Ontario

LONG-RANGE PLAN

Junior Division: Grades 4-6, 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.

Each grade in 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 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 expectations are 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: Junior Division (Grades 4-6)

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?** Number, Algebra, Spatial Sense, Financial Literacy	**When are different operations useful?** Number, Algebra, Spatial Sense, Financial Literacy	**When are different operations useful?** 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

Grade 4 Long-Range Plan

	Topics and Expectations	Connecting the Learning
Sep	**How are things changing?** C: Repeating & growing patterns C, D: Graphing patterns & data C: Number relationships (whole numbers & decimal tenths) B: Place value (powers of 10) D: Stem & Leaf plots B: Equivalent rates (scaling) E: Translations & reflections Number: B1.1; B1.2; B1.7; B2.3; B2.8 Algebra: C1.1; C1.2; C1.3; C1.4 Data: D1.3; D1.6 Spatial Sense: E1.3	Students consider the different ways they can describe change. They look at repeating and growing patterns and use operations and pattern rules to describe change. They look at multiple-bar graphs showing how trends change over time and draw conclusions. They look at place value relationships, describe how the value of a digit changes as it shifts from one column to the next, and use this to develop mental strategies when multiplying and dividing by powers of 10. They extend their place value work with whole numbers to consider decimal tenths. They compare data presented in different ways (i.e., as multiple-bar graphs and stem and leaf plots) and describe how the presentation changes even though the amounts stay the same. They look at situations involving equivalent rates and describe how the amounts change in relation to each other. And they look at designs involving translations and reflections and describe the spatial changes involved.
Oct	**How do these compare?** B: Amounts to 10 000, including decimals amounts to tenths B: Rounding B: Fractions, decimal tenths, & whole numbers B: Additive/multiplicative comparisons D: Types of graphs & data E: Relationships among SI prefixes E: Measure mass, capacity, & length E: Compare angles F: Reasonableness of costs Number: B1.1; B1.2; B1.3; B1.4; B1.5; B1.6; B1.7; B1.8; B1.9 Data: D1.1; D1.2; D1.6 Spatial Sense: E2.1; E2.2; E2.4 Financial Literacy: F1.5	Students build on their work with change to make comparisons involving numbers, graphs, and measurement. They compare length, mass and capacity of different objects and use units to quantify the comparisons. They compare numerical amounts using addition and subtraction (e.g., this is 200 more) as well as multiplication and division (e.g., this is twice as much). They make additive and multiplicative comparisons when describing amounts to 10 000 and decimal amounts to tenths. They compare fractions, decimals, and whole numbers on number lines and round quantities to nearby intervals. They compare prices and decide whether something is reasonably priced. They compare metric (SI) units of measurement and use multiplication and division to describe the relationships between them. They compare angles and classify them as acute, obtuse, straight, or right. They come to see that comparisons can be qualitative or quantitative, and that quantitative comparisons can involve addition-subtraction or multiplication-division.

Nov	**What's the story?** D: Identify & use types of data D: Collect, organize, visualize data (frequency tables; stem & leaf; multiple-bar graph) D: Select type of graph B: Compare & describe frequencies D, B: Mean, median, mode D: Tell data story (infographic) D: Describe likelihood Number: B1.2; 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. They gather qualitative and quantitative data, from both primary and secondary sources, and organize the data in a variety of ways. They select appropriate graphs and compare frequencies using additive and (approximate) multiplicative comparisons. They determine the mean, median, and mode for the data they collected and describe what each indicates. They take a point of view as they create an infographic to share their findings. They discuss whether these results would likely be replicated with a different population and, as appropriate, plot this likelihood on a probability line.
Dec	**Equal groups:** **How much is that?** B: Count by fractions and decimal tenths E: Arrays E: Area of rectangles B: Multiplication as an array B: Distributive property B: Division & remainders B: Math facts (×/÷) B: Multiplication as repeated addition of unit fractions C: Solve equations Number: B1.6; B1.7; B1.9; B2.1; B2.2; B2.5; B2.6; B2.7 Algebra: C2.1; C2.2; C2.3 Spatial Sense: E2.5; E2.6	Students work with repeated equal groups to understand types of numbers and the operations of multiplication and division. Students count by fractions to understand the meaning of the numerator and denominator. They count by decimal tenths to see their connection to fractions and their relationship to whole numbers. Students determine the area of a rectangle by using the row and column structure of an array to organize the count of units. They connect the repeating equal groups (columns or rows) to multiplication, and use this to determine the formula for the area of a rectangle. Students use the array to model the distributive property which they use to understand and recall multiplication and division facts and the relationship between the two operations. They also use the array and the distributive property to solve multiplication and division problems involving larger numbers, and they use their understanding of fractions when considering how to deal with remainders when dividing. They also recognize that any repeated group, including repeated fractional amounts, can be represented with multiplication.
C4: Integrated Modelling Task		

