



## Ontario Ministry Sample Long Range Planner: By Question and Mathology Grade 6

Question: How are things changing?	
Time: September	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Fraction, ratio, percent, &amp; rate problems, Place value relationships, Repeating, growing, shrinking, &amp; linear patterns, Represent linear patterns algebraically, Graph patterns &amp; data, Combinations of translations, reflections, &amp; rotations</b></p> <p>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</p> <p>They describe situations where change happens at a constant rate. They represent these linear patterns in different ways, including as algebraic expressions.</p> <p>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.</p> <p>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.</p> <p>They perform and describe combinations of translations, reflections, and rotations and describe the spatial changes involved in each.</p>	<p><u>Number Unit 1: Number Relationships and Place Value</u></p> <p>1: Representing Larger Numbers (to 1 000 000 and Beyond)            2: Representing Numbers in Different Forms</p> <p><u>Number Unit 2: Fluency with Whole Numbers</u></p> <p>10: Unit Rates            11: Exploring Ratios</p> <p><u>Number Unit 3: Fractions, Decimals, Percents, and Integers</u></p> <p>13: Representing Fractions            15: Representing Decimals            16: Comparing and Ordering Decimals</p> <p><u>Number Unit 4: Operations with Fractions, Decimals, and Percents</u></p> <p>29: Using Mental Math to Calculate Percents</p> <p><u>Patterning Unit 1: Patterning</u></p> <p>1: Investigating Patterns and Relationships in Tables and Graphs            2: Solving Problems            3: Representing Patterns in Different Ways  <b>4: Consolidation (Patterning)</b></p> <p><u>Data Management and Probability Unit 1: Data Management</u></p> <p>3: Collecting and Organizing Data            4: Interpreting Graphs to Solve Problems            5: Determining Range and Measures of Central Tendency</p> <p><u>Geometry Unit 2: Grids and Transformations</u></p> <p>7: Transformations on a Grid            9: Combining Transformations on a Grid  <b>10: Consolidation (Grids and Transformations)</b></p>

Question: How do these compare?	
Time: October	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Amounts to 1 million, including decimal amounts to thousandths, Integers, Fractions &amp; decimals, Relative &amp; absolute comparisons, Prime &amp; composite numbers, Types of data &amp; graphs, Convert smaller to larger SI units, Payment methods, Interest rates</b></p> <p>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</p> <p>They 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.</p> <p>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.</p> <p>They 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.</p>	<p><u>Number Unit 1: Number Relationships and Place Value</u>            1: Representing Larger Numbers (to 1 000 000 and Beyond)            2: Representing Numbers in Different Forms            3: Identifying Factors and Multiples            4: Identifying Prime and Composite Numbers  <b>5: Consolidation (Number Relationships and Place Value)</b></p> <p><u>Number Unit 2: Fluency with Whole Numbers</u>            6: Solving Problems with Whole Numbers</p> <p><u>Number Unit 3: Fractions, Decimals, Percents, and Integers</u>            13: Representing Fractions            14: Comparing and Ordering Fractions            15: Representing Decimals            16: Comparing and Ordering Decimals            17: Comparing and Ordering Fractions and Decimals            18: Relating Fractions, Decimals, and Percents            19: Representing Integers            20: Comparing and Ordering Integers  <b>21: Consolidation (Fractions, Decimals, Percents, and Integers)</b></p> <p><u>Data Management and Probability Unit 1: Data Management</u>            1: Exploring Line Graphs            5: Determining Range and Measures of Central Tendency</p> <p><u>Geometry Unit 1B: 2-D Shapes and Angles</u>            1: Measuring and Constructing Angles            2: Angle Properties and Relationships</p> <p><u>Number Unit 5: Financial Literacy</u>            31: Advantages and Disadvantages of Payment Methods            32: Interest Rates and Fees</p>

Question: What's the story?	
Time: November	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Story of numbers (prime &amp; composite; prime factors; divisibility), Representative sampling techniques, Collect, organize, visualize discrete &amp; continuous data (histogram; broken line), Measures of central tendency, Range, shape &amp; distribution of data, Tell data story (infographic)</b></p> <p>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</p> <p>They 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. They 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.</p>	<p><u>Number Unit 1: Number Relationships and Place Value</u> 3: Identifying Factors and Multiples 4: Identifying Prime and Composite Numbers <b>5: Consolidation (Number Relationships and Place Value)</b></p> <p><u>Number Unit 2: Fluency with Whole Numbers</u> 6: Solving Problems with Whole Numbers 7: Estimating Reasonableness of Solutions 8: The Order of Operations 9: Mental Math Strategies</p> <p><u>Number Unit 4: Operations with Fractions, Decimals, and Percents</u> 29: Using Mental Math to Calculate Percents</p> <p><u>Data Management and Probability Unit 1: Data Management</u> 2: Exploring Histograms 3: Collecting and Organizing Data 4: Interpreting Graphs to Solve Problems 5: Determining Range and Measures of Central Tendency <b>6: Consolidation (Data Management)</b></p>

