Coquitlam Learning Opportunity Centre
104- 2748 Lougheed Hwy
Port Coquitlam, BC, V3B 6P2
Phone: (604) 945-4211

CLOC Course Outline

Course Name	**Foundations of Mathematics 11**
Teacher	**Caroline Lennan**
Course Format	**Self-Paced Online** See 'CLOC Course Pacing and Completion Policies' below.
Teacher Contact Information & Schedule	**clennan@sd43.bc.ca 604-945-4211** **Tuesday 10:00am-2:00pm; 5:00pm-9:00pm** **Thursday 10:00am-2:00pm; 5:00pm-9:00pm**
Learning Centre Hours	**Monday-Thursday 10:00am-2:00pm** **Monday-Thursday 5:00pm-9:00pm** **The Learning Centre is closed on all statutory and school holidays.**

Coquitlam Learning Opportunity Centre

Foundations of Mathematics 11 (Online)

INSTRUCTOR: Caroline Lennan
EMAIL: clennan@sd43.bc.ca
PHONE: 604-945-4211 (CLOC office)
SCHEDULE: Monday/Thursday 10:00am – 2:00pm, 5:00pm – 9:00pm
LEARNING CENTRE HOURS: Monday – Thursday 10:00am – 2:00pm
Monday – Thursday 5:00pm – 9:00pm
The Learning Centre is closed all statutory and school holidays.

INTRODUCTION:

Foundations of Mathematics 11 is a designed to provide students with core mathematics skills essential for areas such as the arts, humanities, and social sciences. Areas of study will include inductive and deductive reasoning, properties of angles and triangles, non-right angled trigonometry, linear inequalities systems, quadratic functions and equations, and proportional and statistical reasoning.

PRESCRIBED LEARNING OUTCOMES

Inductive and Deductive Reasoning:

C1.1 *make conjectures by observing patterns and identifying properties, and justify the reasoning*

C1.2 *explain why inductive reasoning may lead to a false conjecture*
C1.3 *compare, using examples, inductive and deductive reasoning*
C1.4 *provide and explain a counterexample to disprove a given conjecture*
C1.5 *prove algebraic and number relationships, such as divisibility rules, number properties, mental mathematics strategies or algebraic number tricks*
C1.6 *prove a conjecture, using deductive reasoning (not limited to two column proofs)*
C1.7 *determine if a given argument is valid, and justify the reasoning*
C1.8 *identify errors in a given proof; e.g., a proof that ends with 2 = 1*
C1.9 *solve a contextual problem involving inductive or deductive reasoning*
C2.1 *determine, explain and verify a strategy to solve a puzzle or to win a game*
C2.2 *identify and correct errors in a solution to a puzzle or in a strategy for winning a game*
C2.3 *Create a variation on a puzzle or a game, and describe a strategy for solving the puzzle or winning the game*

Properties of Angles and Triangles:

B1.1 *Generalize, using inductive reasoning, the relationships between pairs of angles formed by transversals and parallel lines, with or without technology*
B1.2 *Prove, using deductive reasoning, properties of angles formed by transversals and parallel lines, including the sum of the angles in a triangle*
B1.3 *Generalize, using inductive reasoning, a rule for the relationship between the sum of the interior angles and the number of sides (n) in a polygon, with or without technology*
B1.4 *Identify and correct errors in a given proof of a property involving angles*
B1.5 *Verify, with examples, that if lines are not parallel the angle properties do not apply*
B2.1 *Determine the measures of angles in a diagram that involves parallel lines, angles and triangles, and justify the reasoning*
B2.2 *Identify and correct errors in a given solution to a problem that involves the measures of angles*
B2.3 *Solve a contextual problem that involves angles or triangles*
B2.4 *Construct parallel lines, using only a compass or a protractor, and explain the strategy used*
B2.5 *Determine if lines are parallel, given the measure of an angle at each intersection formed by the lines and a transversal*

Non-Right Angled Triangle Trigonometry:

B3.1 *Draw a diagram to represent a problem that involves the cosine law or sine law*
B3.2 *Explain the steps in a given proof of the sine law or cosine law*
B3.3 *Solve a problem involving the cosine law that requires the manipulation of a formula*
B3.4 *Explain, concretely, pictorially or symbolically, whether zero, one or two triangles exist, given two sides and a non-included angle*
B3.5 *Solve a problem involving the sine law that requires the manipulation of a formula*
B3.6 *Solve a contextual problem that involves the cosine law or the sine law*

System of Linear Inequalities:

E1.1 *Model a problem, using a system of linear inequalities in two variables*
E1.2 *Graph the boundary line between two half planes for each inequality in a system of linear inequalities, and justify the choice of solid or broken lines*
E1.3 *Determine and explain the solution region that satisfies a linear inequality, using a test point when given a boundary line*
E1.4 *Determine, graphically, the solution region for a system of linear inequalities, and verify the solution*
E1.5 *Explain, using examples, the significance of the shaded region in the graphical solution of a system of linear inequalities*
E1.6 *Solve an optimization problem, using linear programming*

Quadratic Functions and Equations:

- E2.1 *Determine, with or without technology, the intercepts of the graph of a quadratic function*
- E2.2 *Determine, by factoring, the roots of a quadratic equation, and verify by substitution*
- E2.3 *Determine, using the quadratic formula, the roots of a quadratic equation*
- E2.4 *Explain the relationships among the roots of an equation, the zeros of the corresponding function, and the x-intercepts of the graph of the function*
- E2.5 *Explain, using examples, why the graph of a quadratic function may have zero, one or two x-intercepts*
- E2.6 *Express a quadratic equation in factored form, using the zeros of a corresponding function or the x-intercepts of its graph*
- E2.7 *Determine, with or without technology, the coordinates of the vertex of the graph of a quadratic function*
- E2.8 *Determine the equation of the axis of symmetry of the graph of a quadratic function, given the x-intercepts of the graph*
- E2.9 *Determine the coordinates of the vertex of the graph of a quadratic function, given the equation of the function and the axis of symmetry, and determine if the y-coordinate of the vertex is a maximum or a minimum*
- E2.10 *Determine the domain and range of a quadratic function*
- E2.11 *Sketch the graph of a quadratic function*
- E2.12 *Solve a contextual problem that involves the characteristics of a quadratic function*

Proportional Reasoning:

- A1.1 *Interpret rates in a given context, such as the arts, commerce, the environment, medicine or recreation*
- A1.2 *Solve a rate problem that requires the isolation of a variable*
- A1.3 *Determine and compare rates and unit rates*
- A1.4 *Make and justify a decision, using rates*
- A1.5 *Represent a given rate pictorially*
- A1.6 *Draw a graph to represent a rate*
- A1.7 *Explain, using examples, the relationship between the slope of a graph and a rate*
- A1.8 *Describe a context for a given rate or unit rate*
- A1.9 *Identify and explain factors that influence a rate in a given context*
- A1.10 *Solve a contextual problem that involves rates or unit rates*
- A2.1 *Explain, using examples, how scale diagrams are used to model a 2-D shape or a 3-D object*
- A2.2 *Determine, using proportional reasoning, the scale factor, given one dimension of a 2-D shape or a 3-D object and its representation*
- A2.3 *Determine, using proportional reasoning, an unknown dimension of a 2-D shape or a 3-D object, given a scale diagram or a model*
- A2.4 *Draw, with or without technology, a scale diagram of a given 2-D shape according to a specified scale factor (enlargement or reduction)*
- A2.5 *Solve a contextual problem that involves scale diagrams*
- A3.1 *Determine the area of a 2-D shape, given the scale diagram, and justify the reasonableness of the result.*
- A3.2 *Determine the surface area and volume of a 3-D object, given the scale diagram, and justify the reasonableness of the result*
- A3.3 *Explain, using examples, the effect of a change in the scale factor on the area of a 2-D shape*
- A3.4 *Explain, using examples, the effect of a change in the scale factor on the surface area of a 3-D object*
- A3.5 *Explain, using examples, the effect of a change in the scale factor on the volume of a 3-D object*

