Ontario

LONG-RANGE PLAN

Intermediate Division: Grades 7-8, 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: Intermediate Division (Grades 7-8)

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

Grade 7 Long-Range Plan

	Topics and Expectations	Connecting the Learning
Sep	**How do these compare?** B: Numbers to 1 billion as powers of 10 B: Rational numbers (positive & negative) B: Fractions and decimals between quantities C: Various patterns in various forms D: Various graphs & purposes E: Radius, diameter, circumference & pi E: Radius, diameter, area & pi 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).
Oct	**How are things changing?** E: Dilations & similar shapes B: Proportional & non-proportional C: Linear growing patterns (equations, graphs; rate of change; initial values) F: Exchange rates between currencies F: Interest rates (saving, borrowing) 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.

Nov	**How much is that?** B, E: Area of a square, perfect squares, & square roots B: Add & subtract fractions (GCF & LCM) B, C: Add & subtract integers (patterns) C: Add & subtract monomials B: Percentage increase & decrease D: Distribution as percentages; circle graphs B: Exponents as repeated multiplication B: Order of 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.
Dec	**What's the story?** D: Collect, organize, visualize & analyze data, including with circle graphs D: Impact of adding or removing data on measures of central tendency D: Tell data story (infographic) B: Story of numbers (integers; common factors; common multiples; relationships between numbers; equivalent rational 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		
Jan	**Scaling & splitting: How much now?** B: Multiply & divide decimals by decimals B: Multiply & divide fractions by fractions B, D: Fractions, percents & circle graphs B: Proportional situations (ratios, rates) E: Dilations, similar shapes C: Coding with sub-programs 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.

Feb	**How can we describe the space around us?** E: Draw 2D views of 3D objects and spaces using scales E: Location, change & transformation on a Cartesian plane C: Write & alter code with control structures E: Properties of cylinders, prisms, pyramids E: Volume, capacity & units of measure E: Nets & surface area of cylinders E: Volume of cylinders & prisms E, B: Solve length, area, volume problems C: Evaluate algebraic expressions 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,
Mar	**When are different operations useful?** B: Represent and solve types of +/−/×/÷ problems involving whole numbers, decimals, fractions, ratios, rates & percents B: Add & subtract integers, fractions, & decimals to make absolute comparisons & describe additive change B: Multiply & divide to make relative comparisons, & describe multiplicative change B: Represent repeated multiplication with exponents E: Solve length, area, & volume problems and convert between units C: Solve equations 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.
Apr	**Are things in balance?** F: Create, track & adjust budget B: Inverse relationships; integers B,E: Equalize proportional situations (including dilations & similar shapes) C: Equivalent representations for linear growing patterns C: Solve equations with multiple terms 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	**How can we make predictions and decide?** F: Identify reliable financial sources & factors that may influence financial decisions F: Compare interest rates & fees C, D: Represent linear patterns (rates) graphically & identify missing elements D: Independent vs dependent events D, B: Experimental & theoretical probabilities of two independent events & two dependent events happening C: Write & execute code 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	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.
Jun	**Is this statement true?** E: Match 2D drawings with objects at correct scale C: Equivalent representations of patterns C: Evaluate expressions & solve equations C: Solve & graph inequalities D: Misleading graphs C: Write, execute, & alter codes C: Test codes for efficiency B: Number properties 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.

Grade 8 Long-Range Plan

	Topics and Expectations	Connecting the Learning
Sep	**How do these compare?** B, E: Very large & small numbers & amounts; scientific notation E: Very large & small SI units B (E): Area & side length of squares, square roots, and irrational numbers B: Compare & order real numbers (rational vs irrational numbers) C: Relationships among rational numbers C: Various patterns in various forms B: Proportional vs non-proportional situations Number: B1.1; B1.2; B1.3 B1.4; B2.2; B2.8 Algebra: C1.1; C1.2; C1.3; C1.4 Spatial Sense: E2.1	Students compare numbers, metric units, patterns, and situations, and they describe relationships. They use scientific notation to compare very large and very small numbers, and make connections to metric units describing very large and very small units. They compare the areas and side lengths of perfect squares and encounter irrational numbers as they describe side length of imperfect squares They use nested diagrams to describe the relationship within the real number system. They compare and order real numbers and describe equivalent relationships among rational numbers. They compare a variety of patterns, in a variety of forms, and identify equivalent representations. They compare proportional and non-proportional situations and describe the difference.
Oct	**How are things changing?** C: Linear growing & shrinking patterns B: Proportional & non-proportional situations F: Simple vs compound interest (growth) E: Scale drawing to calculate lengths E: Tessellations & transformations Number: B2.8 Algebra: C1.1; C1.2; C1.3 Data: D1.1 Spatial Sense: E1.1; E1.3 Financial Literacy: F1.4	Students describe ways in which amounts and shapes change. They analyze linear growing and shrinking patterns represented in various forms and compare the rates at which they grow. They use algebraic expressions and equations to describe the increase or decrease. They recognize that linear patterns which pass through the origin are proportional and those that do not are not proportional. They identify the role of the constant when plotting a linear equation on a graph and describe the impact of the multiplier on the rate of growth. They compare graphs showing the growth rates of simple and compound interest They describe the impact that interest can have on long-term financial goals. They describe the change displayed in scale drawings and use the scale to calculate actual lengths and areas. They change the scale, and produce a similar drawing. They analyze and research different types of tessellations, identify the transformations that make up the designs, and create their own tessellating pattern.

