LONG-RANGE PLAN

Grade 7, Mathematics

ORGANIZED BY QUESTIONS

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 organized around ten unifying questions. Each question typically involves several strands and draws on big mathematical themes such as quantity, change, equivalence, dimension, pattern, and uncertainty. Often the same question spans several grades.

These ten questions can be sequenced throughout the year as ten blocks of time, as presented here in this long-range plan. Alternatively, the questions could be split into smaller, shorter blocks, with the embedded strands and topics serving as different contexts that would spiral the ten questions throughout the year.

While the long-range plan is presented as month-long blocks, this timing should be held loosely, and adjusted according to the learning readiness of students. The following are other considerations when using this long-range plan.

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 should be 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: Grade 7

- Each month is organized around a unifying question. Strands connected to each question are listed below. The Social-Emotional Learning (SEL) Skills and the Mathematical Processes are to be integrated throughout each of the topics below as appropriate.

	Grade 7	Grade 8
Sep	**How do these compare?** Number, Algebra, Data, Spatial Sense	**How do these compare?** Number, Algebra, Spatial Sense
Oct	**How are things changing?** Number, Algebra, Spatial Sense, Financial Literacy	**How are things changing?** Number, Algebra, Data, Spatial Sense, Financial Literacy
Nov	**How much is that?** Number, Algebra, Data	**How much is that?** Number, Algebra, Spatial Sense
Dec	**What's the story?** Number, Data	**What's the story?** Algebra, Data
Jan	**Scaling & splitting: How much now?** Number, Algebra, Data, Spatial Sense	**Scaling & splitting: How much now?** Number, Financial Literacy
Feb	**How can we describe the space around us?** Number, Algebra, Spatial Sense	**How can we describe the space around us?** Number, Algebra, Spatial Sense
Mar	**When are different operations useful?** Number, Algebra, Spatial Sense	**When are different operations useful?** Number, Algebra, Spatial Sense

Apr	**Are things in balance?** Number, Algebra, Spatial Sense, Financial Literacy	**Are things in balance?** Number, Algebra, Spatial Sense, Financial Literacy
May	**How can we make predictions and decide?** Number, Algebra, Data, Financial Literacy	**How can we make predictions and decide?** Number, Algebra, Data, Financial Literacy
Jun	**Is this statement true?** Number, Algebra, Data, Spatial Sense	**Is this statement true?** Number, Algebra, Data Spatial Sense

September	QUESTION: How do these compare?	
	Topics and Specific Expectations	**Connecting the Learning**
	B: Numbers to 1 billion as powers of 10 **B1.1** represent and compare whole numbers up to and including one billion, including in expanded form using powers of ten, and describe various ways they are used in everyday life **B2.7** evaluate and express repeated multiplication of whole numbers using exponential notation, in various contexts **B: Rational numbers (positive & negative)** **B1.3** read, represent, compare, and order rational numbers, including positive and negative fractions and decimal numbers to thousandths, in various contexts **B1.6** round decimal numbers to the nearest tenth, hundredth, or whole number, as applicable, in various contexts **B1.7** convert between fractions, decimal numbers, and percents, in various contexts **B: Fractions and decimals between quantities** **B1.5** generate fractions and decimal numbers between any two quantities **C: Various patterns in various forms** **C1.1** identify and compare a variety of repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and compare linear growing patterns on the basis of their constant rates and initial values **C1.2** create and translate repeating, growing, and shrinking patterns involving whole numbers and decimal numbers using various representations, including algebraic expressions and equations for linear growing patterns **C1.3** determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns involving whole numbers and decimal numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns **C1.4** create and describe patterns to illustrate relationships among integers **D: Various graphs & purposes** **D1.3** select from among a variety of graphs, including circle graphs, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs **D1.6** analyse different sets of data presented in various ways, including in circle graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions **E: Radius, diameter, circumference & pi** **E2.3** use the relationships between the radius, diameter, and circumference of a circle to explain the formula for finding the circumference and to solve related problems **E2.4** construct circles when given the radius, diameter, or circumference **E: Radius, diameter, area & pi** **E2.5** show the relationships between the radius, diameter, and area of a circle, and use these relationships to develop the formula for measuring the area of a circle and to solve related problems --- **Number: B1.1; B1.3; B1.5; B1.6; B1.7; B2.7** **Algebra: C1.1; C1.2; C1.3; C1.4** **Data: D1.3; D1.6** **Spatial Sense: E2.3; E2.4; E2.5**	Students compare numbers, graphs, patterns, and circles, and they describe their relationships. They use expanded form and powers of 10 to compare whole numbers to one billion. They identify real-life examples that involve millions and make absolute comparisons (using addition and subtraction) and relative comparisons (using multiplication, division, fractions and percents). They compare both positive and negative rational numbers, locate them on a number line, and describe their symmetry. They compare fractions, generate fractions and decimals between fractions, and recognize the density of numbers, They compare a variety of patterns, in a variety of forms, and identify equivalent representations. They compare types of graphs and explain when each type might be used. They compare the radius and the diameter of circles. They compare the diameter and the circumference of various circles and approximate their relative difference. They are introduced to pi (π).

