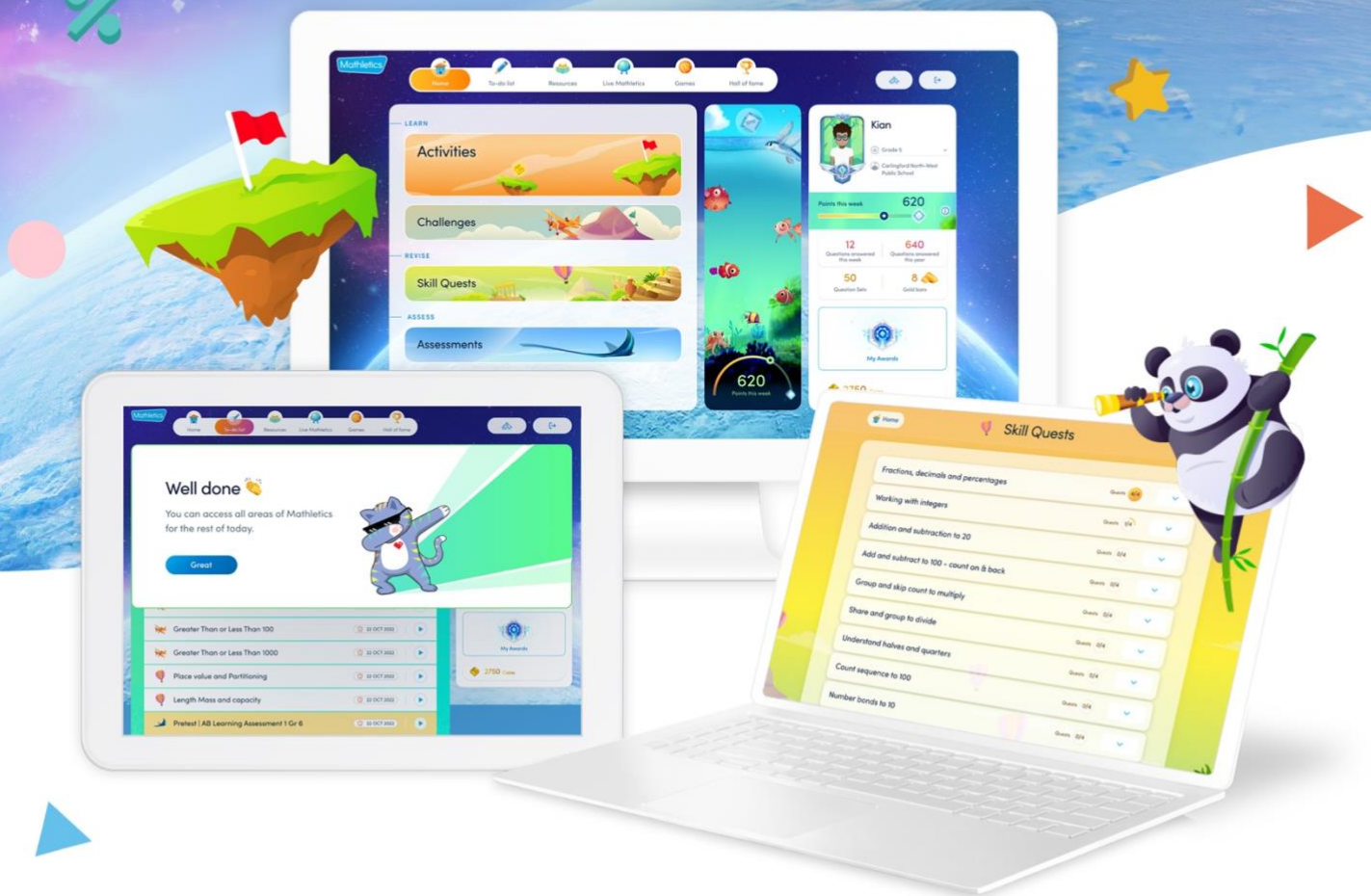
Mathletics

Ontario Curriculum

Activities (Courses) and Skill Quests



Grades 9-10

September, 2025

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Activities (Courses) & Skill Quests

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Grade 9

B. Number

B1. Development of Numbers and Number Sets: demonstrate an understanding of the development and use of numbers, and make connections between sets of numbers

B1.1 Development and Use of Numbers: research a number concept to tell a story about its development and use in a specific culture, and describe its relevance in a current context	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

B1.2 Number Sets: describe how various subsets of a number system are defined, and describe similarities and differences between these subsets	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Real numbers	Distinguishing between different sets of numbers

B1.3 Number Sets: use patterns and number relationships to explain density, infinity, and limit as they relate to number sets	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Infinite nature of sets of real numbers	Understanding the infinite nature of number sets
Pattern & number relationships	Finding the nth term of a linear sequence
	Recognizing geometric sequences & common ratios

B2. Powers: Represent numbers in various ways, evaluate powers, and simplify expressions by using the relationships between powers and their exponents

B2.1 Powers: analyse, through the use of patterning, the relationship between the sign and size of an exponent and the value of a power, and use this relationship to express numbers in scientific notation and evaluate powers	
Course Topics	**Activities**
B2 Scientific notation	Scientific Notation 1
	Scientific Notation
	Scientific Notation 2

	Scientific notation to decimal
	Ordering Scientific Notation
Topics	**Skill Quests**
Investigate exponent notation	Investigating exponent notation
Scientific notation	Writing numbers in scientific notation
	Scientific notation: small numbers
	Scientific notation: large numbers

B2.2	
Powers: analyse, through the use of patterning, the relationships between the exponents of powers and the operations with powers, and use these relationships to simplify numeric and algebraic expressions	
Course Topics	**Activities**
B2 Powers	Exponent Notation
	Powers of Integers
	Exponent Form to Numbers
	Properties of Exponents
	Simplifying with Exponent Laws 1
	Simplifying with Exponent Laws 2
	Integer Exponents
	The Zero Exponent
	Zero Exponent and Algebra
	Exponent Notation and Algebra
	Multiplication with Exponents
	Exponent Laws and Algebra
	Exponent Laws with Brackets
Topics	**Skill Quests**
Exponent laws	Applying exponent laws with negative exponents
	Applying exponent laws for multiplication
	Applying exponent laws for division
	Applying exponent laws for power of a power
	Applying the zero exponent law
	Applying mixed exponent laws
	Exponent laws for multiplication: algebraic bases
	Exponent laws for division: algebraic bases
	Exponent laws, power of a power: algebraic bases
	Simplifying expressions with negative powers
	Exponent laws for zero exponent: algebraic bases
	Mixed exponent laws: algebraic bases
	Numerical expressions: negative exponents