Nov	**How much is that?** B: Add & subtract integers B: Multiply & divide integers C: Add & subtract monomials and add binomials C: Evaluate expressions E: Determine perimeter, circumference, area, and volume E: Unknown angle measures C: Solve algebraic equations Number: B1.2; B1.3; B1.4; B2.1; B2.2; B2.3; B2.4; B2.7; Algebra: C1.4; C2.1; C2.2; C2.3 Spatial Sense: E2.2; E2.3	Students use models, number sense, and spatial reasoning to describe and determine "how much". They solve problems involving the addition and subtraction of integers. They use concrete materials and number string patterns to explain the result when multiplying and dividing integers. They add and subtract monomials, and add binomials. They evaluate expressions that involve whole numbers and decimals to determine the perimeter, circumference, area, or volume of various objects. They use the properties of angles and the properties of various polygons to determine unknown angles. They solve equations to determine an unknown value.
Dec	**What's the story?** D: One- & two-variable data D: Collect, organize, visualize & analyze data, including with scatterplots D: Impact of outliers on measures of central tendency D: Tell data story (infographic) C: Algebraic stories (monomials, binomials; evaluating expressions) Algebra: C2.1; C2.2 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 continuous data and two variables. They organize the data sets in a table of values and represent their findings in appropriate graphs, including scatterplots. They use mathematical language to describe the relationship between the two variables and they create an infographic to share their findings and point of view. They add other relevant information to help tell their story. They also analyze other visual displays of data, and identify any misleading graphs or other strategies that might unfairly persuade an audience. In addition to telling stories with data, students also tell stories with algebraic expressions, including monomials and binomials. They use expressions to represent a given situation, and describe situations that could represent a given expression. They evaluate expressions with quantities that involve rational numbers.
C4: Integrated Modelling Task		
Jan	**Scaling & splitting: How much now?** B: Multiply & divide integers B: Multiply & divide fractions C: Mentally multiply and divide whole and decimal numbers by powers of 10 B: Proportional situations (ratios, rates) B: Problems involving fractions, decimals, & percents (including <1% and >100%) F: Exchange rates & payment methods Number: B1.4; B2.1; B2.3; B2.6; B2.7; B2.8 Financial Literacy: F1.1	Students apply their understanding of operations to integers and rational numbers as they solve problems involving scaling and splitting. They represent situations with drawings and algebraic expressions as they solve the equation. They mentally multiply and divide whole numbers and decimals by powers of 10, and describe situations where these strategies could be applied. They compare proportional situations and use ratios and rates to scale up quantities or split them. They use relationships between fractions, decimals, and percents to calculate a percentage increase or decrease and determine percentages greater than 100% and less than 1%. They use this understanding of rates and percentages to describe the advantages and disadvantages of different payment methods when dealing with multiple currencies and exchange rates.