October	QUESTION: How are things changing?	
	Topics and Specific Expectations	**Connecting the Learning**
	E: Dilations & similar shapes **E1.3** perform dilations and describe the similarity between the image and the original shape **B: Proportional & non-proportional** **B2.8** multiply and divide fractions by fractions, using tools in various contexts **C: Linear growing patterns (equations, graphs; rate of change; initial values)** **C1.1** identify and compare a variety of repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and compare linear growing patterns on the basis of their constant rates and initial values **C1.2** create and translate repeating, growing, and shrinking patterns involving whole numbers and decimal numbers using various representations, including algebraic expressions and equations for linear growing patterns **C1.3** determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns involving whole numbers and decimal numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns **F: Exchange rates between currencies** **F1.1** identify and compare exchange rates, and convert foreign currencies to Canadian dollars and vice versa **F: Interest rates (saving, borrowing)** **F1.5** explain how interest rates can impact savings, investments, and the cost of borrowing to pay for goods and services over time **F1.6** compare interest rates and fees for different accounts and loans offered by various financial institutions, and determine the best option for different scenarios **Number: B2.8** **Algebra: C1.1; C1.2; C1.3** **Spatial Sense: E1.3** **Financial Literacy: F1.1; F1.5; F1.6**	Students describe situations that change. They analyze dilated shapes and explain how the image is similar to the original. Since the side lengths grow or shrink at a constant rate, they describe the shapes as being proportional. They look at other proportional situations, compare them to those that are not proportional, and describe the differences. They analyze linear growing patterns represented in various forms and compare the rates at which they grow. They use algebraic expressions and equations to describe the pattern. They investigate currency exchange rates, and use relationships between fractions, decimals, and percents to describe the change and calculate costs. They also research different types of interest rates and look at graphs that show change over time. They describe the impact that interest has on savings, investments, and borrowing.

November	QUESTION: How much is that?	
	Topics and Specific Expectations	**Connecting the Learning**
	B, E: Area of a square, perfect squares, & square roots **B1.2** identify and represent perfect squares, and determine their square roots, in various contexts **B: Add & subtract fractions (GCF & LCM)** **B2.2** understand and recall commonly used percents, fractions, and decimal equivalents **B2.5** add and subtract fractions, including by creating equivalent fractions, in various contexts **B2.6** determine the greatest common factor for a variety of whole numbers up to 144 and the lowest common multiple for two and three whole numbers **B, C: Add & subtract integers (patterns)** **B2.4** use objects, diagrams, and equations to represent, describe, and solve situations involving addition and subtraction of integers **C1.4** create and describe patterns to illustrate relationships among integers **C: Add & subtract monomials** **C2.1** add and subtract monomials with a degree of 1 that involve whole numbers, using tools **C2.2** evaluate algebraic expressions that involve whole numbers and decimal numbers **C2.3** solve equations that involve multiple terms, whole numbers, and decimal numbers in various contexts, and verify solutions **B: Percentage increase & decrease** **B2.3** use mental math strategies to increase and decrease a whole number by 1%, 5%, 10%, 25%, 50%, and 100%, and explain the strategies used **D: Distribution as percentages; circle graphs** **D1.1** explain why percentages are used to represent the distribution of a variable for a population or sample in large sets of data, and provide examples **D1.3** select from among a variety of graphs, including circle graphs, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs **B: Exponents as repeated multiplication** **B2.7** evaluate and express repeated multiplication of whole numbers using exponential notation, in various contexts **B: Order of operations** **B2.1** use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents, including those requiring multiple steps or multiple operations --- **Number: B1.2; B2.1; B2.2; B2.3; B2.4; B2.5; B2.6; B2.7** **Algebra: C1.4; C2.1; C2.2; C2.3** **Data: D1.1; D1.3**	Students use models, number sense, and spatial reasoning to describe and determine "how much." They describe the side length of a square as the square root of its area. They identify perfect squares and contrast them with imperfect squares. They add and subtract fractions and use the lowest common multiples to find equivalent fractions. They determine the total when adding and subtracting integers. They explain the result when adding and subtracting monomials. They explain how circle graphs are calculated and connect the angles in the graph to the distribution percentages. They explain the meaning of exponents, relate them to repeated multiplication, and determine how much the power represents. They describe the order in which operations are to be performed and explain how not observing this order impacts the answer.