B3. Number Sense and Operations: apply an understanding of rational numbers, ratios, rates, percentages, and proportions, in various mathematical contexts, and to solve problems

B3.1	
Rational Numbers: apply an understanding of integers to describe location, direction, amount, and changes in any of these, in various contexts	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**

Integers	Investigating & interpreting integers
Opposites on the number line	Opposites on the number line
Graph in the 4 quadrants	Graphing coordinates in the 4 quadrants
	Graphing coordinates across the x-axis & y-axis
Graph rational numbers	Placing rational numbers on the number line
	Graphing rational numbers on the coordinate plane
Order rational numbers	Exploring the everyday language of integers
	Statements of order: rational numbers
	Interpreting meanings of integers in context

B3.2 Rational Numbers: apply an understanding of unit fractions and their relationship to other fractional amounts, in various contexts, including the use of measuring tools	
Course Topics	**Activities**
B3 Fractions	Unit Fractions
	Divide by a Unit Fraction
	Fraction Length Models 1
Topics	**Skill Quests**
Calculate unit rates	Calculating unit rates

B3.3 Rational Numbers: apply an understanding of integers to explain the effects that positive and negative signs have on the values of ratios, rates, fractions, and decimals, in various contexts	
Course Topics	**Activities**
B3 Fractions	Add: No Common Denominator
	Add Unlike Mixed Numbers
	Subtract: No Common Denominator
	Subtract Mixed Numbers: Signs Differ
Topics	**Skill Quests**
Compare & order integers	Comparing & ordering integers

B3.4 Applications: solve problems involving operations with positive and negative fractions and mixed numbers, including problems involving formulas, measurements, and linear relations, using technology when appropriate	
Course Topics	**Activities**
B3 Fractions	Multiply Two Fractions 2
	Divide Fractions by Fractions 2
	Divide Mixed Numbers with Signs
	Operations with Fractions
Topics	**Skill Quests**
Positive & negative fractions	Adding & subtracting signed fractions
	Multiplying & dividing signed fractions

B3.5 Applications: Pose and solve problems involving rates, percentages, and proportions in various contexts, including contexts connected to real-life applications of data, measurement, geometry, linear relations, and financial literacy	
Course Topics	**Activities**
B3 Rates, ratio & percents	Rates Word Problems
	Converting Rates
	Rates Calculations
	Rates of Change
	Ratio Word Problems
	Word Problems: Ratio
	Best Buy
	Unitary Method
	Percentage Word Problems
	Percentage Change: Increase and Decrease
	Percent Increase and Decrease
	Solve Percent Equations
	Commission
	Profit and Loss
Topics	**Skill Quests**
Pose & solve real-life Problems	Solving real-life percentage problems
	Solving real-life ratio problems
	Real-life ratio & proportions problems, bar models

C. Algebra

C1. Algebraic Expressions and Equations: demonstrate an understanding of the development and use of algebraic concepts and of their connection to numbers, using various tools and representations

C1.1 Development and Use of Algebra: research an algebraic concept to tell a story about its development and use in a specific culture, and describe its relevance in a current context	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

C1.2 Algebraic Expressions and Equations: create algebraic expressions to generalize relationships expressed in words, numbers, and visual representations, in various contexts	
Course Topics	**Activities**
C1 Expressions & operations	Writing Algebraic Expressions
	Find the Pattern Rule
	Pattern Rules and Tables
Topics	**Skill Quests**
Write algebraic expressions	Writing algebraic expressions

C1.3 Algebraic Expressions and Equations: compare algebraic expressions using concrete, numerical, graphical, and algebraic methods to identify those that are equivalent, and justify their choices	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Equivalent expressions	Verifying equivalent expressions: linear sequences
	Equivalent algebraic expressions

C1.4 Algebraic Expressions and Equations: simplify algebraic expressions by applying properties of operations of numbers, using various representations and tools, in different contexts	
Course Topics	**Activities**
C1 Expressions & operations	Algebraic Multiplication
	Dividing Expressions
	Expanding Brackets
	Expanding with Negatives
	Expand then Simplify
Topics	**Skill Quests**
Apply properties to simplify expressions	Applying properties to simplify expressions

C1.5 Algebraic Expressions and Equations: create and solve equations for various contexts, and verify their solutions	
Course Topics	**Activities**
C1 Equations	Equations with Grouping Symbols
	Solve Multi-Step Equations
	Equations with Decimals
	Equations: Variables, Both Sides
	Equations with Fractions
	Equations to Solve Problems
	Checking Solutions
Topics	**Skill Quests**
Create & solve equations	Translating & solving word problems
	2-step linear equations, integer solutions
	2-step linear equations, non-integer solutions
	3-step linear equations
	Linear equations with variables on both sides
	Linear equations with grouping symbols

C2. Coding: apply coding skills to represent mathematical concepts and relationships dynamically, and to solve problems, in algebra and across the other strands

C2.1 Coding: use coding to demonstrate an understanding of algebraic concepts including variables, parameters, equations, and inequalities	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

C2.2 Coding: create code by decomposing situations into computational steps in order to represent mathematical concepts and relationships, and to solve problems	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

C2.3 Coding: read code to predict its outcome, and alter code to adjust constraints, parameters, and outcomes to represent a similar or new mathematical situation	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

C3. Application of Relations: represent and compare linear and non-linear relations that model real-life situations, and use these representations to make predictions

C3.1 Application of Linear and Non-Linear Relations: compare the shapes of graphs of linear and non-linear relations to describe their rates of change, to make connections to growing and shrinking patterns, and to make predictions	
Course Topics	**Activities**
C3 Linear & non-linear graphs	Identifying Graphs
	Non Linear Graphs
	Graphing Parabolas
	Graphing Cubics
	Graphing Exponentials
	Graphing Circles
	Graphing Hyperbolas
Topics	**Skill Quests**
Graphs of linear & non-linear relations	Exploring graphs of non-linear relationships
	Graphs of linear & non-linear relationships

