Welcome to **Luke's Tailored Tutoring Inc.**
(Mathematics)

We are delighted that you are joining the team! This guide will give you specific information to help you get started with us.

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WHO ARE WE?

Our Objective

Our goal is to help each student in their studies

ELEMENTARY SCHOOL: PRIMARY

GRADE 1

- Learn the basics of time and money
- Counting in intervals of ones, twos, fives, and tens
- Learning how to count to 100
- Adding and subtracting random numbers up to 20
- Place value up to 10

GRADE 2

- Learn perimeter, area, and basic shapes
- Counting in intervals of fives, tens, and twenty-five
- Learning how to count backwards from 50
- Adding and subtracting random numbers between 10 and 100
- Place value up to 100

GRADE 3

- Using grid paper to draw congruent shapes, quadrilaterals, and right angles
- Revise, polish, and produce their writing
- Counting in intervals of tens, twenties, twenty-fives, and hundreds
- Adding and subtracting random numbers between 100 and 999
- Division and multiplication of single-digit numbers
- Place value up to 1,000

ELEMENTARY SCHOOL: JUNIOR

GRADE 4

- Understanding the patterns, in addition, subtraction, and multiplication with steps missing
- Converting decimals from halves, fifths, and tenths
- Dividing and multiplying two-digit numbers
- Basics of fractions
- Adding and subtracting random numbers between 1000 and 10,000
- Division and multiplication of single-digit numbers
- Place value up to 100,000

GRADE 5

- Understanding the patterns, in addition, subtraction, multiplication, and division with steps missing
- Using grid paper to draw angles such as acute, right, obtuse, and straight
- Rounding decimal amounts to the nearest hundredth
- Converting different units of measurement such as grams to kilograms, and centimetres to meters
- Arranging fractions with similar denominators
- Adding and subtracting random numbers between 10,000+
- Dividing and multiplying two-digit numbers
- Place value up to 1,000,000

GRADE 6

- Learning the basics of Probability
- Learning the lines of Symmetry
- BEDMAS introduction when learning Order of Operations
- Learning conversion between different systems such as pounds to kilograms, and yards to meters
- Rounding decimal amounts to the nearest thousandth
- Converting different units of measurement such as grams to kilograms, and centimetres to meters
- Adding and subtracting fractions with different denominators
- Dividing and multiplying four-digit numbers

ELEMENTARY SCHOOL: INTERMEDIATE

GRADE 7

- Probability and the basics of percentages
- Learning the lines of Symmetry
- BEDMAS using "x" and "y" variables when completing Order of Operations
- Using grid paper to draw perpendicular, intersecting, and parallel lines
- Introduction to squares and square root formulas
- Introduction to integers
- Adding and subtracting mixed fractions

GRADE 8

- Introduction to bar graphs, scatter plots, and histograms
- Breakdown of word problems into algebraic formulas
- Introduction to rates such as km/hr and calculating distance
- Probability and the basics of percentages
- Using formulas to calculate the area and volume of basic 3D shapes
- Calculating percentages
- Multiplying and dividing fractions and decimals
- Dividing and multiplying integers and fractions
- Introduction to exponents

SECONDARY SCHOOL

GRADE 9 SUMMARY

Academic will cover all of these units. Applied will cover some of these units.

- Operations with Integers and Rational Numbers
- Algebraic Expressions and Formulas
- Pythagorean Theorem
- Graphing Linear Relationships
- Exponent Laws

GRADE 9 ACADEMIC

- Perimeter, area, surface area, and volume problem-solving with missing values
- Recognizing the elements of linear relationships
- Solving linear equations with $y = mx + b$
- Introduction to Polynomials
- Rearranging equations to solve for a variable
- Problem-solving with exponents
- Creating bar graphs, scatter plots, and pie charts in Microsoft Excel

GRADE 9 APPLIED

- Perimeter, area, surface area, and volume problem-solving refresher
- Identifying linear relations' properties
- Reviewing rates such as km/hr and calculating distance
- Review of breaking down word problems into algebraic formulas
- Review of fractions and decimals

GRADE 10 DETAILED SUMMARY

Academic will cover all of these units. Applied will cover some of these units.