Jan	**How can we describe the space around us?** E: Symmetries (translations & reflections) C: Natural & human-made patterns E: Location & movement on Cartesian plane (Q1) E: Measure objects E: Rectangles, squares & non-rectangles C: Nested relationships E: Types of angles E: Area of rectangles C: Solve equations C: Write & alter code Number: B2.1; B2.2 Algebra: C1.1; C2.1; C2.2; C3.1; c3.2 Spatial Sense: E1.1; E1.2; E1.3; E2.1; E2.2; E2.4; E2.5; E2.6	Students compare, describe, identify and measure shapes, and objects in space. They identify translations and reflections in natural and human-made patterns. They translate and reflect objects, describe the actions involved, and recognize that these actions leave the object unchanged. They overlay the first quadrant of a Cartesian plane on a space and use coordinates to describe the location of an object and the movement needed to get from one location to another. They generate code, written in different ways, to describe this movement. Students choose appropriate tools and metric units to estimate, measure and compare different objects. They use the formula for the area of a rectangle to find a rectangle's area or unknown side lengths, and they represent these situations with multiplication or division. Students also recognize the role that rectangles play in constructing the world around them. They describe the properties of rectangles and use nested diagrams to describe relationships between rectangles, squares and non-rectangles.
Feb	**When is addition and subtraction useful?** B: Represent change, combine, compare situations; add & subtract whole numbers & decimal tenths F: Calculate costs & change C: Write & solve equations C: Code (including nested) E: Elapsed time & timelines E: Translations on Cartesian plane (Q1) Number: B2.3; B2.4 Algebra: C2.1; C2.2; C3.1; c3.2 Spatial Sense: E1.2; E2.3 Financial Literacy: F1.2	Students represent and solve addition and subtraction problems where amounts are joined, separated, combined, and compared. They add and subtract whole numbers to 10 000 as well as numbers involving decimal tenths, and they use mental strategies and algorithms to solve these equations. They use addition or subtraction to calculate total costs and to determine the correct change when amounts are paid for in cash. They use addition when writing code, for example, to describe perimeter as the combined side lengths of a rectangle. They use timelines to track elapsed time, and then use addition to combine the times or subtraction to find the difference. They also notice that they can use addition and subtraction to determine distances when one point is translated to another point.
Mar	**How can we keep things in balance?** B: Relationships between operations F: Concepts of spending, saving, investing & donating C: Represent (translate) equivalent representations C: Equations & variables D: Mean vs median vs mode Number: B2.1 Algebra: C1.1; C1.2; C1.3; C2.1; C2.2; C3.1; C3.2 Data: D1.5 Financial Literacy: F1.1; F1.3; F1.4	Students describe ways to keep things in balance and equal. They create equivalent expressions using different operations and use these expressions to describe the relationship between the operations. They use variables to generalize these relationships and properties. They consider the concepts of spending, saving, investing and donating, and identify key factors when making decisions and keeping amounts balanced. They represent patterns in different ways and explain how the two patterns are equal. They create equivalent codes and show how nested and repeated codes can produce the same output. They also consider how mean and median describe different ways to balance data (mean as the spreading of data across the population and median as the halfway point of the data), in contrast with mode that describes the most frequent value.

