LONG-RANGE PLAN

Grade 6, 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 6

- 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 4	Grade 5	Grade 6
Sep	**How are things** changing**?** Number, Algebra, Data, Spatial Sense	**How are things changing?** Number, Algebra, Data, Spatial Sense	**How are things changing?** Number, Algebra, Data, Spatial Sense
Oct	**How do things compare?** Number, Data, Spatial Sense, Financial Literacy	**How do things compare?** Number, Data, Spatial Sense, Financial Literacy	**How do things compare?** Number, Data, Spatial Sense, Financial Literacy
Nov	**What's the story?** Number, Data	**What's the story?** Number, Data	**What's the story?** Number, Data
Dec	**Equal groups: How much is that?** Number, Algebra, Spatial Sense	**How much is that?** Number, Algebra, Spatial Sense	**How much is that?** Number, Algebra, Spatial Sense
Jan	**How can we describe the space around us?** Number, Algebra, Spatial Sense	**How can we describe the space around us?** Number, Algebra, Spatial Sense	**How can we describe the space around us?** Number, Algebra, Spatial Sense
Feb	**When is addition and subtraction useful?**	**When are different operations useful?**	**When are different operations useful?**

	Number, Algebra, Spatial Sense, Financial Literacy	Number, Algebra, Spatial Sense, Financial Literacy	Number, Algebra, Data, Spatial Sense
Mar	**How can we keep things in balance?** Number, Algebra, Data, Financial Literacy	**How can we keep things in balance?** Number, Algebra, Financial Literacy	**How can we keep things in balance?** Number, Algebra, Spatial Sense, Financial Literacy
Apr	**Scaling & splitting: How much now?** Number, Data, Spatial Sense	**Scaling & splitting: How much now?** Number, Data, Spatial Sense, Financial Literacy	**Scaling & splitting: How much now?** Number, Data
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	**How can we make predictions and decide?** Number, Algebra, Data
Jun	**Is this statement true?** Number, Algebra	**Is this statement true?** Number, Algebra, Data	**Is this statement true?** Number, Algebra, Data

September	**QUESTION: How are things changing?**	
	Topics and Specific Expectations	**Connecting the Learning**
	C: Repeating, growing, shrinking, & linear patterns **C1.1** identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and specify which growing patterns are linear **C: Represent linear patterns algebraically** **C1.2** create and translate repeating, growing, and shrinking patterns using various representations, including tables of values, graphs, and, for linear growing patterns, algebraic expressions and equations **D: Graph patterns & data** **D1.3** select from among a variety of graphs, including histograms and broken-line 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 histograms and broken-line 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, C: Place value relationships** **C1.4** create and describe patterns to illustrate relationships among whole numbers and decimal numbers **B1.1** read and represent whole numbers up to and including one million, using appropriate tools and strategies, and describe various ways they are used in everyday life **B1.4** read, represent, compare, and order decimal numbers up to thousandths, in various contexts **B: Fraction, ratio, percent, & rate problems** **B1.6** describe relationships and show equivalences among fractions and decimal numbers up to thousandths, using appropriate tools and drawings, in various contexts **B2.3** use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used **B2.12** solve problems involving ratios, including percents and rates, using appropriate tools and strategies **E: Combinations of translations, reflections, & rotations** **E1.4** describe and perform combinations of translations, reflections, and rotations up to 360° on a grid, and predict the results of these transformations **Number: B1.1; B1.4; B1.6; B2.3; B2.12** **Algebra: C1.1; C1.2; C1.4** **Data: D1.3; D1.6** **Spatial Sense: E1.4**	Students describe situations where change happens at a constant rate. They represent these linear patterns in different ways, including as algebraic expressions. They describe how linear patterns are different from non-linear patterns, and compare them to repeating, growing and shrinking patterns. They analyze different graphs and sets of data that reflect change over time and describe trends. They describe how the value of a digit changes as it shifts from one column to the next, and identify place value relationships among whole numbers and decimals, They change representations, from fractions, to decimals, to percents. They solve problems involving equivalent rates, percents, and fractions, and describe the change among the varying amounts. They perform and describe combinations of translations, reflections, and rotations and describe the spatial changes involved in each.