December	QUESTION: What's the story?	
	Topics and Specific Expectations	**Connecting the Learning**
	D: Collect, organize, visualize & analyze data, including with circle graphs **D1.1** explain why percentages are used to represent the distribution of a variable for a population or sample in large sets of data, and provide examples **D1.2** collect qualitative data and discrete and continuous quantitative data to answer questions of interest, and organize the sets of data as appropriate, including using percentages **D1.3** select from among a variety of graphs, including circle graphs, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs **D1.6** analyse different sets of data presented in various ways, including in circle graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions **D: Impact of adding or removing data on measures of central tendency** **D1.5** determine the impact of adding or removing data from a data set on a measure of central tendency, and describe how these changes alter the shape and distribution of the data **D: Tell data story (infographic)** **D1.4** create an infographic about a data set, representing the data in appropriate ways, including in tables and circle graphs, and incorporating any other relevant information that helps to tell a story about the data **B: Story of numbers (integers; common factors; common multiples; relationships between numbers; equivalent rational numbers)** **B1.3** read, represent, compare, and order rational numbers, including positive and negative fractions and decimal numbers to thousandths, in various contexts **B1.4** use equivalent fractions to simplify fractions, when appropriate, in various contexts **B2.2** understand and recall commonly used percents, fractions, and decimal equivalents **B2.6** determine the greatest common factor for a variety of whole numbers up to 144 and the lowest common multiple for two and three whole numbers --- **Number: B1.3; B1.4; B2.2; B2.6** **Data: D1.1; D1.2; D1.3; D1.4; D1.5; D1.6**	Students ask questions and gather information about areas of interest that involve discrete and continuous qualitative data. They organize data in tables and represent their findings in appropriate graphs, including circle graphs. They describe the impact of adding or removing data on measures of central tendency and how these alter the shape and distribution of the data. They create an infographic to share their findings and point of view. They also analyze other visual displays of data, and identify any misleading graphs or other strategies that might unfairly persuade an audience. Students also tell the story of numbers by describing their properties. They describe numbers as being whole, integers, and/or rational. They identify common factors and multiples. They use number relationships and operations to compare numbers to other numbers. They describe equivalent rational numbers. They arrange these properties as clues and have other students identify the number or numbers.
C4: Integrated Modelling Task		

January	QUESTION: Scaling and splitting: How much now?	
	Topics and Specific Expectations	**Connecting the Learning**
	B: Multiply & divide decimals by decimals **B2.9** multiply and divide decimal numbers by decimal numbers, in various contexts **B: Multiply & divide fractions by fractions** **B2.8** multiply and divide fractions by fractions, using tools in various contexts **B, D: Fractions, percents & circle graphs** **B1.4** use equivalent fractions to simplify fractions, when appropriate, in various contexts **B1.7** convert between fractions, decimal numbers, and percents, in various contexts **B2.2** understand and recall commonly used percents, fractions, and decimal equivalents **D1.6** analyse different sets of data presented in various ways, including in circle graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions **B: Proportional situations (ratios, rates)** **B2.1** use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents, including those requiring multiple steps or multiple operations **B2.10** identify proportional and non-proportional situations and apply proportional reasoning to solve problems **E: Dilations, similar shapes** **E1.3** perform dilations and describe the similarity between the image and the original shape **E1.4** describe and perform translations, reflections, and rotations on a Cartesian plane, and predict the results of these transformations **C: Coding with sub-programs** **C2.3** solve equations that involve multiple terms, whole numbers, and decimal numbers in various contexts, and verify solutions **C3.1** solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves events influenced by a defined count and/or sub-program and other control structures **C3.2** read and alter existing code, including code that involves events influenced by a defined count and/or sub-program and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code --- **Number: B1.4; B1.7; B2.1; B2.2; B2.8; B2.9; B2.10** **Algebra: C2.3; C3.1; C3.2** **Data: D1.6** **Spatial Sense: E1.3; E1.4**	Students represent situations involving scaling and splitting and describe connections among multiplication, division, fractions, percents, ratios, and rates. They model scaling and splitting when they solve problems involving ratios, equivalent fractions, and rates, and when they simplify fractions. They understand multiplication with fractions and decimals as the scaling of a quantity by a factor, up or down. They understand division with fractions and decimals as the splitting of a quantity. They show how the side lengths of dilations and similar figures are scaled up or down at a constant rate, even as the angles remain constant. They use ratio tables to scale proportional situations up or down to solve problems, and recognize that scaling and splitting is not present in non-proportional situations. They write, execute and alter code to scale a shape up or down.