Question: How much is that?	
Time: December	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Round repeating &amp; terminating decimals, Add &amp; subtract decimals thousandths, &amp; fractions with unlike denominators, Mental calculation of percents, Multiply &amp; divide by decimal tenths, Divide decimals by whole numbers, Multiply &amp; divide by proper fractions, Add monomials, evaluate algebraic expressions, &amp; solve equations, Area of various shapes, Convert smaller to larger SI units</b></p> <p>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</p> <p>They 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.</p> <p>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.</p> <p>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.</p>	<p><u>Number Unit 2: Fluency with Whole Numbers</u>            6: Solving Problems with Whole Numbers            7: Estimating Reasonableness of Solutions</p> <p><u>Number Unit 3: Fractions, Decimals, Percents, and Integers</u>            15: Representing Decimals            16: Comparing and Ordering Decimals  <b>21: Consolidation (Fractions, Decimals, Percents, and Integers)</b></p> <p><u>Number Unit 4: Operations with Fractions, Decimals, and Percents</u>            22: Multiplying Decimals by 1-Digit Numbers            23: Multiplying 3-Digit Whole Numbers by Decimal Tenths            24: Dividing Decimals by 1-Digit Numbers            25: Dividing 3-Digit Whole Numbers by Decimal Tenths            26: Adding and Subtracting Decimals            27: Adding and Subtracting Fractions            28: Multiplying and Dividing Whole Numbers by Proper Fractions            29: Using Mental Math to Calculate Percents  <b>30: Consolidation (Operations with Fractions, Decimals, and Percents)</b></p> <p><u>Patterning Unit 2: Variables and Equations</u>            5: Investigating Algebraic Expressions            6: Investigating Equality in Equations            7: Representing Generalizations in Patterns            8: Writing and Solving Equations</p> <p><u>Measurement Unit 1B: Length, Mass, Capacity, and Area</u>            1: Relationships Among Metric Units            2: Determining Area</p>

Question: How can we describe the space around us?	
Time: January	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Evaluate expressions &amp; solve equations, Code movement (Cartesian plane Q1), Construct 3-D objects given 2-D views, Reflex angles, Solve for unknown angles, Properties of quadrilaterals, Measure attributes (length, mass, capacity, area) &amp; solve problems, Create nets of prisms &amp; pyramids, Distances on Cartesian Plane, expressed with integers</b></p> <p>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</p> <p>They compare, construct, identify and measure shapes and objects in space. They construct 3-D objects given 2-D views. They create nets of prisms and pyramids and describe the 2-D faces of these 3-D 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. They solve equations, including those with multiple terms and whole numbers, to find unknown areas and side lengths.</p> <p>They 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.</p>	<p><u>Number Unit 3: Fractions, Decimals, Percents, and Integers</u>            19: Representing Integers</p> <p><u>Patterning Unit 2: Variables and Equations</u>            5: Investigating Algebraic Expressions            6: Investigating Equality in Equations            7: Representing Generalizations in Patterns            8: Writing and Solving Equations</p> <p><u>Patterning Unit 3: Coding</u>            11: Altering Code for a Game            12: Making Shapes            13: Classifying Polygons  <b>14: Consolidation (Coding)</b></p> <p><u>Geometry Unit 1B: 2-D Shapes and Angles</u>            1: Measuring and Constructing Angles            2: Angle Properties and Relationships            3: Properties of Quadrilaterals            4: Constructing 3-D Objects  <b>5: Consolidation (2-D Shapes and Angles)</b></p> <p><u>Geometry Unit 2: Grids and Transformations</u>            6: Plotting and Reading Coordinates            7: Transformations on a Grid            8: Rotating 2-D shapes up to 360°            9: Combining Transformations on a Grid  <b>10: Consolidation (Grids and Transformations)</b></p> <p><u>Measurement Unit 1B: Length, Mass, Capacity, and Area</u>            1: Relationships Among Metric Units            2: Determining Area            3: Surface Area of Prisms and Pyramids  <b>4: Consolidation (Length, Mass, Capacity, and Area)</b></p>