October	QUESTION: How do these compare?	
	Topics and Specific Expectations	**Connecting the Learning**
	B: Amounts to 1 million, including decimal amounts to thousandths **B1.1** read and represent whole numbers up to and including one million, using appropriate tools and strategies, and describe various ways they are used in everyday life **B1.4** read, represent, compare, and order decimal numbers up to thousandths, in various contexts **B: Integers** **B1.2** read and represent integers, using a variety of tools and strategies, including horizontal and vertical number lines **B1.3** compare and order integers, decimal numbers, and fractions, separately and in combination, in various contexts **B2.2** understand the divisibility rules and use them to determine whether numbers are divisible by 2, 3, 4, 5, 6, 8, 9, and 10 **B: Fractions, & decimals** **B1.5** round decimal numbers, both terminating and repeating, to the nearest tenth, hundredth, or whole number, as applicable, in various contexts **B: Relative & absolute comparisons** **B1.6** describe relationships and show equivalences among fractions and decimal numbers up to thousandths, using appropriate tools and drawings, in various contexts **B: Prime & composite numbers** **B2.6** represent composite numbers as a product of their prime factors, including through the use of factor trees **D: Types of data & graphs** **D1.1** describe the difference between discrete and continuous data, and provide examples of each **D1.2** collect qualitative data and discrete and continuous quantitative data to answer questions of interest about a population, and organize the sets of data as appropriate, including using intervals **D1.6** analyse different sets of data presented in various ways, including in histograms and broken-line 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: Convert smaller to larger SI units** **E2.1** measure length, area, mass, and capacity using the appropriate metric units, and solve problems that require converting smaller units to larger ones and vice versa **F: Payment methods** **F1.1** describe the advantages and disadvantages of various methods of payment that can be used to purchase goods and services **F: Interest rates** **F1.4** explain the concept of interest rates, and identify types of interest rates and fees associated with different accounts and loans offered by various banks and other financial institutions	Students compare amounts to one million, including those that involve decimals to thousandths. They use addition and subtraction to make absolute comparisons between amounts, and make relative comparisons using multiplication, division, fractions and percents. They explain the difference between the types of comparisons. They use their understanding of percent to compare interest rates, and also compare the advantages and disadvantages of using different payment methods. They use everyday examples to compare positive and negative integers, and compare and order integers, decimals, and fractions on a number line. They use divisibility rules to identify and compare prime and composite numbers. Students also compare types of graphs and describe when each type might be used. They compare metric units and convert smaller units to larger ones. They describe the qualitative and quantitative ways they have made comparisons.
	Number: B1.1; B1.2; B1.3; B1.4; B1.5; B1.6; B2.2; B2.6 **Data: D1.1; D1.2; D1.6** **Spatial Sense: E2.1** **Financial Literacy: F1.1; F1.4**	

November	QUESTION: What's the story?	
	Topics and Specific Expectations	**Connecting the Learning**
	D: Representative sampling techniques **D1.2** collect qualitative data and discrete and continuous quantitative data to answer questions of interest about a population, and organize the sets of data as appropriate, including using intervals **D: Collect, organize, visualize discrete & continuous data (histogram; broken line)** **D1.1** describe the difference between discrete and continuous data, and provide examples of each **D1.2** collect qualitative data and discrete and continuous quantitative data to answer questions of interest about a population, and organize the sets of data as appropriate, including using intervals **D1.3** select from among a variety of graphs, including histograms and broken-line 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, B Measures of central tendency** **B2.1** use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operations **B2.3** use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used **D1.5** determine the range as a measure of spread and the measures of central tendency for various data sets, and use this information to compare two or more data sets **D2.1** use fractions, decimals, and percents to express the probability of events happening, represent this probability on a probability line, and use it to make predictions and informed decision **D2.2** determine and compare the theoretical and experimental probabilities of two independent events happening **D, B: Range, shape & distribution of data** **D1.6** analyse different sets of data presented in various ways, including in stacked-bar 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 **B2.4** represent and solve problems involving the addition and subtraction of whole numbers and decimal numbers, using estimation and algorithms **D: Tell data story (infographic)** **D1.4** create an infographic about a data set, representing the data in appropriate ways, including in tables, histograms, and broken-line graphs, and incorporating any other relevant information that helps to tell a story about the data **B: Story of numbers (prime & composite; prime factors; divisibility)** **B2.6** represent composite numbers as a product of their prime factors, including through the use of factor trees **Number: B2.1; B2.3; B2.4; B2.6** **Data: D1.1; D1.2; D1.3; D1.4; D1.5; D1.6; D2.1; D2.2**	Students ask questions and gather information about areas of interest that involve qualitative data and discrete and continuous quantitative data. They organize data in tables and represent their findings in appropriate graphs, including histograms and broken-line graphs. They determine the range of their data and measures of central tendency and use this information to compare two or more data sets. 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 use divisibility rules to decide if a number is prime or composite, they identify its factors, and they use number relationships and operations to compare it to other numbers. They share these properties as clues and have students identify the number.

