, and solve related problems, using various tools and drawings B2.6 represent division of up to 12 items as the equal sharing of a quantity, and solve related problems, using various tools and drawings
20 days	**Patterns and Likelihood of Events** **Creating patterns and code, and making predictions about them** C1.2 create and translate patterns using various representations, including shapes and numbers C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in patterns represented with shapes and numbers C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential and concurrent events C3.2 read and alter existing code, including code that involves sequential and concurrent events, and describe how changes to the code affect the outcomes **Predicting the likelihood of an event** D2.1 use mathematical language, including the terms "impossible", "possible", and "certain", to describe the likelihood of complementary events happening, and use that likelihood to make predictions and informed decisions
15 days	**Mathematical Modelling** **This is an opportunity to apply mathematical concepts and skills from this grade to solve real-life problems that require the process of mathematical modelling*** **Depending on the real-life situation, coding may be a tool in mathematical modelling** C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential and concurrent events C3.2 read and alter existing code, including code that involves sequential and concurrent events, and describe how changes to the code affect the outcomes * One aspect of the mathematical modelling process is to identify things that change (variable) and things that remain the same.

Grade 3 Long-Range Plan

180 days + 10 days discretionary

NOTE: The **Social-Emotional Learning Skills** and the **Mathematical Processes** are introduced, applied, and integrated throughout the year as appropriate.

Time	Topics and Expectations
10 days	**Attributes and Numbers** **Introduce and apply throughout the year as appropriate** B1.1 read, represent, compose, and decompose whole numbers up to and including 1000, using a variety of tools and strategies, and describe various ways they are used in everyday life B1.5 use place value when describing and representing multi-digit numbers in a variety of ways, including with base ten materials E2.6 use analog and digital clocks and timers to tell time in hours, minutes, and seconds **Developing an understanding of attributes** D1.1 sort sets of data about people or things according to two and three attributes, using tables and logic diagrams, including Venn, Carroll, and tree diagrams, as appropriate E1.1 sort, construct, and identify cubes, prisms, pyramids, cylinders, and cones by comparing their faces, edges, vertices, and angles C1.1 identify and describe repeating elements and operations in a variety of patterns, including patterns found in real-life contexts **Counting collections and subsets of collections based on attributes** B1.4 count to 1000, including by 50s, 100s, and 200s, using a variety of tools and strategies
20 days	**Number Patterns, Relationships and Equivalency** **Using patterns to develop an understanding of relationships among numbers, and multiplication and division facts** C1.4 create and describe patterns to illustrate relationships among whole numbers up to 1000 B1.5 use place value when describing and representing multi-digit numbers in a variety of ways, including with base ten materials B2.2 recall and demonstrate multiplication facts of 2, 5, and 10, and related division facts **Proving equivalence of quantities** C2.2 determine whether given sets of addition, subtraction, multiplication, and division expressions are equivalent or not **Demonstrating and using equivalency to represent, compose, and decompose whole numbers and fractions** B1.1 read, represent, compose, and decompose whole numbers up to and including 1000, using a variety of tools and strategies, and describe various ways they are used in everyday life B2.8 represent the connection between the numerator of a fraction and the repeated addition of the unit fraction with the same denominator using various tools and drawings, and standard fractional notation C2.1 describe how variables are used, and use them in various contexts as appropriate C2.3 identify and use equivalent relationships for whole numbers up to 1000, in various contexts

	Using coding to show equivalent relationships
	C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, and repeating events
	C3.2 read and alter existing code, including code that involves sequential, concurrent, and repeating events, and describe how changes to the code affect the outcomes
25 days	**Comparison of Measures and Quantities**
	Comparing spatially and identifying congruence
	E1.3 identify congruent lengths, angles, and faces of three-dimensional objects by mentally and physically matching them, and determine if the objects are congruent
	E2.5 use various units of different sizes to measure the same attribute of a given item, and demonstrate that even though using different-sized units produces a different count, the size of the attribute remains the same
	E2.7 compare the areas of two-dimensional shapes by matching, covering, or decomposing and recomposing the shapes, and demonstrate that different shapes can have the same area
	E2.8 use appropriate non-standard units to measure area, and explain the effect that gaps and overlaps have on accuracy
	Comparing measures using non-standard units*
	E2.3 use non-standard units appropriately to estimate, measure, and compare capacity, and explain the effect that overfilling or underfilling, and gaps between units, have on accuracy
	E2.4 compare, estimate, and measure the mass of various objects, using a pan balance and non-standard units
	Comparing measures using standard units
	E2.1 use appropriate units of length to estimate, measure, and compare the perimeters of polygons and curved shapes, and construct polygons with a given perimeter
	E2.2 explain the relationships between millimetres, centimetres, metres, and kilometres as metric units of length, and use benchmarks for these units to estimate lengths
	E2.9 use square centimetres (cm2) and square metres (m2) to estimate, measure, and compare the areas of various two-dimensional shapes, including those with curved sides
	B1.3 round whole numbers to the nearest ten or hundred, in various contexts
	Comparing quantities
	B1.1 read, represent, compose, and decompose whole numbers up to and including 1000, using a variety of tools and strategies, and describe various ways they are used in everyday life
	B1.2 compare and order whole numbers up to and including 1000, in various contexts
	B2.9 use the ratios of 1 to 2, 1 to 5, and 1 to 10 to scale up numbers and to solve problems
30 days	**Collection, Organization, Representation, and Analysis of Data, and Introduction to Mathematical Modelling**
	Collecting, organizing, and representing data
	D1.2 collect data through observations, experiments, and interviews to answer questions of interest that focus on qualitative and quantitative data, and organize the data using frequency tables
	D1.3 display sets of data, using many-to-one correspondence, in pictographs and bar graphs with proper sources, titles, and labels, and appropriate scales