Question: When are different operations useful?	
Time: February	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Represent types of <math>+/ - / \times / \div</math> situations involving whole numbers, decimals, fractions, ratios, rates &amp; percents, Relationship between operations, Represent situations with monomials and solve, Solve equations &amp; inequalities, Determine range &amp; central tendency, Surface area of prisms &amp; pyramids</b></p> <p>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</p> <p>They 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.</p>	<p><u>Number Unit 2: Fluency with Whole Numbers</u>            6: Solving Problems with Whole Numbers            7: Estimating Reasonableness of Solutions            8: The Order of Operations            9: Mental Math Strategies            10: Unit Rates            11: Exploring Ratios  <b>12: Consolidation (Fluency with Whole Numbers)</b>  <u>Number Unit 4: Operations with Fractions, Decimals, and Percents</u>            22: Multiplying Decimals by 1-Digit Numbers            23: Multiplying 3-Digit Whole Numbers by Decimal Tenths            24: Dividing Decimals by 1-Digit Numbers            25: Dividing 3-Digit Whole Numbers by Decimal Tenths            26: Adding and Subtracting Decimals            27: Adding and Subtracting Fractions            28: Multiplying and Dividing Whole Numbers by Proper Fractions            29: Using Mental Math to Calculate Percents  <b>30: Consolidation (Operations with Fractions, Decimals, and Percents)</b>  <u>Patterning Unit 2: Variables and Equations</u>            5: Investigating Algebraic Expressions            6: Investigating Equality in Equations            7: Representing Generalizations in Patterns            8: Writing and Solving Equations            9: Solving and Graphing Inequalities  <b>10: Consolidation (Variables and Equations)</b>  <u>Patterning Unit 3: Coding</u>            11: Altering Code for a Game            12: Making Shapes            13: Classifying Polygons  <b>14: Consolidation (Coding)</b>  <u>Data Management and Probability Unit 1: Data Management</u>            4: Interpreting Graphs to Solve Problems  <b>6: Consolidation (Data Management)</b>  <u>Measurement Unit 1B: Length, Mass, Capacity, and Area</u>            3: Surface Area of Prisms and Pyramids</p>

Question: How can we keep things in balance?	
Time: March	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Inverse relationships; integers, Equivalent representations, Solve equations with multiple terms; add monomials, Write equivalent &amp; efficient code, Counterclockwise &amp; clockwise angles &amp; rotations, Financial goals; steps to achieve them; factors that help or interfere</b></p> <p>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</p> <p>They 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.</p> <p>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.</p>	<p><u>Number Unit 2: Fluency with Whole Numbers</u>            6: Solving Problems with Whole Numbers            7: Estimating Reasonableness of Solutions            8: The Order of Operations            9: Mental Math Strategies</p> <p><u>Number Unit 3: Fractions, Decimals, Percents, and Integers</u>            19: Representing Integers</p> <p><u>Number Unit 4: Operations with Fractions, Decimals, and Percents</u>            28: Multiplying and Dividing Whole Numbers by Proper Fractions</p> <p><u>Patterning Unit 2: Variables and Equations</u>            5: Investigating Algebraic Expressions            6: Investigating Equality in Equations            7: Representing Generalizations in Patterns            8: Writing and Solving Equations</p> <p><u>Patterning Unit 3: Coding</u>            11: Altering Code for a Game            12: Making Shapes            13: Classifying Polygons  <b>14: Consolidation (Coding)</b></p> <p><u>Geometry Unit 1B: 2-D Shapes and Angles</u>            1: Measuring and Constructing Angles            2: Angle Properties and Relationships  <b>5: Consolidation (2-D Shapes and Angles)</b></p> <p><u>Geometry Unit 2: Grids and Transformations</u>            7: Transformations on a Grid            9: Combining Transformations on a Grid  <b>10: Consolidation (Grids and Transformations)</b></p> <p><u>Number Unit 5: Financial Literacy</u>            31: Advantages and Disadvantages of Payment Methods            32: Interest Rates and Fees            33: Planning for Financial Goals  <b>34: Consolidation (Financial Literacy)</b></p>