December	QUESTION: How much is that?	
	Topics and Specific Expectations	**Connecting the Learning**
	B: Round repeating & terminating decimals **B1.5** round decimal numbers, both terminating and repeating, to the nearest tenth, hundredth, or whole number, as applicable, in various contexts **B: Add & subtract decimals thousandths, & fractions with unlike denominators** **B1.4** read, represent, compare, and order decimal numbers up to thousandths, in various contexts **B2.4** represent and solve problems involving the addition and subtraction of whole numbers and decimal numbers, using estimation and algorithms **B2.5** add and subtract fractions with like and unlike denominators, using appropriate tools, in various contexts **C: Add monomials, evaluate algebraic expressions, & solve equations** **C2.1** add monomials with a degree of 1 that involve whole numbers, using tools **C2.2** evaluate algebraic expressions that involve whole numbers and decimal tenths **C2.3** solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions **E: Area of various shapes** **E2.4** determine the areas of trapezoids, rhombuses, kites, and composite polygons by decomposing them into shapes with known areas **B: Mental calculation of percents** **B2.3** use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used **E: Convert smaller to larger SI units** **E2.1** measure length, area, mass, and capacity using the appropriate metric units, and solve problems that require converting smaller units to larger ones and vice versa **B: Multiply & divide by decimal tenths** **B2.7** represent and solve problems involving the multiplication of three-digit whole numbers by decimal tenths, using algorithms **B2.8** represent and solve problems involving the division of three-digit whole numbers by decimal tenths, using appropriate tools, strategies, and algorithms, and expressing remainders as appropriate **B: Divide decimals by whole numbers** **B2.11** represent and solve problems involving the division of decimal numbers up to thousandths by whole numbers up to 10, using appropriate tools and strategies **B: Multiply & divide by proper fractions** **B2.9** multiply whole numbers by proper fractions, using appropriate tools and strategies **B2.10** divide whole numbers by proper fractions, using appropriate tools and strategies **Number: B1.4; B1.5; B2.3; B2.4; B2.5; B2.7; B2.8; B2.9. B2.10; B2.11** **Algebra: C2.1; C2.2; C2.3** **Spatial Sense: E2.1, E2.4**	Students use models, number sense, and spatial reasoning to describe and determine "how much". They round repeating and terminating decimals to describe their amount relative to nearby numbers. They add and subtract fractions and decimal numbers to thousandths. They use visual and concrete representations to model the addition of monomials and describe the importance of common units. They develop and evaluate algebraic expressions to represent and determine the area and perimeter of various polygons at specific and general times. They multiply and divide by decimal tenths and mentally calculate percentages. They use place value relationships to convert between smaller and larger metric units, and describe why the conversion makes sense. They use models to visualize the multiplication and division of whole numbers by fractions and by decimal tenths. They also model the division of a whole number by a decimal. They recognize that division does not always make something smaller and that multiplication does not always make something larger.
C4: Integrated Modelling Task		