C3.2 Application of Linear and Non-Linear Relations: represent linear relations using concrete materials, tables of values, graphs, and equations, and make connections between the various representations to demonstrate an understanding of rates of change and initial values	
Course Topics	**Activities**
C3 Linear & non-linear graphs	Graphing from a Table of Values
	Reading Values from a Line
	Determining a Rule for a Line
Topics	**Skill Quests**
Linear relations	Graphing a linear relation by making a table
	Equations in the form y = ax + b
	Determining rate of change & initial value

C3.3 Application of Linear and Non-Linear Relations: compare two linear relations of the form y = ax + b graphically and algebraically, and interpret the meaning of their point of intersection in terms of a given context	
Course Topics	**Activities**
C3 Linear & non-linear graphs	Intersecting Linear Regions
	Modelling Linear Relationships
	Gradients for Real
	Simultaneous Linear Equations
Topics	**Skill Quests**
Simultaneous equations	Understanding simultaneous equations
	Solving simultaneous equations graphically
	Solving simultaneous equations algebraically
	Checking answers to simultaneous equations

C4. Characteristics of Relations: demonstrate an understanding of the characteristics of various representations of linear and non-linear relations, using tools, including coding when appropriate

C4.1 Characteristics of Linear and Non-Linear Relations: compare characteristics of graphs, tables of values, and equations of linear and non-linear relations	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Compare linear relationships	Comparing linear relationships, Cartesian plane

C4.2 Characteristics of Linear and Non-Linear Relations: graph relations represented as algebraic equations of the forms x = k, y = k, x + y = k, x – y = k, ax + by = k, and xy = k, and their associated inequalities, where a, b, and k are constants, to identify various characteristics and the points and/or regions defined by these equations and inequalities	
Course Topics	**Activities**

C4 Linear & non-linear equations	Horizontal and Vertical Lines
Topics	**Skill Quests**
Graph horizontal & vertical lines	Graphing horizontal & vertical lines

C4.3 Characteristics of Linear and Non-Linear Relations: translate, reflect, and rotate lines defined by y = ax, where a is a constant, and describe how each transformation affects the graphs and equations of the defined lines	
Course Topics	**Activities**
C4 Linear & non-linear equations	Are they Parallel?
	Perpendicular and Parallel Lines
	Are they Perpendicular?
Topics	**Skill Quests**
Teacher directed	

C4.4 Characteristics of Linear and Non-Linear Relations: determine the equations of lines from graphs, tables of values, and concrete representations of linear relations by making connections between rates of change and slopes, and between initial values and y-intercepts, and use these equations to solve problems	
Course Topics	**Activities**
C4 Linear & non-linear equations	Slope of a Line
	Equation of a Line 1
	Intercepts
	Which Straight Line?
	Equation from Point and Gradient
	Equation from Two Points
	General Form of a Line
	Solve Systems by Graphing
	Breakeven Point
Topics	**Skill Quests**
Model real-life relationships	Modelling real-life relationships: constant rates
	Determining the equation from a graph

D. Data

D1. Collection, Representation, and Analysis of Data: describe the collection and use of data, and represent and analyse data involving one and two variables

D1.1 Application of Data: identify a current context involving a large amount of data, and describe potential implications and consequences of its collection, storage, representation, and use	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

D1.2 Representation and Analysis of Data: represent and statistically analyse data from a real-life situation involving a single variable in various ways, including the use of quartile values and box plots	
Course Topics	**Activities**
D1 Data analysis & D2 Data sampling	Calculating Interquartile Range
	Box-and-Whisker Plots 1
	Box-and-Whisker Plots 2
Topics	**Skill Quests**
Box plots	Constructing box plots
	Analysing box plots
Define quartiles & interquartile range	Defining quartiles & interquartile range

D1.3 Representation and Analysis of Data: create a scatter plot to represent the relationship between two variables, determine the correlation between these variables by testing different regression models using technology, and use a model to make predictions when appropriate	
Course Topics	**Activities**
D1 Data analysis & D2 Data sampling	Data Analysis: Scatter Plots
	Scatter Plots
	Correlation
Topics	**Skill Quests**
Scatter plots	Constructing scatter plots
	Analysing scatter plots

D2. Mathematical Modelling: apply the process of mathematical modelling, using data and mathematical concepts from other strands, to represent, analyse, make predictions, and provide insight into real-life situations

D2.1 Application of Mathematical Modelling: describe the value of mathematical modelling and how it is used in real life to inform decisions	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

D2.2 Process of Mathematical Modelling: identify a question of interest requiring the collection and analysis of data, and identify the information needed to answer the question	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

D2.3 Process of Mathematical Modelling: create a plan to collect the necessary data on the question of interest from an appropriate source, identify assumptions, identify what may vary and what may remain the same in the situation, and then carry out the plan	
Course Topics	**Activities**
D1 Data analysis & D2 Data sampling	Methods of Data Sampling
	Data sampling
Topics	**Skill Quests**
Construct & conduct a survey	Constructing & conducting a survey

D2.4 Process of Mathematical Modelling: Determine ways to display and analyse the data in order to create a mathematical model to answer the original question of interest, taking into account the nature of the data, the context, and the assumptions made	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

D2.5 Process of Mathematical Modelling: report how the model can be used to answer the question of interest, how well the model fits the context, potential limitations of the model, and what predictions can be made based on the model	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

E. Geometry and Measurement

E1. Geometric and Measurement Relationships: demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations

E1.1 Geometric and Measurement Relationships: research a geometric concept or a measurement system to tell a story about its development and use in a specific culture or community, and describe its relevance in connection to careers and to other disciplines	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

E1.2 Geometric and Measurement Relationships: create and analyse designs involving geometric relationships and circle and triangle properties, using various tools	
Course Topics	**Activities**