Question: Scaling & splitting: How much now?	
Time: April	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Solve problems involving ratios, percents, &amp; rates, Multiply &amp; divide by decimal tenths, Divide decimals by whole numbers, Multiply &amp; divide by proper fractions, Choose intervals &amp; scales for graphs, Probability as a fraction, decimal &amp; percent</b></p> <p>Number: B2.1; B2.3; B2.6; B2.7; B2.8; B2.9; B2.10; B2.11; B2.12 Data: D1.2; D1.3</p> <p>They 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.</p>	<p><u>Number Unit 1: Number Relationships and Place Value</u> 3: Identifying Factors and Multiples 4: Identifying Prime and Composite Numbers <b>5: Consolidation (Number Relationships and Place Value)</b></p> <p><u>Number Unit 2: Fluency with Whole Numbers</u> 6: Solving Problems with Whole Numbers 7: Estimating Reasonableness of Solutions 8: The Order of Operations 9: Mental Math Strategies 10: Unit Rates 11: Exploring Ratios <b>12: Consolidation (Fluency with Whole Numbers)</b></p> <p><u>Number Unit 4: Operations with Fractions, Decimals, and Percents</u> 22: Multiplying Decimals by 1-Digit Numbers 23: Multiplying 3-Digit Whole Numbers by Decimal Tenths 24: Dividing Decimals by 1-Digit Numbers 26: Adding and Subtracting Decimals 27: Adding and Subtracting Fractions 28: Multiplying and Dividing Whole Numbers by Proper Fractions 29: Using Mental Math to Calculate Percents</p> <p><u>Data Management and Probability Unit 1: Data Management</u> 1: Exploring Line Graphs 2: Exploring Histograms 3: Collecting and Organizing Data 4: Interpreting Graphs to Solve Problems 5: Determining Range and Measures of Central Tendency</p>



Question: How can we make predictions and decide?	
Time: May	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Rules for growing, shrinking, &amp; linear patterns, Algebraic expressions for linear patterns, Visualize &amp; analyze data, Experimental &amp; theoretical probabilities of two independent events; expressed as fraction, decimal &amp; percent</b></p> <p>Number: B1.6; B2.3            Algebra: C1.1; C1.2; C1.3; C1.4            Data: D1.5; D1.6; D2.1; D2.2</p> <p>They 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.</p>	<p><u>Number Unit 3: Fractions, Decimals, Percents, and Integers</u>            13: Representing Fractions            18: Relating Fractions, Decimals, and Percents  <b>21: Consolidation (Fractions, Decimals, Percents, and Integers)</b></p> <p><u>Number Unit 4: Operations with Fractions, Decimals, and Percents</u>            29: Using Mental Math to Calculate Percents</p> <p><u>Patterning Unit 2: Variables and Equations</u>            5: Investigating Algebraic Expressions            6: Investigating Equality in Equations            7: Representing Generalizations in Patterns            8: Writing and Solving Equations</p> <p><u>Data Management and Probability Unit 1: Data Management</u>            4: Interpreting Graphs to Solve Problems  <b>6: Consolidation (Data Management)</b></p> <p><u>Data Management and Probability Unit 2: Probability</u>            7: Exploring Theoretical Probability            8: Independent Events            9: Conducting Experiments  <b>10: Consolidation (Probability)</b></p>

Question: Is this statement true?	
Time: June	
Ontario Ministry Topics and Expectations	Pearson Mathology Lessons
<p><b>Number properties, Equivalent representations of patterns, Add monomials, Solve equations, Solve &amp; graph inequalities, Misleading graphs, Write, execute, &amp; alter codes, Test codes for efficiency</b></p> <p>Number: B2.1 Algebra: C2.1; C2.2; C2.4; C3.1; C3.2 Data: D1.6</p> <p>They 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.</p>	<p><u>Number Unit 2: Fluency with Whole Numbers</u> 6: Solving Problems with Whole Numbers 7: Estimating Reasonableness of Solutions 8: The Order of Operations 9: Mental Math Strategies</p> <p><u>Number Unit 4: Operations with Fractions, Decimals, and Percents</u> 26: Adding and Subtracting Decimals 27: Adding and Subtracting Fractions 28: Multiplying and Dividing Whole Numbers by Proper Fractions</p> <p><u>Patterning Unit 2: Variables and Equations</u> 5: Investigating Algebraic Expressions 6: Investigating Equality in Equations 7: Representing Generalizations in Patterns 8: Writing and Solving Equations</p> <p><u>Patterning Unit 3: Coding</u> 11: Altering Code for a Game 12: Making Shapes 13: Classifying Polygons <b>14: Consolidation (Coding)</b></p> <p><u>Data Management and Probability Unit 1: Data Management</u> 3: Collecting and Organizing Data</p>