Unit 1 - Linear Systems	Unit 2 - Coordinates and Geometry	Unit 3 - Factoring
- Linear Equations - Graphing Linear Equations - Intersecting Lines - Substitution/Elimination	- Simplifying Radicals - Distance on a Plane - Equation of a Circle - The midpoint of a line Segment - Classifying shapes on a plane - Geometric Properties	- Multiplying by Monomials and Polynomials - Common Factoring - Factoring Simple Trinomials - Factoring Complex Trinomials - Factoring Difference of Squares
Unit 4 - Quadratic Models	**Unit 5 - Quadratic Relations**	**Unit 6 - Similar and Congruent Triangles**
- Quadratic Relations - Properties of Quadratic Relations - The role of Zeros in Quadratics - Standard Form/ Factoring Quadratic Expressions - Solving Quadratic Equations	- Vertex Form of a Quadratic Relation - Transformations of Quadratics - Symmetry to relate Standard form and Vertex form - Max and Min Values/ Completing the square - Quadratic formula and nature of roots	- Conditions for Congruent Triangles - Investigating and comparing triangles - Modelling with Similar Triangles - Similar Triangle Models
Unit 7 - Trigonometry I	**Unit 8 - Trigonometry II**	
- The connection between slope and angle - Primary Trigonometric Ratios - Solving Problems using right triangle models and trigonometry	- Investigating the Sine Law - Proving and Using the Sine Law - Adjusting the Pythagorean Theorem: Cosine Law	

GRADE 10 ACADEMIC

- Introduction to solving right triangles using trigonometry SOH, CAH, TOA
- Perimeter, area, surface area, and volume problem-solving with missing values
- Examining the fundamental characteristics of quadratic relations
- Rearranging equations to solve for a variable
- Problem-solving angles in non-right-angled triangles
- Solving equations using quadratic relations, $y = ax^2 + bx + c$
- Solving Polynomials
- Introduction to Factoring

GRADE 10 APPLIED

- Interpreting quadratic relation graphs to solve problems
- Rearranging quadratic expressions and equations
- Graphing and writing linear equations
- Solving surface area and volume problems
- Introduction to trigonometry

GRADE 11 UNIVERSITY FUNCTIONS (MCR3U) DETAILED SUMMARY

Unit 1 - Equivalent Algebraic Expressions	**Unit 2 - Quadratic Equations**	**Unit 3 - Representing Functions**
- Factoring - Adding and Subtracting and Multiplying Polynomials - Simplifying Rational Expressions - Multiplying and Dividing Rational Expressions - Adding and Subtracting Rational Expressions	- Simplifying Radicals - Determining Maximum or Minimum of Quadratic Functions by Completing the Square - Solving Quadratic Equations - The Nature of the Root of a Quadratic Equation - Determining in a Quadratic Equation - Solving Linear-Quadratic Systems	- Domain and Range of a Relation - Function Notation - Properties of $f(x)=\sqrt{x}$ and $f(x)=1/x$ - Inverse Functions - Horizontal and Vertical Translations of Functions - Reflections of Functions - Stretches of Functions - Combinations of Transformations
Unit 4 - Exponential Functions	**Unit 5 - Sequence and Series**	**Unit 6 - Financial Applications**
- Exponent Laws - Rational Exponents - Compare Rates of Change of Exponential Functions with Linear and Quadratic Functions - Graphs of Exponential Functions - Transformations of Exponential Functions - Solving Problems Involving Exponential Functions	- Sequences (Continuous vs Discrete) - Arithmetic Sequences - Geometric Sequences - Recursion Formulas - Pascal's Triangle and Expanding Binomials - Arithmetic Series - Geometric Series	- Simple Interest - Compound Interest - Present Value - Amount of an Ordinary Annuity - Present Value of an Ordinary Annuity - Present Value or Future Value
Unit 7 - Trigonometry I	**Unit 8 - Trigonometry II**	**Unit 9 - Trigonometric Identities**
- Reviewing the Trigonometry of Right Triangles - CAST Rule - Special Triangles - The Sine and Cosine Law - The Sine Law: Ambiguous Case	- Modelling Periodic Behaviour - Spaghetti Trigonometry - Sketching the Graphs of $f(x)=\sin x$ and $f(x) = \cos x$ - Stretches of Periodic Functions - Translations and Reflections of Trigonometric Functions - Combinations of Transformations - Applications of Sinusoidal Functions	- Trigonometric Identities - Solving Trigonometric Equations