Apr	**Scaling & splitting: How much now?** B: Decimals as splitting B: Fractions as part-whole, division, & ratios; meaning of numerator & denominator B: Repeated addition of unit fraction and multiplication E, D: Reading scales on grids, graphs & measurement tools B: Compare two sharing situations B: Scale rates up & down Number: B1.4; B1.5; B1.6; B1.7; B1.8; B1.9; B2.2; B2.7; B2.8 Data: D1.3 Spatial Sense: E2.2	Students represent situations that involve scaling and splitting. They split a number line to show tenths and use this to describe the meaning of the denominator. They scale up to show the meaning of the numerator. They relate the splitting to division and the scaling to multiplication and use the numberline to describe how fractions and decimals are related. They read scales on grids, graphs, and measurement instruments and identify the amount of each partition. They compare two equal sharing situations, each having different amounts and different numbers of people, and determine which situation produces the greater portion size. In doing so, they compare fractions and ratios, and encounter another type of multiplication and division situation. They scale rates up and down, and describe the constant multiplicative relationships that exist between the units and among equivalent ratios. They use these experiences to identify how multiplication and division can be used to scale and split amounts.
C4: Integrated Modelling Task		
May	**How can we make predictions and decide?** D: Probability line C: Represent repeating & growing patterns as rules & graphs; extend, predict & justify D: Visualize & analyze data D, B: Mean, median, mode F: Financial management Number: B2.4; B2.6 Algebra: C1.1; C1.2; C1.3; C1.4 Data: D1.5; D1.6; D2.1; D2.2 Financial Literacy: F1.3; F1.4; F1.5	Students use patterns and trends in data to inform decisions and make predictions. They use a probability line, and the language of likelihood to describe levels of certainty. They examine growing and repeating patterns represented concretely, as rules, and as graphs, and they use these to justify their predictions about future trends. They look at data presented in different ways, and they predict and test the likelihood that the mean, median, and mode of that data set will be similar to data collected from another population. They analyze different financial scenarios and consider factors needed to make decisions about spending and saving. They make decisions about whether something is reasonably priced and describe their rationale.
Jun	**Is this statement true?** C: Equivalent expressions C, B: Solve equations C: Solve & graph inequalities C: Write, execute, & alter codes B: Number properties Number: B2.1 Algebra: C2.1; C2.2; C2.3; C3.1; C3.2	Students analyze a variety of situations to decide whether they are true. They compare expressions, written using different operations and quantities, and demonstrate why they are or are not equivalent. They solve equations and verify their solutions. They solve and graph inequalities as they explain under what conditions the inequality is true or false. They write, execute and alter different codes and predict which ones produce the desired result.

Grade 5 Long-Range Plan

	Topics and Expectations	Connecting the Learning
Sep	**How are things changing?** C: Repeating, growing & shrinking patterns C, D: Graphing patterns & data C: Number relationships (whole numbers, decimals) B: Place value relationships B: Equivalent fractions, ratios, rates E: Translations, reflections, & rotations Number: B1.1; B1.2; B1.5; B1.7; B2.3; B2.9 Algebra: C1.1; C1.2; C1.3; C1.4 Data: D1.3; D1.6 Spatial Sense: E1.4; E1.5	Students describe how repeating, growing, and shrinking patterns change, and use various representations of the pattern to support their description. They describe relationships between whole numbers and decimals, and describe how the value of a digit changes as it shifts from one place value column to the next. They look at a series of equivalent fractions, ratios, and rates, and describe additive and multiplicative patterns that exist. They look at shapes that have been reflected, translated, or rotated and describe the spatial changes involved in each. In all these cases, they describe the actions involved in creating a change.
Oct	**How do these compare?** B: Amounts to 100 000, including decimal amounts to hundredths B: Rounding B: Fractions, decimal hundredths, & whole numbers B: Fractions, decimals, & percents D: Relative frequency D: Types of graphs E: Angles (direct comparison & non-standard units) F: Price, value, and unit rate F: Types of taxes & transfer payment methods Number: B1.1; B1.2; B1.3; B1.4; B1.5; B1.6; B1.7; B2.9 Data: F1.1; D1.5; F1.6 Spatial Sense: E2.3 Financial Literacy: F1.5; F1.6	Students compare amounts to 100 000, including those that involve decimals to hundredths. As they look at place value relationships, they make additive and multiplicative comparisons and explain the difference. They locate amounts on a number line and round to different intervals. They represent percents as an amount of 100, and explain how a percent could also be described with an equivalent fraction or decimal. They compare fractions, decimals, and percents. They look at different sets of data and use fractions and percents to describe relative frequency. They describe the advantages and disadvantages of using frequency data and relative frequency data when making comparisons. Students also directly and indirectly compare angles and use non-standard units and non-standard angle measuring tools to quantify the comparison. They compare prices for goods and services and use unit rates, as well as other strategies, to determine the best value. They use their understanding of percent to explain and compare different types of taxes, and they describe the advantages and disadvantages of using different ways to transfer money.
Nov	**What's the story?** D: Representative sampling techniques D: Collect, organize, visualize data (relative frequency tables; stacked bar) B: Percentages D: Select type of graph D: Analyze data; challenge assumption D: Misleading graphs D, B: Mean, median, mode D: Tell data story (infographic) Number: B1.7; B2.4; 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. They explain their sampling technique to ensure their data is representative of a population. They organize data in relative-frequency tables and select appropriate graphs to represent their findings, including stacked bar graphs. They determine the mean, median, and mode and describe what each indicates about the data. They create an infographic to share their findings and point of view. They analyze commercial infographics and other visual displays of data, and identify any misleading graphs or other strategies that might unfairly persuade an audience.