A3.6 *Explain, using examples, the relationships among scale factor, area of a 2-D shape, surface area of a 3-D object and volume of a 3-D object*
A3.7 *Solve a spatial problem that requires the manipulation of formulas*
A3.8 *Solve a contextual problem that involves the relationships among scale factors, areas and volumes*

Statistical Reasoning:

D1.1 *Explain, using examples, the meaning of standard deviation.*
D1.2 *Calculate, using technology, the population standard deviation of a data set.*
D1.3 *Explain, using examples, the properties of a normal curve, including the mean, median, mode, standard deviation, symmetry and area under the curve.*
D1.4 *Determine if a data set approximates a normal distribution, and explain the reasoning.*
D1.5 *Compare the properties of two or more normally distributed data sets.*
D1.6 *Explain, using examples that represent multiple perspectives, the application of standard deviation for making decisions in situations such as warranties, insurance or opinion polls.*
D1.7 *Solve a contextual problem that involves the interpretation of standard deviation.*
D1.8 *Determine, with or without technology, and explain the z-score for a given value in a normally distributed data set.*
D1.9 *Solve a contextual problem that involves normal distribution.*

LEARNING RESOURCES

There is no hardcopy textbook for this course. Instruction and practice material is found in the online resource **Content Connections**. Your login information (username and password) will be e-mailed to you by your instructor.

http://www.contentconnections.ca/fm11/

The website includes 'send-in assignments' which can be done for extra practice; these 'assignments' are not to be handed in and will not count towards your grade**.** Answers to these assignments are posted in the **Math 11 Foundations Virtual Classroom**. The virtual classroom is the teacher hosted website where announcements, course information and extra resources for this course are posted. There is a separate handout sheet on how to access the virtual classroom.

FOUNDATIONS OF MATH 11 at CLOC

Foundations of Math 11 at CLOC is a self-paced, self-directed course. You will need to manage your time appropriately with good self-discipline in order to complete the course successfully. Help is available during all Learning Centre hours from any instructor in room 2. Suggested completion timelines will be posted in the virtual classroom.

EVALUATION

All tests are to be written at CLOC during Learning Centre hours. Evaluation consists of 7 tests, 1 midterm and a final exam. ONE re-write is permitted for each unit test and there are NO rewrites for the midterm or final exam. The midterm covers Units 1 - 4 and the final covers Units 1 - 7. Tests are weighted as follows:

COURSE UNIT	CONTENT	PERCENT	CONTENT CONNECTIONS UNIT
1	Properties of Angles & Triangles	10	2
2	Non-Right Angled Triangle Trigonometry	8	3
3	Systems of Linear Inequalities	8	4
4	Inductive and Deductive Reasoning	8	1
Midterm	Units 1-4	15	
5	Quadratic Functions & Equations	10	5
6	Proportional Reasoning	8	6
7	Statistical Reasoning	8	7
Final Exam	Units 1-7	25	
Total		**100**	

NOTE: The order of topics in Math 11 Foundations is different from the order in the 'Content Connections' website. Keep track by topic. There is a chart in the virtual classroom under the 'Course Outline' tab to help you keep track.

CLOC Course Pacing and Completion Policies

1. **Students are expected to complete all self-paced, flexible and online courses within a 10 month period.**

2. **Students are expected to complete 10% of course material within the 1st month after registration.**

3. **A final mark will be assigned to all students who complete at least 65% of the course requirements.***

Our teachers can help you determine a pace that works for you and fits within these expectations. Please discuss your course completion plan with them.

If you plan to take two self-paced courses, we recommend that you stagger the registration dates so that you get one course started before enrolling in the second course. We do not permit taking more than two courses at the same time without discussing this with our administrator.

If you have extenuating circumstances that make these timelines challenging, please have a conversation with your teacher, or our CLOC administrator, 604-945-5211.

**65% of course requirements does not include comprehensive final exams.*