E1 Angle relationships	Parallel Lines
	Introduction to Angles on Parallel Lines 1
	Angles on Parallel Lines
	Introduction to Angles on Parallel Lines 3
	Are the Lines Parallel?
	Circle Theorems
Topics	**Skill Quests**
Tessellations	Investigating tessellations using transformations

E1.3 Geometric and Measurement Relationships: solve problems involving different units within a measurement system and between measurement systems, including those from various cultures or communities, using various representations and technology, when appropriate	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Unit conversions	Converting between metric & imperial units: length
	Converting between metric & imperial units: mass
Solve problems using scale drawings	Solving problems using scale drawings

E1.4 Geometric and Measurement Relationships: show how changing one or more dimensions of a two-dimensional shape and a three-dimensional object affects perimeter/circumference, area, surface area, and volume, using technology when appropriate	
Course Topics	**Activities**
E1 Surface area & volume	Perimeter, Area, Dimension Change
	Surface Area: Square Pyramids
	Surface Area: Rectangular Pyramids
	Surface Area: Cones
	Surface Area: Rearrange Formula
Topics	**Skill Quests**
Teacher directed	

E1.5 Geometric and Measurement Relationships: solve problems involving the side-length relationship for right triangles in real-life situations, including problems that involve composite shapes	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Real-life problems, Pythagorean Theorem	Pythagorean Theorem: bearings
	Solving real-life problems, Pythagorean Theorem

E1.6 Geometric and Measurement Relationships: solve problems using the relationships between the volume of prisms and pyramids and between the volume of cylinders and cones, involving various units of measure

Course Topics	Activities
E1 Surface area & volume	Volume: Composite Figures
	Volume: Pyramids
	Volume: Cylinders
	Volume: Cones
Topics	**Skill Quests**
Volume of pyramids & prisms	Finding the volume of pyramids
	Finding the volume of any prisms
	Finding the volume of composite/irregular prisms
	Finding the volume of rectangular prisms
	Finding the height of prisms
	Finding missing dimensions of rectangular prisms
	Finding the volume of triangular prisms
	Finding the missing dimension of triangular prisms
Volume of cylinders & cones	Developing the formula for the volume of cylinders
	Finding the volume of cones

F. Financial Literacy

F1. Financial Decisions: demonstrate the knowledge and skills needed to make informed financial decisions

F1.1 Financial Decisions: identify a past or current financial situation and explain how it can inform financial decisions, by applying an understanding of the context of the situation and related mathematical knowledge	
Course Topics	**Activities**
Teacher directed	
Topics	**Skill Quests**
Teacher directed	

F1.2 Financial Decisions: identify financial situations that involve appreciation and depreciation, and use associated graphs to answer related questions	
Course Topics	**Activities**
F1 Appreciation & depreciation	Future Value of Investments 1
	Future Value of Investments 2
	Depreciation
	Straight Line Depreciation
	Declining Balance Depreciation
Topics	**Skill Quests**
Appreciation & depreciation	Understanding appreciation & depreciation

F1.3 Financial Decisions: compare the effects that different interest rates, lengths of borrowing time, ways in which interest is calculated, and amounts of down payments have on the overall costs associated with purchasing goods or services, using appropriate tools	
Course Topics	**Activities**

F1 Interest rates, loans & budgets	Simple Interest
	Compound Interest
	Compound Interest by Formula
	Purchase Options
	Successive Discounts
	Credit Card Repayments
	Comparing Loans
	Comparing Home Loans
Topics	**Skill Quests**
Calculate interest	Calculating simple interest
	Calculating compound interest
	Comparing simple & compound interest

F1.4 Financial Decisions: modify budgets displayed in various ways to reflect specific changes in circumstances, and provide a rationale for the modifications	
Course Topics	**Activities**
F1 Interest rates, loans & budgets	Budgeting
Topics	**Skill Quests**
Teacher directed	

Grade 10, Academic

1 Quadratic Relations of the Form $y = ax^2 + bx + c$

1.1 Investigating the Basic Properties of Quadratic Relations

Collect data that can be represented as a quadratic relation, from experiments using appropriate equipment and technology, or from secondary sources; graph the data and draw a curve of best fit, if appropriate, with or without the use of technology.	
Course Topics	**Activities**
Teacher directed	

Determine, through investigation with and without the use of technology, that a quadratic relation of the form y = ax2 + bx + c (a ≠ 0) can be graphically represented as a parabola, and that the table of values yields a constant second difference.	
Course Topics	**Activities**
Quadratic Relations 1	Graphing Parabolas

Identify the key features of a graph of a parabola, and use the appropriate terminology to describe them.	
Course Topics	**Activities**
Quadratic Relations 1	Vertex of a Parabola
	Parabolas and Marbles
	Parabolas and Rectangles

Compare, through investigation using technology, the features of the graph of $y = x^2$ and the graph of $y = 2^x$, and determine the meaning of a negative exponent and of zero as an exponent	
Course Topics	**Activities**
Quadratic Relations 1	Graphing Exponentials

1.2 Relating the Graph of $y = x^2$ and Its Transformations

Identify, through investigation using technology, the effect on the graph of $y = x^2$ of transformations by considering separately each parameter a, h, and k	
Course Topics	**Activities**
Quadratic Relations 1	Symmetries of Graphs 1

Explain the roles of a, h, and k in $y = a(x – h)^2 + k$, using the appropriate terminology to describe the transformations, and identify the vertex and the equation of the axis of symmetry.	
Course Topics	**Activities**
Quadratic Relations 1	Vertex of a Parabola
	Symmetries of Graphs 1

Sketch, by hand, the graph of $y = a(x – h)^2 + k$ by applying transformations to the graph of $y = x^2$.