Analysing data using mean and mode

D1.4   determine the mean and identify the mode(s), if any, for various data sets involving whole numbers, and explain what each of these measures indicates about the data

D1.5   analyse different sets of data presented in various ways, including in frequency tables and in graphs with different scales, by asking and answering questions about the data and drawing conclusions, then make convincing arguments and informed decisions

D2.2   make and test predictions about the likelihood that the mean and the mode(s) of a data set will be the same for data collected from different populations

Posing a real-life situation that requires the process of mathematical modelling and involves the collection, organization, representation, and analysis of data*

C4   apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations**

*   Depending on the situation it may be appropriate to complete the mathematical modelling task now or continue as new learning is acquired
**   One aspect of the mathematical modelling process is to identify things that change (variable) and things that remain the same

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35 days

Represent and Solve Problems Involving Addition and Subtraction

Developing mental math skills related to estimating, adding, and subtracting

Representing and using addition and subtraction, and the commutative property for addition

Using mental math strategies to create and predict the outcome of code that moves an agent from one location to another and models addition and subtraction

B1.1   read, represent, compose, and decompose whole numbers up to and including 1000, using a variety of tools and strategies, and describe various ways they are used in everyday life

B1.3   round whole numbers to the nearest ten or hundred, in various contexts

B2.3   use mental math strategies, including estimation, to add and subtract whole numbers that add up to no more than 1000, and explain the strategies used

B2.4   demonstrate an understanding of algorithms for adding and subtracting whole numbers by making connections to and describing the way other tools and strategies are used to add and subtract

B2.5   represent and solve problems involving the addition and subtraction of whole numbers that add up to no more than 1000, using various tools and algorithms

C2.1   describe how variables are used, and use them in various contexts as appropriate

C3.1   solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, and repeating events

C3.2   read and alter existing code, including code that involves sequential, concurrent, and repeating events, and describe how changes to the code affect the outcomes

E1.4   give and follow multi-step instructions involving movement from one location to another, including distances and half- and quarter-turns

F1.1   estimate and calculate the change required for various simple cash transactions involving whole-dollar amounts and amounts of less than one dollar

Representing multiplication and division, and the inverse relationship between them

B2.1   use the properties of operations, and the relationships between multiplication and division, to solve problems and check calculations

B2.6   represent multiplication of numbers up to 10 × 10 and division up to 100 ÷ 10, using a variety of tools and drawings, including arrays

20 days	**Parts and Wholes** **Developing an understanding that "wholes" can be decomposed into "parts" and "parts" can be recomposed to make "wholes"** E1.2 compose and decompose various structures, and identify the two-dimensional shapes and three-dimensional objects that these structures contain B1.6 use drawings to represent, solve, and compare the results of fair-share problems that involve sharing up to 20 items among 2, 3, 4, 6, 8, and 10 sharers, including problems that result in whole numbers, mixed numbers, and fractional amounts B1.7 represent and solve fair-share problems that focus on determining and using equivalent fractions, including problems that involve halves, fourths, and eighths; thirds and sixths; and fifths and tenths B2.1 use the properties of operations, and the relationships between multiplication and division, to solve problems and check calculations B2.2 recall and demonstrate multiplication facts of 2, 5, and 10, and related division facts B2.6 represent multiplication of numbers up to 10 × 10 and division up to 100 ÷ 10, using a variety of tools and drawings, including arrays B2.7 represent and solve problems involving multiplication and division, including problems that involve groups of one half, one fourth, and one third, using tools and drawings
20 days	**Patterns and Likelihood of Events** **Creating patterns and code, and making predictions about them** C1.2 create and translate patterns that have repeating elements, movements, or operations using various representations, including shapes, numbers, and tables of values C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in patterns that have repeating elements, movements, or operations C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, and repeating events C3.2 read and alter existing code, including code that involves sequential, concurrent, and repeating events, and describe how changes to the code affect the outcomes **Predicting the likelihood of an event** D2.1 use mathematical language, including the terms "impossible", "unlikely", "equally likely", "likely", and "certain", to describe the likelihood of events happening, and use that likelihood to make predictions and informed decisions
15 days	**Mathematical Modelling** **This is an opportunity to apply mathematical concepts and skills from this grade to solve real-life problems that require the process of mathematical modelling*** **Depending on the real-life situation, coding may be a tool in mathematical modelling** C2.1 describe how variables are used, and use them in various contexts as appropriate C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, and repeating events C3.2 read and alter existing code, including code that involves sequential, concurrent, and repeating events, and describe how changes to the code affect the outcomes * One aspect of the mathematical modelling process is to identify things that change (variable) and things that remain the same.