Dec	**How much is that?** B: Fractions, decimals, & percent equivalences B: Add & subtract decimal hundredths, & fractions with like denominators B: Math facts (×/÷) & mental math E: Measure length, mass, capacity & convert larger to smaller SI units E: Area of parallelograms & triangles B: Multiply & divide whole numbers B: Multiply & divide by unit fractions C: Solve equations Number: B1.3; B1.4; B1.5; B1.6; B1.7; B2.1; B2.2; B2.3; B2.4; B2.5; B2.6; B2.7; B2.8 Algebra: C2.1; C2.2 Spatial Sense: E2.1; E2.2; E2.5	Students use models, number sense, and spatial reasoning to describe and determine how much. They compare and order fractions on a number line, and represent equivalent fractions, decimals, and percents. They add and subtract decimals and fractions with like denominators. They use mental math strategies and the array or area model to understand and recall multiplication and related division facts to 12 × 12. They use metric units to describe how much length, mass, and capacity an object has, and use relationships between metric units to convert larger units to smaller ones. They identify spatial relationships between rectangles, parallelograms, and triangles, with the same base and height, and use these to indirectly measure their areas. They express these relationships with formulas. Students continue to use their understanding of the array to multiply and divide whole numbers. They use the distributive property to describe their mental multiplication and division strategies and to explain how the standard algorithms work. They also model what it means to multiply and divide by unit fractions.
	C4: Integrated Modelling Task	
Jan	**How can we describe the space around us?** E: Draw 2D views of 3D objects E: Angles, degrees, & protractors E: Properties of triangles E: Congruent shapes E: Congruent areas, different perimeters E: Represent area & perimeter as equations & solve E: Symmetries (translations, reflections, rotations) B: Fractions & percentages of an area C: Solve equations C: Code conditional movement (Cartesian plane Q1) Number: B1.3; B1.4; B1.7; B2.1; B2.2 Algebra: C2.1; C2.2; C2.3; C3.1; c3.2 Spatial Sense: E1.1; E1.2; E1.3; E1.4; E1.5; E2.1; E2.3; E2.4; E2.5; E2.6	Students compare, construct, identify and measure shapes, and objects in space. They draw 2D views of 3D objects. They measure angles using degrees and explain how the scales on a protractor track the count of degrees. They use their ability to measure angles and lengths to describe and classify triangles. They construct different types of triangles when given certain measurements. They also construct rectangles and parallelograms and use measurement to identify congruence. Students translate among words, algebraic, and visual expressions involving area and perimeter. They solve equations related to area and perimeter when given different measurements. They use fractions and percentages to describe ways in which an area is subdivided. They demonstrate that congruent areas can have different perimeters. They also describe translations, reflections, and rotations in natural and human-made patterns. They translate, reflect, and rotate objects on a grid, both by hand and with technology, and describe the impact of each spatial operation. They use different scales to describe location and movement on the first quadrant of a Cartesian plane. They write, execute, and alter code involving conditional statements to navigate a space.