Course Topics	Activities
Teacher directed	

Determine the equation, in the form $y = a(x - h)^2 + k$, of a given graph of a parabola.	
Course Topics	**Activities**
Teacher directed	

1.3 Solving Quadratic Equations

Expand and simplify second-degree polynomial expressions, using a variety of tools and strategies.	
Course Topics	**Activities**
Quadratic Relations 1	Expand then Simplify
	Expanding Binomial Products
	Special Binomial Products

Factor polynomial expressions involving common factors, trinomials, and differences of squares, using a variety of tools and strategies.	
Course Topics	**Activities**
Quadratic Relations 1	Grouping in Pairs
	Factoring Quadratics 1
	Factoring Quadratics 2

Determine, through investigation, and describe the connection between the factors of a quadratic expression and the x-intercepts of the graph of the corresponding quadratic relation, expressed in the form $y = a(x - r)(x - s)$.	
Course Topics	**Activities**
Quadratic Relations 1	Quadratic Equations 1
	Quadratic Equations 2
	Solve Quadratics: Coefficient of 1

Interpret real and non-real roots of quadratic equations, through investigation using graphing technology, and relate the roots to the x-intercepts of the corresponding relations.	
Course Topics	**Activities**
Quadratic Relations 1	Checking Quadratic Solutions
	Quadratic Formula
	The Discriminant
	Roots of the Quadratic

Express $y = ax^2 + bx + c$ in the form $y = a(x - h)^2 + k$ by completing the square in situations involving no fractions, using a variety of tools.	
Course Topics	**Activities**
Quadratic Relations 1	Completing the Square
	Completing the Square 2

Sketch or graph a quadratic relation whose equation is given in the form $y = ax^2 + bx + c$, using a variety of methods.	
Course Topics	**Activities**
Quadratic Relations 1	Graphing Parabolas

Explore the algebraic development of the quadratic formula.	
Course Topics	**Activities**
Teacher directed	

Solve quadratic equations that have real roots, using a variety of methods.	
Course Topics	**Activities**
Quadratic Relations 1	Factoring Quadratics 1
	Factoring Quadratics 2
	Quadratic Formula
	Graphing Parabolas

1.4 Solving Problems Involving Quadratic Relations

Determine the zeros and the maximum or minimum value of a quadratic relation from its graph or from its defining equation.	
Course Topics	**Activities**
Quadratic Relations 1	Parabolas and Marbles
	Parabolas and Rectangles
	Vertex of a Parabola

Solve problems arising from a realistic situation represented by a graph or an equation of a quadratic relation, with and without the use of technology.	
Course Topics	**Activities**
Quadratic Relations 1	Parabolas and Marbles
	Parabolas and Rectangles

2 Analytic Geometry

2.1 Using Linear Systems to Solve Problems

Solve systems of two linear equations involving two variables, using the algebraic method of substitution or elimination.	
Course Topics	**Activities**
Analytic Geometry	Simultaneous Linear Equations
	Simultaneous Equations 1
	Simultaneous Equations 2

Solve problems that arise from realistic situations described in words or represented by linear systems of two equations involving two variables, by choosing an appropriate algebraic or graphical method.	
Course Topics	**Activities**
Analytic Geometry	Breakeven Point

2.2 Solving Problems Involving Properties of Line Segments

Develop the formula for the midpoint of a line segment, and use this formula to solve problems.	
Course Topics	**Activities**
Analytic Geometry	Midpoint by Formula

Develop the formula for the length of a line segment, and use this formula to solve problems.	
Course Topics	**Activities**
Analytic Geometry	Distance Between Two Points

Develop the equation for a circle with centre (0, 0) and radius r, by applying the formula for the length of a line segment.	
Course Topics	**Activities**
Teacher directed	

Determine the radius of a circle with centre (0, 0), given its equation; write the equation of a circle with centre (0, 0), given the radius; and sketch the circle, given the equation in the form $x^2 + y^2 = r^2$.	
Course Topics	**Activities**
Teacher directed	

Solve problems involving the slope, length, and midpoint of a line segment.	
Course Topics	**Activities**
Analytic Geometry	Midpoint by Formula
	Distance Between Two Points
	Are They Parallel?
	Are They Perpendicular?
	Perpendicular and Parallel Lines
	Equation of a Line 3
	Perpendicular Distance 1
	Perpendicular Distance 2

2.3 Using Analytic Geometry to Verify Geometric Properties

Determine, through investigation, some characteristics and properties of geometric figures.	
Course Topics	**Activities**
Analytic Geometry	Plane Figure Theorems

Verify, using algebraic techniques and analytic geometry, some characteristics of geometric figures.	
Course Topics	**Activities**
Analytic Geometry	Coordinate Methods in Geometry

Plan and implement a multi-step strategy that uses analytic geometry and algebraic techniques to verify a geometric property	
Course Topics	**Activities**
Teacher directed	

3 Trigonometry

3.1 Investigating Similarity and Solving Problems Involving Similar Triangles

Verify, through investigation, the properties of similar triangles.	
Course Topics	**Activities**
Similarity and Congruence	Similar Triangles
	Scale Factor
	Similar Figures

Describe and compare the concepts of similarity and congruence.	
Course Topics	**Activities**
Similarity and Congruence	Scale Factor
	Similar Triangles
	Similar Figures
	Congruent Triangles
	Congruent Figures (Grid)
	Congruent Figures: Find Values

Solve problems involving similar triangles in realistic situations.	
Course Topics	**Activities**
Teacher directed	

3.2 Solving Problems Involving the Trigonometry of Right Triangles

Determine, through investigation, the relationship between the ratio of two sides in a right triangle and the ratio of the two corresponding sides in a similar right triangle, and define the sine, cosine, and tangent ratios.	
Course Topics	**Activities**
Trigonometry	Hypotenuse, Adjacent, Opposite
	Sin A
	Cos A
	Tan A

Determine the measures of the sides and angles in right triangles, using the primary trigonometric ratios and the Pythagorean theorem.	
Course Topics	**Activities**
Trigonometry	Pythagorean Theorem
	Sin A
	Cos A
	Tan A
	Find Unknown Sides
	Find Unknown Angles

Solve problems involving the measures of sides and angles in right triangles in real life applications, using the primary trigonometric ratios and the Pythagorean theorem.	
Course Topics	**Activities**

Trigonometry	Elevation and Depression
	Trigonometry Problems 1
	Trigonometry Problems 2
	Bearings

3.3 Solving Problems Involving the Trigonometry of Acute Triangles

Explore the development of the sine law within acute triangles.	
Course Topics	**Activities**
Trigonometry	Sine Rule 1

Explore the development of the cosine law within acute triangles.	
Course Topics	**Activities**
Teacher directed	