GRADE 11 FUNCTIONS AND APPLICATIONS (MCF3M) DETAILED SUMMARY

Unit 1 - Intro to Quadratic Functions	Unit 2 - Factor Quadratic Expressions	Unit 3 -Represent Quadratic Functions
- Identity Functions - Domain and Range - Analyze Quadratic Functions - Stretches of Functions - Translations of Functions - Sketch and Graphs Using Transformations	- Exploring Forms - Comparing Forms - Factoring $ax^2 + bx + c$ - Factoring - Solving Equations by Factoring	- Complete the Square - Quadratic Formula - The Real Roots of Quadratic Equations - Multiple Forms of Quadratic Functions - Model with Quadratic Equations
Unit 4 - Trigonometry	**Unit 5 - Sine Function**	**Unit 6 - Exponential Functions**
- Find the Length - Find the Angle - Solve Problems Using 2 Right Angles - Sine Law - Cosine Law	- Periodic Motion and Behaviour - Sine Function - Transformations	- The Exponent Rules - Evaluate Powers with Integer Exponents - Rational Exponents - Model Data with Exponential Functions - Exponential Functions and Their Properties - Compare Linear, Quadratic, and Exponential Function - Growth and Decay
Unit 7 - Finance I	**Unit 8 - Finance II**	
- Explore Simple and Compound Interest - The Compound Interest Formula - Time Value of Money Calculator (TMV) Solver	- Future Value of an Ordinary Simple Annuity - Present Value of an Ordinary Simple Annuity - The Effects of Changing The Conditions of an Ordinary Simple Annuity	

GRADE 11 FOUNDATIONS FOR COLLEGE (MBF3C)

- Workplace-Readiness Training
- Management of Data
- Trigonometry and Geometry
- Financial Services
- Models in Mathematics

GRADE 12 DATA MANAGEMENT (MDM4U)

Unit 1 - Organization and analysis of data: Two Variable Stats	Unit 2- Data analysis: One variable stats, and the normal distribution	Unit 3 - Permutations and combinations
- Introducing the Importance of Data - Recognizing Bias Data Collection Principles and Methods - Analyzing Two-Variable Data - Analyzing the Residuals and Outliers in Two Variable Data - Interpreting Data	- Introducing One Variable Statistics - Calculating Measures of Central Tendency - Calculating Measures of Spread - Learning About Normal Distribution and Z-Scores - Applying Z-Scores to Discrete Data - Exploring Confidence Intervals	- Introducing Organized Counting and the Fundamental Multiplicative Counting Principle - Learning about Permutations Factorials: Rule of Sum and Applications - Understanding Combinations - Counting Problems with Repeated Elements and Overlap - Investigating Pascal Triangle and Problems using Combinations
Unit 4 - Probability and probability distributions - Introducing Experimental vs Theoretical Probability - Learning About Mutually Exclusive and Non-Mutually Exclusive Events - Understanding Independent and Dependent Events - Exploring Probability Distributions and Expected Value - Calculating Binomial Distribution and Hypergeometric Distribution - Applying Normal Approximation to the Binomial Distribution		

GRADE 12 UNIVERSITY ADVANCED FUNCTIONS (MHF4U)