February	QUESTION: How can we describe the space around us?	
	Topics and Specific Expectations	**Connecting the Learning**
	E: Draw 2D views of 3D objects and spaces using scales **E1.2** draw top, front, and side views, as well as perspective views, of objects and physical spaces, using appropriate scales **E: Location, change & transformation on a Cartesian plane** **E1.4** describe and perform translations, reflections, and rotations on a Cartesian plane, and predict the results of these transformations **C: Write & alter code with control structures** **C3.1** solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves events influenced by a defined count and/or sub-program and other control structures **C3.2** read and alter existing code, including code that involves events influenced by a defined count and/or sub-program and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code **E: Properties of cylinders, prisms, pyramids** **E1.1** describe and classify cylinders, pyramids, and prisms according to their geometric properties, including plane and rotational symmetry **E: Volume, capacity & units of measure** **E2.1** describe the differences and similarities between volume and capacity, and apply the relationship between millilitres (mL) and cubic centimetres (cm3) to solve problems **E2.2** solve problems involving perimeter, area, and volume that require converting from one metric unit of measurement to another **E: Nets & surface area of cylinders** **E2.6** represent cylinders as nets and determine their surface area by adding the areas of their parts **E: Volume of cylinders & prisms** **E2.7** show that the volume of a prism or cylinder can be determined by multiplying the area of its base by its height, and apply this relationship to find the area of the base, volume, and height of prisms and cylinders when given two of the three measurements **E, B: Solve length, area, volume problems** **B2.1** use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents, including those requiring multiple steps or multiple operations **C: Evaluate algebraic expressions** **C2.1** add and subtract monomials with a degree of 1 that involve whole numbers, using tools **C2.2** evaluate algebraic expressions that involve whole numbers and decimal numbers **C2.3** solve equations that involve multiple terms, whole numbers, and decimal numbers in various contexts, and verify solutions --- **Number: B2.1** **Algebra: C2.1; C2.2; C2.3; C3.1; C3.2** **Spatial Sense: E1.1; E1.2; E1.4; E2.1; E2.2; E2.6; E2.7**	Students compare, construct, identify and measure shapes, and objects in space. They draw 2D views and perspectives of 3D objects and spaces, and describe the scale. They describe and perform translations, reflections, and rotations on a Cartesian plane, and use patterns in the coordinates to predict the location of an image. They write and alter code with control structures to perform transformations. They describe relationships between volume and capacity, and the metric units used to measure them. They identify cylinders, prisms, and pyramids in the real world and describe their geometric properties. They calculate the surface area of cylinders and determine a common formula to indirectly measure the volume of cylinders and prisms. They solve problems involving length, area, and volume.