Determine the measures of sides and angles in acute triangles, using the sine law and the cosine law	
Course Topics	**Activities**
Trigonometry	Sine Rule 1
	Cosine Rule 1
	Cosine Rule 2

Solve problems involving the measures of sides and angles in acute triangles.	
Course Topics	**Activities**
Trigonometry	Sine Rule 1
	Cosine Rule 1
	Cosine Rule 2

Grade 10, Applied

1 Measurement and Trigonometry

1.1 Solving Problems Involving Similar Triangles

Verify, through investigation, properties of similar triangles.	
Course Topics	**Activities**
Trigonometry	Similar Triangles

Determine the lengths of sides of similar triangles, using proportional reasoning.	
Course Topics	**Activities**
Trigonometry	Similar Triangles

Solve problems involving similar triangles in realistic situations.	
Course Topics	**Activities**
Teacher directed	

1.2 Solving Problems Involving the Trigonometry of Right Triangles

Determine, through investigation, the relationship between the ratio of two sides in a right triangle and the ratio of the two corresponding sides in a similar right triangle, and define the sine, cosine, and tangent ratios.	
Course Topics	**Activities**
Trigonometry	Hypotenuse, Adjacent, Opposite

Determine the measures of the sides and angles in right triangles, using the primary trigonometric ratios and the Pythagorean theorem.	
Course Topics	**Activities**
Trigonometry	Pythagorean Theorem
	Sin A
	Cos A
	Tan A
	Find Unknown Sides
	Find Unknown Angles

Solve problems involving the measures of sides and angles in right triangles in real- life applications, using the primary trigonometric ratios and the Pythagorean theorem.	
Course Topics	**Activities**
Trigonometry	Elevation and Depression
	Trigonometry Problems 1
	Trigonometry Problems 2
	Bearings

Describe, through participation in an activity, the application of trigonometry in an occupation.	
Course Topics	**Activities**
Teacher directed	

1.3 Solving Problems Involving Surface Area and Volume, Using the Imperial and Metric Systems of Measurement

Use the imperial system when solving measurement problems.	
Course Topics	**Activities**
Measurement	Perimeter: Squares and Rectangles
	Calculate Area of Shapes (inches, feet, yards)

Perform everyday conversions between the imperial system and the metric system and within these systems, as necessary to solve problems involving measurement.	
Course Topics	**Activities**
Measurement	Customary Units of Capacity
	Customary Units of Length
	Customary Units of Weight 1
	Converting Units of Length
	Converting Units of Mass
	Operations with Length

Determine, through investigation, the relationship for calculating the surface area of a pyramid.	
Course Topics	**Activities**
Surface Area and Volume	Nets
	Surface Area: Square Pyramids
	Surface Area: Rectangular Pyramids

Solve problems involving the surface areas of prisms, pyramids, and cylinders, and the volumes of prisms, pyramids, cylinders, cones, and spheres, including problems involving combinations of these figures, using the metric system or the imperial system, as appropriate.	
Course Topics	**Activities**
Surface Area and Volume	Surface Area: Rectangular Prisms
	Surface Area: Triangular Prisms
	Surface Area: Cylinders
	Surface Area: Cones
	Surface Area: Spheres
	Surface Area: Square Pyramids
	Surface Area: Rectangular Pyramids
	Volume: Rectangular Prisms 1
	Volume: Rectangular Prisms 2
	Volume: Triangular Prisms
	Volume: Prisms
	Volume: Pyramids
	Volume: Cylinders
	Volume: Cones
	Volume: Spheres
	Volume: Composite Figures

2 Modelling Linear Relations

2.1 Manipulating and Solving Algebraic Equations

Solve first-degree equations involving one variable, including equations with fractional coefficients.	
Course Topics	**Activities**
Linear Equations	Checking Solutions
	Solving Simple Equations
	Solve Two-Step Equations
	Solve Multi-Step Equations
	Solving More Equations
	Equations with Grouping Symbols
	Equations: Variables, Both Sides
	Equations with Decimals
	Equations with Fractions
	Equations with Fractions 2

Determine the value of a variable in the first degree, using a formula.	
Course Topics	**Activities**
Teacher directed	

Express the equation of a line in the form y = mx + b, given the form Ax + By + C = 0	
Course Topics	**Activities**
Linear Equations	General Form of a Line

2.2 Graphing and Writing Equations of Lines

Connect the rate of change of a linear relation to the slope of the line, and define the slope as the ratio m = rise/ruin	
Course Topics	**Activities**
Linear Equations	Gradient

Identify, through investigation, y = mx + b as a common form for the equation of a straight line, and identify the special cases x = a, y = b.	
Course Topics	**Activities**
Linear Equations	Which Straight Line?
	Horizontal and Vertical Lines

Identify, through investigation with technology, the geometric significance of m and b in the equation y = mx + b.	
Course Topics	**Activities**
Linear Equations	Gradient
	Intercepts
	Which Straight Line?
	Equation of a Line 1

Identify, through investigation, properties of the slopes of lines and line segments, using graphing technology to facilitate investigations, where appropriate.	
Course Topics	**Activities**
Linear Equations	y=ax
	Equation of a Line 1
	Are They Parallel?

Graph lines by hand, using a variety of techniques.	
Course Topics	**Activities**
Linear Equations	y=ax
	Which Straight Line?