Feb	**When are different operations useful?** B: Represent types of +/−/×/÷ situations; B: Relationship between operations C: Write & solve algebraic equations; E: Area & perimeter problems E: Conversion between SI units E: Translations on Cartesian plane (Q1) with scales F: Total cost (sales tax, discounts) C: Coding operations Number: B2.1; B2.2; B2.3; B2.4; B2.5; B2.6; B2.7; B2.8 Algebra: C2.1; C2.2; C3.1; c3.2 Spatial Sense: E1.4; E2.2; E2.5; E2.6 Financial Literacy: F1.2	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 use addition and subtraction to solve perimeter problems and multiplication and division to solve area problems. They describe multiplicative relationships between metric units and in place value that help them convert between units. They use addition and subtraction to calculate distances (translations) on a Cartesian plane and they use combinations of the operations to calculate the total cost of multiple items, including sales tax. They use a variety of operations when writing code.
Mar	**How can we keep things in balance?** F: Design basic budget; credit & debt F: Transfer payment methods B: Relationships between operations C: Describe and represent equivalent relationships C: Evaluate algebraic expressions C: Solve equations C: Write, execute & alter code Number: B2.1 Algebra: C1.1; C1.2; C1.3; C2.1; C2.3; C3.1; C3.2 Financial Literacy: F1.1; F1.3; F1.4	Students describe ways to keep things in balance and equal. They design a basic budget given different earning and spending scenarios and explain the concepts of credit and debt. They create conditional code that compares budgets to actual spending. As they do this they also discuss different ways to transfer money. They create equivalent representations of a situation using words, algebraic expressions, and concrete models and explain why they are the same. They solve equations using a balance model. They evaluate algebraic expressions and use inverse operations to demonstrate that the algebraic expressions on either side of an equal sign are in balance.
Apr	**Scaling & splitting: How much now?** B: Equivalent fractions (scaling-splitting) B: Equivalent fractions & decimals B, F: Equivalent ratios; unit rates B: Relative amounts of a whole (percents, fractions, decimals) B: Multiply and divide by unit fractions D: Relative frequency tables E: Convert larger to smaller SI units Number: B1.3; B1.7; B2.7; B2.8; B2.9 Data: D1.2 Spatial Sense: E2.2 Financial Literacy: F1.5	Students represent situations involving scaling and splitting and describe connections among multiplication, division, fractions, ratios, and rates. They model scaling and splitting as they use ratio tables to determine equivalent fractions, ratios, and rates. They find the unit rate to compare prices and find the best value. They use double number lines to show percent as the splitting of an amount by 100. They describe relative amounts, create relative frequency tables, and make relative comparisons that involve percents, fractions, and decimals. They see multiplying by unit fractions as splitting and scaling down, and dividing by unit fractions as splitting and counting the partitions. They describe how converting from larger to smaller metric units involves splitting, and use relationships among metric units to carry out conversions.
C4: Integrated Modelling Task		

May	**How can we make predictions and decide?** C: Represent repeating & growing patterns as rules & graphs; extend, predict & justify D: Visualize & analyze data F: Making financial decisions D: Experimental & theoretical probability D, B: Probability expressed as fraction & represented on probability line Number: B1.3; B1.4; B1.7 Algebra: C1.1; C1.2; C1.3; C1.4 Data: D1.5; D1.6; D2.1; D2.2 Financial Literacy: F1.3; F1.4	Students use patterns and trends in data, presented in different ways, to inform decisions and make predictions. They examine repeating, growing, and shrinking patterns represented concretely, as rules, and as graphs, and use these to justify their predictions about future trends. They analyze different spending scenarios, make financial decisions about credit and debt, and ensure budgets are well managed. They determine and compare the theoretical and experimental probabilities of an event happening by expressing them both as fractions and plotting them on a probability line. They describe the factors involved in making predictions and decisions.
Jun	**Is this statement true?** C: Equivalent representations of patterns C, B: Solve equations C: Solve & graph inequalities D: Misleading graphs B: Number properties C: Write, execute, & alter code involving conditional statements C: Test code involving conditional statements Number: B2.1 Algebra: C2.1; C2.2; C2.3; 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 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 create code involving if-then conditions. and demonstrate that both sides of the flow diagram are true.