Feb	**How can we describe the space around us?** E: Construct scaled objects and models given 2D views E: Reproduce scaled drawings and objects at different ratios E: Movement & change on a Cartesian plane E: Side lengths of squares & right triangles; the Pythagorean theorem E: Solve measurement problems (length, circumference, area, volume, surface area, & angle) C: Evaluate algebraic expressions Number: B2.1 Algebra: C2.1; C2.2; C2.3 Spatial Sense: E1.2; E1.3; E1.4; E2.2; E2.3; E2.4	Students compare, construct, identify and measure shapes and objects in space. They construct scaled objects and models given different views and perspectives. They reproduce scaled drawings and objects using different ratios. They visualize, construct, and compare dilations, rotations, reflections, and translations on a Cartesian plane, and describe patterns among the coordinates that help predict the location of a transformation. They explain how these spatial operations can be described using algebraic expressions. They compose and decompose composite shapes and objects creatively in order to apply formulas and indirectly measure attributes. When indirect measurement is not possible, they use different strategies to measure attributes directly. They recognize that the side length of a square is equal to the square root of its areas. They apply this to find the side lengths of a right triangle and in doing so recognize the Pythagorean relationship. They formalize this as a theorem and apply it to solving real-life problems.
Mar	**When are different operations useful?** B: Add & subtract integers, fractions, & decimals to compare & describe additive change B: Multiply & divide to make relative comparisons, describe multiplicative change, & solve for proportional situations C: Represent situations that involve adding & subtracting monomials & adding binomials E: Calculate lengths and areas on scale drawings; apply different scale ratios E: Predict transformations on a Cartesian plane E: Calculate unknown measurements Number: B1.4; B2.1; B2.3; B2.4; B2.5; B2.6; B2.7; B2.8 Algebra: C2.1; C2.2; C2.3; C2.4 Spatial Sense: E1.3; E1.4; E2.2; E2.3; E2.4	Students add and subtract integers, fractions, and decimals to make absolute comparisons and describe additive change. They multiply and divide integers, fractions, and decimals to make relative comparisons and describe additive change. They determine the appropriate operations that match a situation, write the equation, and then solve it. They represent and solve problems that involve adding and subtracting monomials and adding binomials. They use multiplication and division to compare proportional situations and the scaling factor or unit rate to determine unknown values. They use multiplication and division to determine the length and area of objects in a scale drawing, and to create drawings and models at different scales.

Apr	**Are things in balance?** F: Create long-term plan for financial goal F: Maintain balanced budget & track inputs & spending B, C, E: Solve for proportional situations (linear patterns; scale drawings; dilations) C: Solve equations with multiple terms C: Solve & graph inequalities Number: B2.1; B2.8 Algebra: C2.1; C2.2; C2.3; C2.4 Spatial Sense: E1.2; E1.3; E1.4 (dilations) Financial Literacy: F1.2; F1.3	Students describe ways to keep things in balance and equal. They create a long-term financial plan and identify ways to maintain a balanced budget that accounts for income, expenses, taxes, and spending, given different scenarios. They solve proportional situations using ratio tables, drawings, algebraic expressions, and graphs. They describe relationships among these representations and demonstrate how the quantities vary at the same rate. They apply this thinking to create dilations, similar shapes, scale drawings, and proportional linear patterns. Students also use a balance model to solve equations involving multiple terms, integers, and decimal numbers. They evaluate algebraic expressions involving rational numbers, 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	**How can we make predictions and decide?** F: Compare rates, fees, & incentives & determine best value & best choice C, D: Represent linear patterns (rates) graphically & identify missing elements D: Scatterplots, relationships & trends D: Independent vs dependent events D, B: Experimental & theoretical probabilities of multiple independent events & multiple dependent events happening Number: B1.4; B2.1 Algebra: C1.2; 1.3 Data: D1.3; D1.5; D1.6; D2.1; D2.2 Financial LIteracy: 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 compare interest rates, service fees, and incentive programs associated with different products and institutions and use this data to decide the best choice for given scenarios. They make predictions about missing elements in a linear pattern by determining the pattern rule, or plotting the data as a broken-line graph. They look at data presented in scatterplots and use the relationship between the two variables to make predictions and generate hypotheses. They describe the impact of outliers on data and adjust their conclusions accordingly. They compare the theoretical and experimental probabilities of multiple independent events happening and multiple dependent events happening. They use these probabilities to describe the degree of uncertainty they have in making a prediction. They also consider other probability scenarios (including those with data presented in Venn and tree diagrams) and describe their strategies for making a prediction.

Jun	**Is this statement true?** C: Equivalent representations of patterns C: Solve equations C: Solve & graph inequalities C: Write, execute, & alter codes D: Misleading graphs D: Relationships between 2-variable data D: Probability claims and the nature of uncertainty E: Visual proofs for Pythagorean theorem 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: D1.5; D1.6; D2.1; D2.2 Spatial Sense: E2.4	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 that a solution to an equation is true, including equations involving monomials and binomials. They solve and graph inequalities and explain conditions for when an inequality is true or false. They compare two sets of code, determine if they are equivalent, and describe what makes one more efficient than the other. They research and share visual proofs for the Pythagorean theorem and explain what makes the proofs convincing. They analyze misleading graphs and describe how the truth has been distorted. They look at different scatterplots and the relationship between the two variables, and decide whether the conclusions are justified. They examine probability data and decide whether the probability claims are reasonable.