Determine the equation of a line, given its graph, the slope and y-intercept, the slope and a point on the line, or two points on the line.	
Course Topics	**Activities**
Linear Equations	Determining the Rule for a Line 1
	Equation of a Line 1
	Equation from Point and Gradient
	Equation from Two Points

2.3 Solving and Interpreting Systems of Linear Equations

Determine graphically the point of intersection of two linear relations.	
Course Topics	**Activities**
Systems of Linear Equations	Solve Systems by Graphing

Solve systems of two linear equations involving two variables with integral coefficients, using the algebraic method of substitution or elimination.	
Course Topics	**Activities**
Systems of Linear Equations	Simultaneous Equations 1
	Simultaneous Equations 2
	Simultaneous Linear Equations

Solve problems that arise from realistic situations described in words or represented by given linear systems of two equations involving two variables, by choosing an appropriate algebraic or graphical method.	
Course Topics	**Activities**
Systems of Linear Equations	Breakeven Point

3 Quadratic Relations of the Form $y = ax^2 + bx + c$

3.1 Manipulating Quadratic Expressions

Expand and simplify second-degree polynomial expressions involving one variable that consist of the product of two binomials, using a variety of tools and strategies.	
Course Topics	**Activities**

Quadratic Relations	Expand then Simplify
	Expanding Binomial Products
	Special Binomial Products

Factor binomials and trinomials involving one variable up to degree two, by determining a common factor using a variety of tools and strategies.	
Course Topics	**Activities**
Quadratic Relations	Factoring
	Factoring Expressions

Factor simple trinomials of the form $x^2 + bx + c$, using a variety of tools and strategies.	
Course Topics	**Activities**
Quadratic Relations	Grouping in Pairs
	Factoring Quadratics 1

Factor the difference of squares of the form $x^2 – a^2$.	
Course Topics	**Activities**
Teacher directed	

3.2 Identifying Characteristics of Quadratic Relations

Collect data that can be represented as a quadratic relation, from experiments using appropriate equipment and technology, or from secondary sources; graph the data and draw a curve of best fit, if appropriate, with or without the use of technology.	
Course Topics	**Activities**
Teacher directed	

Determine, through investigation using technology, that a quadratic relation of the form $y = ax^2 + bx + c$ ($a \neq 0$) can be graphically represented as a parabola, and determine that the table of values yields a constant second difference.	
Course Topics	**Activities**
Quadratic Relations	Graphing Parabolas

Identify the key features of a graph of a parabola, using a given graph or a graph generated with technology from its equation, and use the appropriate terminology to describe the features.	
Course Topics	**Activities**
Quadratic Relations	Vertex of a Parabola

Compare, through investigation using technology, the graphical representations of a quadratic relation in the form $y = x^2 + bx + c$ and the same relation in the factored form $y = (x – r)(x – s)$, and describe the connections between each algebraic representation and the graph.	
Course Topics	**Activities**
Teacher directed	

3.3 Solving Problems by Interpreting Graphs of Quadratic Relations

Solve problems involving a quadratic relation by interpreting a given graph or a graph generated with technology from its equation.	
Course Topics	**Activities**
Quadratic Relations	Parabolas and Rectangles
	Parabolas and Marbles

Solve problems by interpreting the significance of the key features of graphs obtained by collecting experimental data involving quadratic relations.	
Course Topics	**Activities**
Teacher directed	

Grade 10 LDCC

1 Extending Money Sense

1.1 Understanding and Using Decimal Numbers in Solving Problems

EMS1.01 Read and interpret money values given in words, write money values as decimals, and round money values appropriately, in solving problems found in everyday contexts	
Course Topics	**Activities**
Money Sense	Money
	Everyday Money
	Who has the Money?

EMS1.02 Explain the meaning of negative numbers as they apply to money and use them to solve problems involving money.	
Course Topics	**Activities**
Teacher directed	

EMS1.03 Interpret numerical data drawn from the media and explain its significance, using other number references.	
Course Topics	**Activities**
Teacher directed	

EMS1.04 Demonstrate the effective use of a calculator in operations with decimals.	
Course Topics	**Activities**
Teacher directed	

EMS1.05 Judge the reasonableness of calculations involving decimals through estimation.	
Course Topics	**Activities**
Money Sense	Estimate Decimal Sums 1
	Estimate Decimal Sums 2
	Estimate Decimal Sums 1
	Estimate Decimal Sums 2

EMS1.06 Solve problems involving sales tax, discounts, restaurant tips, and commission earnings.	
Course Topics	**Activities**
Money Sense	Commission
	Successive Discounts

EMS1.07 Investigate and identify possible part-time jobs, determine hourly rates of pay, and calculate possible weekly, monthly, and yearly total incomes.	
Course Topics	**Activities**
Teacher directed	

EMS1.08 Solve problems involving the accomplishment of a particular goal, including investigating, planning, gathering, and organizing data, and making relevant calculations.	
Course Topics	**Activities**
Money Sense	Budgeting

1.2 Communicating Information about Money

EMS2.01 Verbalize their observations and reflections regarding money sense and ask questions to clarify their understanding.	
Course Topics	**Activities**
Teacher directed	

EMS2.02 Explain their reasoning used in problem solving and in judging reasonableness.	
Course Topics	**Activities**
Teacher directed	

EMS2.03 Communicate, orally and in writing, the solutions to money problems and the results of investigations, using appropriate terminology, symbols, and form.	
Course Topics	**Activities**
Teacher directed	

2 Extending Understanding of Measurement

2.1 Estimating and Measuring Using the Metric System

EUM1.01 Demonstrate accuracy in measuring length, capacity, and mass in everyday applications, using appropriate tools, and record the measurements using the correct abbreviations for metric units.	
Course Topics	**Activities**
Teacher directed	

EUM1.02 Solve problems drawn from everyday applications requiring the conversion between commonly used metric units.	
Course Topics	**Activities**
Measurement	Capacity Addition
	Converting cm and mm
	Converting Units of Mass
	Mass Addition

EUM1.03 Estimate, using standard units, measurements of length, capacity, and mass that arise from their everyday experience.	
Course Topics	**Activities**
Teacher directed	

EUM1.04 Read and use schedules to solve problems.	
Course Topics	**Activities**
Measurement	Using Timetables
	Elapsed Time

EUM1.05 Read, write, and interpret dates, using a specified numerical format	
Course Topics	**Activities**
Teacher directed	

EUM1.06 Solve problems to determine the elapsed time between two given dates or two given times.	
Course Topics	**Activities**
Measurement	Time Zones
	What Time Will it Be?