Unit 1 - Algebraic Operations	Unit 2 - Polynomial Functions	Unit 3 -Trigonometric Ratios & Equations
- Operations With Polynomials - Common Factors & Trinomials - Special Factoring Methods - Dividing A Polynomial By A Polynomial - The Remainder Theorem - The Factor Theorem - Factoring Sums & Differences of Cubes	- Polynomial Functions – Terminology & Facts - The Shapes of Polynomial Functions - End Behaviours of Polynomial Functions - Solving Polynomial Equations - Solving Polynomial Inequalities	- Measuring Angles With Radians - Coterminal Angles & Reciprocal Trig Ratios - Trigonometric Ratios of Special Angles - Trigonometric Ratios of Obtuse Angles - Trig Ratios of Angles In Standard Position - Exploring the Unit Circle
Unit 4 - Transformations Of Trigonometric Functions	Unit 5 - Combining Functions	Unit 6 - Exponential Functions
- Introduction to Periodic Functions - Graphing Primary/Reciprocal Trig Functions - Varying The Vertical Displacement of $\sin\theta$ & $\cos\theta$ - Varying The Phase Shift of $\sin\theta$ & $\cos\theta$ - Varying The Amplitude of $\sin\theta$ & $\cos\theta$ - Varying The Period of $\sin\theta$ & $\cos\theta$ - Connecting Functions & Their Graphs - Rescaling The Horizontal Axis - Applying General Sinusoidal Functions	- Reciprocal Functions - Rational Functions & Their Asymptotes - Combinations & Composition of Functions - Addition & Subtraction Formulas - Double Angle Formulas - Trigonometric Identities	- Simplifying Exponential Expressions - Graphing Exponential Functions - Applications of Exponential Functions - Using Exponential Functions to Make Comparisons
Unit 7 - Logarithmic Functions	Unit 8 - Introduction To Calculus	
- Common Logarithms - Laws of Logarithms – Mult. & Division - Laws of Logarithms – Powers & Roots - Introduction to Logarithmic Functions - Graphing Logarithmic Functions - Logarithms As Exponents - Laws of Logarithms – Bases Other Than 10	- Introduction To Tangents & Limits - Limits of Infinite Series - Limits of Functions - Indeterminate Forms - Slopes of Secants - Slope of The Tangent Line - The Derivative Function - Rates of Change	

GRADE 12 CALCULUS AND VECTORS (MCV4U)

Unit 1 - Vectors - Introduction to Vectors	Unit 2 - Vectors - Algebraic Vectors	Unit 3 - Vectors - Lines and Planes
- Introduction to Vectors - Vector Addition & Subtraction - Vector Operations - Applications of Vectors – Velocity - Applications of Vectors – Force	- Algebraic Vectors (2D) - Algebraic Vectors (3D) - Dot Product - Applications of Dot Product – Work - Cross Product - Applications of Cross Product – Area & Torque	- Matrices - Equation of a Line (2D) - The Intersection of Lines (2D) - Equation of a Line (3D) - The Intersection of Lines (3D) - Vector Equation of a Plane - Scalar Equation of a Plane - The Intersection of Lines & Planes - The Intersection of Planes (Geometric Representation) - Intersection of Planes
Unit 4 - Calculus - Introduction to Calculus & Derivatives	Unit 5 - Calculus - Curve Sketching	Unit 6 - Calculus - Applications of Derivatives
- Polynomial Review - Rate of Change - The Derivative Function - Power Rule - Chain Rule - Product Rule - Derivative Practice - Derivatives of Rational Expressions - Derivative Problem Solving	- Sketching Intercepts & Asymptotes - Critical Points - Increasing/ Decreasing - Points of Inflection & Concavity	- Velocity & Acceleration - Maximum & Minimum - Max/Min Displacement, Velocity & Acceleration - Optimization - Measurement - Optimization - Finance
Unit 7 - Calculus - Derivatives of Trigonometric Functions	Unit 8 - Calculus - Derivatives of Exponential Functions	
- Trigonometry Review - Derivative of $y = SinX$ and $y = CosX$ - Chain Rule - Product Rule - Derivative Practice Max/Min - Optimization	- Exponent & Log Review - Derivatives of Exponential Functions - Chain Rule - Product Rule - Derivative Practice - Maximum & Minimum - Optimization Problems	