Grade 6 Long-Range Plan

	Topics and Expectations	Connecting the Learning
Sep	**How are things changing?** C: Repeating, growing, shrinking, & linear patterns C: Represent linear patterns algebraically D: Graph patterns & data B, C: Place value relationships B: Fraction, ratio, percent, & rate problems E: Combinations of translations, reflections, & rotations 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.
Oct	**How do these compare?** B: Amounts to 1 million, including decimal amounts to thousandths B: Integers B: Fractions, & decimals B: Relative & absolute comparisons B: Prime & composite numbers D: Types of data & graphs E: Convert smaller to larger SI units F: Payment methods F: Interest rates 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: E2.2 Financial Literacy: F1.1; F1.4	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.
Nov	**What's the story?** D: Representative sampling techniques D: Collect, organize, visualize discrete & continuous data (histogram; broken line) D, B Measures of central tendency; D, B: Range, shape & distribution of data D: Tell data story (infographic) B: Story of numbers (prime & composite; prime factors; divisibility) 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.
Dec	**How much is that?** B: Round repeating & terminating decimals B: Add & subtract decimals thousandths, & fractions with unlike denominators C: Add monomials, evaluate algebraic expressions, & solve equations E: Area of various shapes B: Mental calculation of percents E: Convert smaller to larger SI units B: Multiply & divide by decimal tenths B: Divide decimals by whole numbers B: Multiply & divide by proper fractions 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: E2.4	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		
Jan	**How can we describe the space around us?** E: Construct 3D objects given 2D views E: Reflex angles E, C: Solve for unknown angles E: Properties of quadrilaterals; E: Measure attributes (length, mass, capacity, area) & solve problems E: Create nets of prisms & pyramids E, B: Distances on Cartesian Plane, expressed with integers C: Evaluate expressions & solve equations C: Code movement (Cartesian plane Q1) Number: B1.2 Algebra: C2.2; C2.3; C3.1; c3.2 Spatial Sense: E1.1; E1.2; E1.3; E1.4; E2.1; E2.2; E2.3; E2.4; E2.5	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.

Feb	**When are different operations useful?** B: Represent types of +/−/×/÷ situations involving whole numbers, decimals, fractions, ratios, rates & percents B: Relationship between operations C: Represent situations with monomials and solve C: Solve equations & inequalities E: Surface area of prisms & pyramids D: Determine range & central tendency Number: B2.1; B2.3; B2.4; B2.5; B2.7; B2.8; B2.9; B2.10; B2.11; B2.12 Algebra: C2.1; C2.2; C2.3; C2.4; C3.1; c3.2 Data: D1.5 Spatial Sense: E2.5	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.
Mar	**How can we keep things in balance?** F: Financial goals; steps to achieve them; factors that help or interfere B: Inverse relationships; integers E: Counterclockwise & clockwise angles & rotations C: Equivalent representations C: Solve equations with multiple terms; add monomials C: Write equivalent & efficient code Number: B1.2; B2.1 Algebra: C1.1; C1.2; C1.3; C2.1; C2.2; C2.3; C3.1; C3.2 Spatial Sense: E1.4; E2.2 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 operation. 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.
Apr	**Scaling & splitting: How much now?** B: Solve problems involving ratios, percents, & rates D: Choose intervals & scales for graphs B: Multiply & divide by decimal tenths B: Divide decimals by whole numbers B: Multiply & divide by proper fractions D: Probability as a fraction, decimal & percent Number: B2.1; B2.3; B2.6; B2.7; B2.8; B2.9; B2.10; B2.11; B2.12 Data: D1.2; D1.3	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	**How can we make predictions and decide?** C: Rules for growing, shrinking, & linear patterns C: Algebraic expressions for linear patterns D: Visualize & analyze data D: Experimental & theoretical probabilities of two independent events; expressed as fraction, decimal & percent 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.
Jun	**Is this statement true?** C: Equivalent representations of patterns C: Add monomials C: Solve equations C: Solve & graph inequalities D: Misleading graphs C: Write, execute, & alter codes B: Number properties C: Test codes for efficiency 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.