EUM1.07 Identify and use personal referents to aid in the estimation of temperature.	
Course Topics	**Activities**
Teacher directed	

EUM1.08 Describe applications from everyday life and the workplace that involve a combination of perimeter, area, volume, mass, capacity, time, and/or money.	
Course Topics	**Activities**
Teacher directed	

2.2 Estimating and Measuring Using the Imperial System

EUM2.01 Measure length in feet and inches, to accuracies of 1/8 inch and 1/16 inch, using tape measures and 12-inch rulers	
Course Topics	**Activities**
Teacher directed	

EUM2.02 Record linear measurements, using commonly accepted abbreviations for the chosen units.	
Course Topics	**Activities**
Teacher directed	

EUM2.03 Make estimates and accurate measurements of length in the Imperial system to construct a model.	
Course Topics	**Activities**
Teacher directed	

EUM2.04 Explore and identify approximate relationships between non-linear units of measure in the metric and Imperial systems.	
Course Topics	**Activities**
Teacher directed	

2.3 Solving Problems Involving Circumference, Perimeter, Area, and Volume

EUM3.01 Identify the parts of a circle, using the correct terminology.	
Course Topics	**Activities**
Measurement	Labelling Circles

EUM3.02 Determine an approximate value for π (pi) by investigating the relationship between the circumference and the diameter of a circle, using concrete materials to obtain measurements.	
Course Topics	**Activities**
Teacher directed	

EUM3.03 Validate the formula for the circumference of a circle by comparing measurements of the circumference to the calculations, using the formula $C = \pi d$	
Course Topics	**Activities**
Teacher directed	

EUM3.04 Solve authentic problems requiring the calculation of the circumference of a circle.	
Course Topics	**Activities**
Measurement	Calculate Circumference of Circles

EUM3.05 Solve authentic problems requiring the calculation of the perimeter of composite figures made up of straight line segments and half- and quarter-circles.	
Course Topics	**Activities**
Measurement	Perimeter Detectives 1
	Perimeter Detectives 2

EUM3.06 Estimate the size of a given angle by comparing it to angles of 30°, 45°, 60°, 90°, 180°, or 360°.	
Course Topics	**Activities**
Measurement	Estimating Angles

EUM3.07 Estimate and calculate the areas of circles and fractions of circles drawn from applications in the environment.	
Course Topics	**Activities**
Measurement	Area: Circles 1
	Area: Sectors (Degrees)

EUM3.08 Validate the formula for the area of a circle by comparing approximate measurements of the area to the calculations, using the formula $A = \pi r^2$.	
Course Topics	**Activities**
Teacher directed	

EUM3.09 Construct reasonably accurate diagrams of the angles 180°, 90°, 45°, 30°, and 60°, by dividing a given circle into the appropriate number of parts.	
Course Topics	**Activities**
Teacher directed	

EUM3.10 Solve authentic problems requiring the calculation of the areas of composite figures made up of rectangles and half- or quarter-circles.	
Course Topics	**Activities**
Measurement	Area: Circles 1
	Area: Annulus

EUM3.11 Establish that the volume of a cylinder is found by multiplying the area of its base by its height by comparing the structure of a prism to that of a cylinder.	
Course Topics	**Activities**
Measurement	Volume: Rectangular Prisms 1
	Volume: Prisms
	Volume: Cylinders

EUM3.12 Solve problems drawn from everyday situations involving the perimeters and the areas of circles and rectangles, and the volumes of cylinders and rectangular prisms.	
Course Topics	**Activities**
Teacher directed	

2.4 Communicating Information about Measurement

EUM4.01 Organize measurement information, using a simple framework, draw conclusions from this data, and make decisions based on it.	
Course Topics	**Activities**
Teacher directed	

EUM4.02 Verbalize their observations and reflections regarding measurements and ask questions to clarify their understanding.	
Course Topics	**Activities**
Teacher directed	

EUM4.03 Explain their reasoning used in problem solving and in judging reasonableness.	
Course Topics	**Activities**
Teacher directed	

EUM4.04 Communicate, orally and in writing, the solutions to measurement problems and the results of investigations, using appropriate terminology, symbols, and form.	
Course Topics	**Activities**
Teacher directed	

3 Extending Understanding of Proportional Reasoning

3.1 Applying Fractions, Percent, Ratio, and Rate in Solving Problems

EPR1.01 Determine the relationships among fractions, decimals, and percentages by constructing diagrams and building models.	
Course Topics	**Activities**
Proportional Reasoning	Modelling Percentages

EPR1.02 Recall from memory the most commonly used equivalences or approximations between fractions and percentages.	
Course Topics	**Activities**
Proportional Reasoning	Common Fractions as Percentages

EPR1.03 Solve problems involving the most commonly used equivalences between fractions and percentages.	
Course Topics	**Activities**
Proportional Reasoning	Percents to Fractions
	Percents and Decimals
	Decimals to Fractions 2

EPR1.04 Round decimal values appropriately in solving problems drawn from everyday situations.	
Course Topics	**Activities**
Proportional Reasoning	Rounding Decimals 2

EPR1.05 Solve problems involving fractions and percentages in practical situations, by converting to decimals and using a calculator, where appropriate.	
Course Topics	**Activities**
Teacher directed	

EPR1.06 Measure areas of personal interest, using metric or Imperial units, and construct scale diagrams, using grid paper.	
Course Topics	**Activities**
Proportional Reasoning	Scale drawings
	Scale
	Scale Measurement

EPR1.07 Write ratios describing relationships in the school environment.	
Course Topics	**Activities**
Teacher directed	

EPR1.08 Describe the effects of changing the parts of a given ratio proportionately and disproportionately in activities in which the results are observable.	
Course Topics	**Activities**
Teacher directed	

EPR1.09 Solve problems using proportions.	
Course Topics	**Activities**
Proportional Reasoning	Ratio Word Problems
	Rates Word Problems

EPR1.10 Solve problems involving the calculation of rates drawn from a variety of everyday contexts and from familiar social issues.	
Course Topics	**Activities**
Proportional Reasoning	Rates Word Problems

3.2 Communicating Information

EPR2.01 Read, interpret, and explain, orally and in writing, data displayed in tables and graphs.	
Course Topics	**Activities**
Proportional Reasoning	Interpreting Tables
	Line Graphs: Interpretation

EPR2.02 Construct a variety of graphs (straight line, bar, circle), with and without the use of technology, to assist in identifying patterns in data or drawing conclusions from data.	
Course Topics	**Activities**
Teacher directed	

EPR2.03 Identify graphs that misrepresent data and explain why the graphs are misleading.	
Course Topics	**Activities**
Teacher directed	

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