January	QUESTION: How can we describe the space around us?	
	Topics and Specific Expectations	**Connecting the Learning**
	E: Construct 3D objects given 2D views **E1.2** construct three-dimensional objects when given their top, front, and side views **E: Reflex angles** **E2.2** use a protractor to measure and construct angles up to 360°, and state the relationship between angles that are measured clockwise and those that are measured counterclockwise **E, C: Solve for unknown angles** **E2.3** use the properties of supplementary angles, complementary angles, opposite angles, and interior and exterior angles to solve for unknown angle measures **C2.3** solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions **E: Properties of quadrilaterals;** **E1.1** create lists of geometric properties of various types of quadrilaterals, including the properties of the diagonals, rotational symmetry, and line symmetry **E: Measure attributes (length, mass, capacity, area) & solve problems** **E2.1** measure length, area, mass, and capacity using the appropriate metric units, and solve problems that require converting smaller units to larger ones and vice versa **E2.4** determine the areas of trapezoids, rhombuses, kites, and composite polygons by decomposing them into shapes with known areas **E: Create nets of prisms & pyramids** **E2.5** create and use nets to demonstrate the relationship between the faces of prisms and pyramids and their surface areas **E, B: Distances on Cartesian Plane, expressed with integers** **B1.2** read and represent integers, using a variety of tools and strategies, including horizontal and vertical number lines **E1.3** plot and read coordinates in all four quadrants of a Cartesian plane, and describe the translations that move a point from one coordinate to another **E1.4** describe and perform combinations of translations, reflections, and rotations up to 360° on a grid, and predict the results of these transformations **C: Evaluate expressions & solve equations** **C2.2** evaluate algebraic expressions that involve whole numbers and decimal tenths **C2.3** solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions **C: Code movement (Cartesian plane Q1)** **C3.1** solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves conditional statements and other control structures **C3.2** read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code	Students compare, construct, identify and measure shapes and objects in space. They construct 3D objects given 2D views. They create nets of prisms and pyramids and describe the 2D faces of these 3D objects. They identify and measure reflex angles and use the properties of angles to determine unknown measures. They use their ability to measure angles and lengths to describe and classify quadrilaterals. They use formulas for the area of parallelograms and triangles to determine the areas of other shapes, including trapezoids. They write expressions to describe area relationships and evaluate those expressions given specific dimensions. Students solve equations, including those with multiple terms and whole numbers, to find unknown areas and side lengths. Students also use integers to describe space as they plot and read coordinates on all four quadrants of a Cartesian plane. They describe the distances from one coordinate to another.
	Number: B1.2 **Spatial Sense: E1.1; E1.2; E1.3; E1.4; E2.1; E2.2; E2.3; E2.4; E2.5** **Algebra: C2.2; C2.3; C3.1; c3.2**	

February	QUESTION: When are different operations useful?	
	Topics and Specific Expectations	**Connecting the Learning**
	B: Represent types of +/−/×/÷ situations involving whole numbers, decimals, fractions, ratios, rates & percents **B2.3** use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used **B2.4** represent and solve problems involving the addition and subtraction of whole numbers and decimal numbers, using estimation and algorithms **B2.5** add and subtract fractions with like and unlike denominators, using appropriate tools, in various contexts **B2.7** represent and solve problems involving the multiplication of three-digit whole numbers by decimal tenths, using algorithms **B2.8** represent and solve problems involving the division of three-digit whole numbers by decimal tenths, using appropriate tools, strategies, and algorithms, and expressing remainders as appropriate **B2.9** multiply whole numbers by proper fractions, using appropriate tools and strategies **B2.10** divide whole numbers by proper fractions, using appropriate tools and strategies **B2.11** represent and solve problems involving the division of decimal numbers up to thousandths by whole numbers up to 10, using appropriate tools and strategies **B2.12** solve problems involving ratios, including percents and rates, using appropriate tools and strategies **B: Relationship between operations** **B2.1** use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operations **C: Represent situations with monomials and solve** **C2.1** add monomials with a degree of 1 that involve whole numbers, using tools **C2.2** evaluate algebraic expressions that involve whole numbers and decimal tenths **C: Solve equations & inequalities** **C2.3** solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions **C2.4** solve inequalities that involve two operations and whole numbers up to 100, and verify and graph the solutions **E: Surface area of prisms & pyramids** **E2.5** create and use nets to demonstrate the relationship between the faces of prisms and pyramids and their surface areas **E2.6** determine the surface area of prisms and pyramids by calculating the areas of their two-dimensional faces and adding them together **D: Determine range & central tendency** **D1.5** determine the range as a measure of spread and the measures of central tendency for various data sets, and use this information to compare two or more data sets **Number: B2.1; B2.3; B2.4; B2.5; B2.7; B2.8; B2.9; B2.10; B2.11; B2.12** **Spatial Sense: E2.5, E2.6** **Algebra: C2.1; C2.2; C2.3; C2.4** **Data: D1.5**	Students represent and solve addition and subtraction problems where amounts 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 choose the appropriate operation to match the situation and write and solve algebraic equations. They describe the operations used to determine range and measures of central tendency and use visuals to explain the actions involved. They use the nets created in the previous month to visualize the faces of prisms and pyramids. They use multiplication to calculate the area of each face, and add the areas together to determine the surface area of the object. They use algebraic expressions to generalize their surface area calculations for different shapes