March	QUESTION: When are different operations useful?	
	Topics and Specific Expectations	**Connecting the Learning**
	B: Represent and solve types of +/−/×/÷ problems involving whole numbers, decimals, fractions, ratios, rates & percents **B1.4** use equivalent fractions to simplify fractions, when appropriate, in various contexts **B2.1** use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents, including those requiring multiple steps or multiple operations **B2.2** understand and recall commonly used percents, fractions, and decimal equivalents **B2.3** use mental math strategies to increase and decrease a whole number by 1%, 5%, 10%, 25%, 50%, and 100%, and explain the strategies used **B2.5** add and subtract fractions, including by creating equivalent fractions, in various contexts **B2.6** determine the greatest common factor for a variety of whole numbers up to 144 and the lowest common multiple for two and three whole numbers **B: Add & subtract integers, fractions, & decimals to make absolute comparisons & describe additive change** **B2.4** use objects, diagrams, and equations to represent, describe, and solve situations involving addition and subtraction of integers **B: Multiply & divide to make relative comparisons, & describe multiplicative change** **B2.8** multiply and divide fractions by fractions, using tools in various contexts **B2.9** multiply and divide decimal numbers by decimal numbers, in various contexts **B2.10** identify proportional and non-proportional situations and apply proportional reasoning to solve problems **B: Represent repeated multiplication with exponents** **B2.7** evaluate and express repeated multiplication of whole numbers using exponential notation, in various contexts **E: Solve length, area, & volume problems and convert between units** **E2.2** solve problems involving perimeter, area, and volume that require converting from one metric unit of measurement to another **C: Solve equations** **C2.3** solve equations that involve multiple terms, whole numbers, and decimal numbers in various contexts, and verify solutions **C2.4** solve inequalities that involve multiple terms and whole numbers, and verify and graph the solutions --- **Number: B1.4; B2.1; B2.2; B2.3; B2.4; B2.5; B2.6; B2.7; B2.8; B2.9; B2.10** **Algebra: C2.3; C2.4** **Spatial Sense: E2.2**	Students represent and solve addition and subtraction problems where rational numbers are joined, separated, combined, and compared. They represent and solve multiplication and division problems involving repeated equal groups, rates, ratios, area measurements, and possible combinations. They add and subtract integers, fractions, and decimals to make absolute comparisons and describe additive change. They multiply and divide with whole numbers, fractions, and decimals to make relative comparisons and describe multiplicative change. They use exponents to describe situations involving repeated multiplication, such as when converting from square metres to square centimetres or from cubic metres to cubic centimetres.

April	QUESTION: Are things in balance?	
	Topics and Specific Expectations	**Connecting the Learning**
	F: Create, track & adjust budget **F1.3** create, track, and adjust sample budgets designed to meet longer-term financial goals for various scenarioS **B: Inverse relationships; integers** **B1.3** read, represent, compare, and order rational numbers, including positive and negative fractions and decimal numbers to thousandths, in various contexts **B2.1** use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents, including those requiring multiple steps or multiple operations **B, E: Equalize proportional situations (including dilations & similar shapes)** **B2.10** identify proportional and non-proportional situations and apply proportional reasoning to solve problems **E1.3** perform dilations and describe the similarity between the image and the original shape **C: Equivalent representations for linear growing patterns** **C1.1** identify and compare a variety of repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and compare linear growing patterns on the basis of their constant rates and initial values **C1.2** create and translate repeating, growing, and shrinking patterns involving whole numbers and decimal numbers using various representations, including algebraic expressions and equations for linear growing patterns **C: Solve equations with multiple terms** **C2.1** add and subtract monomials with a degree of 1 that involve whole numbers, using tools **C2.2** evaluate algebraic expressions that involve whole numbers and decimal numbers **C2.3** solve equations that involve multiple terms, whole numbers, and decimal numbers in various contexts, and verify solutions --- **Number: B1.3; B2.1; B2.10** **Algebra: C1.1; C1.2; C2.1; C2.2; C2.3** **Spatial Sense: E1.3** **Financial Literacy: F1.3**	Students describe ways to keep things in balance and equal. They create, track, and adjust sample budgets to meet longer-term financial goals. They recognize that when positive and negative amounts are equal, they balance to zero. They apply this idea when using integer tiles to subtract integers. They analyze linear growing patterns, describe their constant rate of growth, and represent them with algebraic expressions and equations. They recognize that in proportional situations, quantities vary at the same rate. They use this idea to equalize ratios and determine unknown side lengths of similar shapes. They use a balance model to solve equations involving multiple terms. They evaluate algebraic expressions involving whole numbers and decimals, and use inverse operations to verify that expressions on both sides of the equal sign in an equation are in balance.
C4: Integrated Modelling Task		