March	QUESTION: How can we keep things in balance?	
	Topics and Specific Expectations	**Connecting the Learning**
	F: Financial goals; steps to achieve them; factors that help or interfere **F1.2** identify different types of financial goals, including earning and saving goals, and outline some key steps in achieving them **F1.3** identify and describe various factors that may help or interfere with reaching financial goals **F1.4** explain the concept of interest rates, and identify types of interest rates and fees associated with different accounts and loans offered by various banks and other financial institutions **F1.5** describe trading, lending, borrowing, and donating as different ways to distribute financial and other resources among individuals and organizations **B: Inverse relationships; integers** **B1.2** read and represent integers, using a variety of tools and strategies, including horizontal and vertical number lines **B2.1** use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operations **E: Counterclockwise & clockwise angles & rotations** **E1.4** describe and perform combinations of translations, reflections, and rotations up to 360° on a grid, and predict the results of these transformations **E2.2** use a protractor to measure and construct angles up to 360°, and state the relationship between angles that are measured clockwise and those that are measured counterclockwise **C: Equivalent representations** **C1.1** identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and specify which growing patterns are linear **C1.2** create and translate repeating, growing, and shrinking patterns using various representations, including tables of values, graphs, and, for linear growing patterns, algebraic expressions and equations **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, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns **C: Solve equations with multiple terms; add monomials** **C2.1** add monomials with a degree of 1 that involve whole numbers, using tools **C2.2** evaluate algebraic expressions that involve whole numbers and decimal tenths **C2.3** solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions **C: Write equivalent & efficient code** **C3.1** solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves conditional statements and other control structures **C3.2** read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code **Number: B1.2; B2.1** **Spatial Sense: E1.4; E2.2** **Algebra: C1.1; C1.2; C1.3; C2.1; C2.2; C2.3; C3.1; C3.2** **Financial Literacy: F1.2; F1.3; F1.4; F1.5**	Students describe ways to keep things in balance and equal. They identify financial goals, and the steps to achieve them, and factors that may help or interfere with reaching them. They look at opposites as a way to think about balance. They perform clockwise and counterclockwise rotations and describe the angle relationships. They consider the symmetry of positive and negative integers and how to solve equations using inverse operations. They describe how situations can be represented by equivalent algebraic expressions, including expressions with monomials. They solve equations using a balance model. They evaluate algebraic expressions and use inverse operations to demonstrate that both sides of the equal sign are in balance.

April	QUESTION: Scaling and splitting: How much now?	
	Topics and Specific Expectations	**Connecting the Learning**
	B: Solve problems involving ratios, percents, & rates **B2.1** use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operations **B2.3** use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used **B2.6** represent composite numbers as a product of their prime factors, including through the use of factor trees **B2.12** solve problems involving ratios, including percents and rates, using appropriate tools and strategies **D: Choose intervals & scales for graphs** **D1.3** select from among a variety of graphs, including stacked-bar 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: Multiply & divide by decimal tenths** **B2.7** represent and solve problems involving the multiplication of three-digit whole numbers by decimal tenths, using algorithms **B2.8** represent and solve problems involving the division of three-digit whole numbers by decimal tenths, using appropriate tools, strategies, and algorithms, and expressing remainders as appropriate **B: Divide decimals by whole numbers** **B2.11** represent and solve problems involving the division of decimal numbers up to thousandths by whole numbers up to 10, using appropriate tools and strategies **B: Multiply & divide by proper fractions** **B2.9** multiply whole numbers by proper fractions, using appropriate tools and strategies **B2.10** divide whole numbers by proper fractions, using appropriate tools and strategies **D: Probability as a fraction, decimal & percent** **D2.1** use fractions, decimals, and percents to express the probability of events happening, represent this probability on a probability line, and use it to make predictions and informed decisions **Number: B2.1; B2.3; B2.6; B2.7; B2.8; B2.9; B2.10; B2.11; B2.12** **Data: D1.3, D2.1**	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, and use ratio tables to determine equivalent fractions, ratios, and rates. They mentally calculate percentages and represent probability as a fraction, decimal or percent, and use number lines to explain their scaling and splitting strategies. They divide decimals by whole numbers, and use number lines and area models to show how the amount was split. They divide an amount by a fraction or decimal, and describe how many iterations of that fraction or decimal (scaling) fit into the amount. They multiply an amount by a fraction or decimal, and explain how the denominator or unit tells how many parts to split an amount into (the unit fraction), and the numerator scales the unit up.
C4: Integrated Modelling Task		

May	QUESTION: How can we make predictions and decide?	
	Topics and Specific Expectations	**Connecting the Learning**
	C: Rules for growing, shrinking, & linear patterns **C1.1** identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and specify which growing patterns are linear **C1.2** create and translate repeating, growing, and shrinking patterns using various representations, including tables of values, graphs, and, for linear growing patterns, algebraic expressions and equations **C1.4** create and describe patterns to illustrate relationships among whole numbers and decimal number **C: Algebraic expressions for linear 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, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns **D: Visualize & analyze data** **D1.5** determine the range as a measure of spread and the measures of central tendency for various data sets, and use this information to compare two or more data sets **D1.6** analyse different sets of data presented in various ways, including in histograms and broken-line 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, B: Experimental & theoretical probabilities of two independent events; expressed as fraction, decimal & percent** **D2.1** use fractions, decimals, and percents to express the probability of events happening, represent this probability on a probability line, and use it to make predictions and informed decisions **D2.2** determine and compare the theoretical and experimental probabilities of two independent events happening **B1.6** describe relationships and show equivalences among fractions and decimal numbers up to thousandths, using appropriate tools and drawings, in various contexts **B2.3** use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used **Number: B1.6; B2.3** **Algebra: C1.1; C1.2; C1.3; C1.4** **Data: D1.5; D1.6; D2.1; D2.2**	Students use patterns and trends in data, presented in different ways, to inform decisions and make predictions. They examine repeating, growing, shrinking, and linear patterns represented concretely, as rules, and as graphs, and use these to justify their predictions about future trends. They visualize and analyze data, and use range and measures of central tendency to draw conclusions and make decisions. They determine and compare the theoretical and experimental probabilities of two independent events happening. They express these probabilities as fractions, decimals, and percents, and plot them on a probability line. They describe the factors involved in making predictions and decisions.

June	QUESTION: Is this statement true?	
	C: Equivalent representations of patterns **C2.2** evaluate algebraic expressions that involve whole numbers and decimal tenths **C: Add monomials** **C2.1** add monomials with a degree of 1 that involve whole numbers, using tools **C: Solve equations & graph inequalities** **C2.4** solve inequalities that involve two operations and whole numbers up to 100, and verify and graph the solutions **D: Misleading graphs** **D1.6** analyse different sets of data presented in various ways, including in histograms and broken-line 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 conditional statements and other control structures **B: Number properties** **B2.1** use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operations **C: Test codes for efficiency** **C3.2** read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code **Number: B2.1** **Algebra: C2.1; C2.2; C2.4; C3.1; C3.2** **Data: D1.6**	Students analyze a variety of situations to decide whether they are true. They decide if various representations of a pattern or situation are equivalent. They verify if a solution to an equation, including those involving monomials, is true and, if not, adjust accordingly. 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. They compare two sets of code, determine if they are equivalent, and describe what makes one more efficient than the other.