May	QUESTION: How can we make predictions and decide?	
	Topics and Specific Expectations	**Connecting the Learning**
	F: Identify reliable financial sources & factors that may influence financial decisions **F1.2** identify and describe various reliable sources of information that can help with planning for and reaching a financial goal **F1.4** identify various societal and personal factors that may influence financial decision making, and describe the effects that each might have **F: Compare interest rates & fees** **F1.5** explain how interest rates can impact savings, investments, and the cost of borrowing to pay for goods and services over time **F1.6** compare interest rates and fees for different accounts and loans offered by various financial institutions, and determine the best option for different scenarios **C, D: Represent linear patterns (rates) graphically & identify missing elements** **C1.2** create and translate repeating, growing, and shrinking patterns involving whole numbers and decimal numbers using various representations, including algebraic expressions and equations for linear growing patterns **C1.3** determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns involving whole numbers and decimal numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns **D1.3** select from among a variety of graphs, including circle graphs, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs **D: Independent vs dependent events** **D2.1** describe the difference between independent and dependent events, and explain how their probabilities differ, providing examples **D, B: Experimental & theoretical probabilities of two independent events & two dependent events happening** **B1.4** use equivalent fractions to simplify fractions, when appropriate, in various contexts **B1.7** convert between fractions, decimal numbers, and percents, in various contexts **D2.2** determine and compare the theoretical and experimental probabilities of two independent events happening and of two dependent events happening **C: Write & execute code** **C3.1** solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves events influenced by a defined count and/or sub-program and other control structures --- **Number: B1.4; B1.7** **Algebra: C1.2; C 1.3; C3.1** **Data: D1.3; D2.1; D2.2** **Financial LIteracy: F1.2; F1.4; F1.5; F1.6**	Students identify patterns, trends, resources, and other factors that inform and influence decision-making and help make predictions. They recognize societal and personal factors that could influence decisions about finances and they identify reliable sources of information that could help with planning for and reaching a financial goal. As part of this research, they compare interest rates and fees. They also analyze other data displayed as graphs, tables, or measures of central tendency, that could inform a decision. They identify and extend different types of patterns and represent linear growing patterns concretely, as graphs, as algebraic expressions, and as equations. They use these to identify missing elements and justify their predictions about future trends. They write code to perform different probability simulations. They determine the theoretical and experimental probabilities of two independent events happening and two dependent events happening. They express these probabilities as decimals, as percents, and as fractions in simplest form, and plot them on a probability line. They explain why the probabilities are different and describe how the dependence and independence of events impacts a prediction or decision.

June	QUESTION: Is this statement true?	
	Topics and Specific Expectations	**Connecting the Learning**
	E: Match 2D drawings with objects at correct scale **E1.2** draw top, front, and side views, as well as perspective views, of objects and physical spaces, using appropriate scales **C: Equivalent representations of patterns** **C1.1** identify and compare a variety of repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and compare linear growing patterns on the basis of their constant rates and initial values **C1.2** create and translate repeating, growing, and shrinking patterns involving whole numbers and decimal numbers using various representations, including algebraic expressions and equations for linear growing patterns **C1.3** determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns involving whole numbers and decimal numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns **C1.4** create and describe patterns to illustrate relationships among integers **C: Evaluate expressions & solve equations** **C2.1** add and subtract monomials with a degree of 1 that involve whole numbers, using tools **C2.2** evaluate algebraic expressions that involve whole numbers and decimal numbers **C2.3** solve equations that involve multiple terms, whole numbers, and decimal numbers in various contexts, and verify solutions **C: Solve & graph inequalities** **C2.4** solve inequalities that involve multiple terms and whole numbers, and verify and graph the solutions **D: Misleading graphs** **D1.6** analyse different sets of data presented in various ways, including in circle graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions **C: Write, execute, & alter codes** **C3.1** solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves events influenced by a defined count and/or sub-program and other control structures **C: Test codes for efficiency** **C3.2** read and alter existing code, including code that involves events influenced by a defined count and/or sub-program and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code **B: Number properties** **B2.1** use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents, including those requiring multiple steps or multiple operations --- **Number: B2.1** **Algebra: C1.1; C1.2; C1.3; C1.4; C2.1; C2.2; C2.3; C2.4; C3.1; C3.2** **Data: D1.6** **Spatial Sense: E1.2**	Students analyze a variety of situations to decide whether they are true. They determine if 2D drawings match the correct object at the correct scale. They decide if various representations of a pattern or situation are equivalent. They verify that a solution to an equation is true, including equations involving monomials. They solve and graph inequalities and explain conditions for when an inequality is true. They analyze misleading graphs and describe how the truth has been distorted. They analyze different number properties, presented algebraically, and describe why they are true or false. They compare two sets of code, determine if they are equivalent, and describe what makes one more efficient than the other.