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Online Flexible-Paced

Course Name	Pre-Calculus 12, Flexible-Paced
Teacher	Ms. Tiffany Tseng
Contact Information	ttseng@sd43.bc.ca Cell Phone: 604-880-9273
Location	Online
Course Site	http://sd43.knowplace.ca/course/view.php?id=431 (username/password required)
Course Resources	All course resources are on the course website. The following is also required for the course: - Graphing Calculator (ex. Texas Instruments TI-83 Plus)

Online Flexible-Paced –There are no scheduled classes or cohort groupings in flex-paced courses. In a flex-paced course, a student has a maximum of 10 months to complete a course which means, students are not eligible to be enrolled in this course at any other school while completing the course with Coquitlam Open Learning. This is **not** an "at your own pace" course. You are given [due dates](#) and are required to submit assignments regularly as well as regularly communicating with the teacher and other online students. The 'flexibility' comes in the time of day and the location you work on the course.

The **aim of Pre-Calculus 12** is for students to use communication in order to learn and express their understanding, make connections among mathematical ideas, other concepts in math, everyday experiences and other disciplines, demonstrate fluency with mental math and estimation, develop and apply new mathematical knowledge through problem solving, develop mathematical reasoning, select and use technology as a tool for learning and solving problems, develop visualization skills to assist in processing information, making connections and solving problems.

Taken from:

http://www.bced.gov.bc.ca/irp/pdfs/mathematics/WNCPmath1012/2008math1012wncp_ccf.pdf

Pre-Calculus 12:

- ✓ Students will develop trigonometric reasoning
- ✓ Students will develop algebraic and graphical reasoning through the study of relations.
- ✓ Students will develop algebraic and numeric reasoning that involves combinatorics.

Taken from:

http://www.bced.gov.bc.ca/irp/pdfs/mathematics/WNCPmath1012/2008math1012wncp_ccf.pdf

Pre-Calculus 12 consists of **eight units** organized into **four modules**.

<u>Areas of Study</u>	<u>Modules</u>
<ul style="list-style-type: none">▪ Unit 1: Transformations▪ Unit 2: Graphing Radical and Rational Functions	Module 1
<ul style="list-style-type: none">▪ Unit 3: Polynomials▪ Unit 4: Exponents and Logarithms	Module 2
<ul style="list-style-type: none">▪ Unit 5: Circular Functions▪ Unit 6: Trigonometric Equations and identities	Module 3
<ul style="list-style-type: none">▪ Unit 7: Permutations & Combinations▪ Unit 8: Function Notation and Operations	Module 4

Evaluation

Send In Assignments (8 Assignments)	35%
Tests (5 Tests)	65%

Assignment Marks

There is a unit send in assignment at the end of each unit. You will also be able to check your assignment marks in Moodle. The criterion for grading is found on the course website along with the description for each assignment.

E-mail communications

Staying in touch is essential in an online course. I will be in contact with you via e-mail almost on a daily basis. Be sure to check your e-mail every day so as not to miss any important announcements.

Course Log On Information

To login to the course, you will need your Moodle ID and password. These are created and distributed on a yearly basis. I will distribute your login information via email. To access the course go to <http://sd43.bcln.ca> and click on Course Login.

Assignment Submissions

Please submit your assignments electronically in the course Moodle site. You will need to print a paper copy of the assignment, write down your work, and scan the assignments as a PDF, or as images inserted into a Word or a similar document. You will submit the assignment directly on the course Moodle site. If you need help with this please ask. With each assignment submission ***always include your full name in the document. Please name your scanned assignment as: Last Name_First Name__unit X assignment.***

Computer Requirements

You will need to have access to a computer from either school or home. A home computer is preferred as this will allow you greater flexibility when organizing your study time.

Windows PC and Macintosh minimum requirements:

- Windows 2000 or XP or MacOS X
- 64 MB RAM
- Internet connectivity
- Sound card and speakers
- Microsoft Office 2000 or XP or Microsoft Office X
- A printer

Computer Skills

Although I am available to help you it is recommended that you are able to:

- Use a scanner to scan your work as a PDF file or as images
- Insert scanned images into a Word document
- open applications
- send/receive e-mail

- send attachments in an e-mail
- save and locate files

If you need assistance in any of these areas, please contact me.

Plagiarism and Cheating

Any students that plagiarize any portion of an assignment will receive a zero and a possible comment on their report card. The problem will also be referred to administration. For your own protection, keep all drafts of all work until the end of the school year.

LETTER GRADES AND DEFINITIONS

A (86-100%) Excellent or Outstanding Performance in relation the learning outcomes.

B (73-85%) Very Good Performance in relation to learning outcomes.

C+ (67-72%) Good Performance in relation to learning outcomes.

C(60-66%) Satisfactory Performance in relation to learning outcomes.

C- (50-59%) Minimally Acceptable Performance in relation to learning outcomes.

I No demonstration of minimally acceptable performance in relation to learning outcomes in this reporting period.

FINAL LETTER GRADES

F No demonstration of minimally acceptable performance in relation to the learning outcomes for the course.

W Student has withdrawn from the course.

SG Standing Granted. Acceptable level of performance though normal requirements not completed.

TS Transfer Granted. Standing is granted based on records from an institution other than a school.

Pre-Calculus 12 Mark Breakdown

****denotes what are needed for substantive assignment and refund**

Module	Unit	Topic	Lesson	Marks	% of course		
Module 1	Unit 1 Transformations	Functions and Their Graphs, Domain and Range	Lesson 1				
		Translating Graphs of Functions	Lesson 2				
		Reflecting Graphs of Functions	Lesson 3				
		Compressing and expanding Graphs of Functions	Lesson 4				
		Combining Transformations of Functions	Lesson 5				
		Finding the Coordinates of Ordered Pairs	Lesson 6				
		Unit 1 Send In Assignment	Lessons 1-6			100	4.375%
		Unit 1 Test	Covers unit 1			100	8%
	Unit 2 Radical and Rational Functions	Transformations of Radical Functions	Lesson 1				
		The Square Root Functions	Lesson 2				
		Solving Radical Equations	Lesson 3				
		Graphing Rational Functions	Lesson 4				
		Analyzing Rational Functions	Lesson 5				
		Equations and Graphs of Rational Functions	Lesson 6				
Unit 2 Send In Assignment		Lessons 1-6	100			4.375%	
Unit 2 Test		Covers unit 2	100			8%	
Module 2	Unit 3 Polynomials	The Remainder Theorem	Lesson 1				
		The Factor Theorem	Lesson 2				
		Factoring Polynomials	Lesson 3				
		Solving Polynomial Equations	Lesson 4				
		Graphs of Polynomial Functions	Lesson 5				
		Unit 3 Send In Assignment	Lessons 1 -5			100	4.375%
	Unit 4 Exponents & Logarithms	Review the Laws of Exponents	Lesson 1				
		Solving Equations Involving Exponents	Lesson 2				
		Defining a Logarithm and Logarithmic Restrictions	Lesson 3				
		Laws of Logarithms	Lesson 4				
		Solving Exponential and Logarithmic Equations	Lesson 5				
Introduction to Exponential		Lesson 6					

Module 2	Unit 4 Exponents & Logarithms	Functions			
		Applications of Exponential Functions Part I	Lesson 7		
		Applications of Exponential Functions Part II	Lesson 8		
		Graphs of Exponential Functions	Lesson 9		
		Graphing Logarithmic Functions	Lesson 10		
		Unit 4 Send in Assignment	Lessons 1-10	100	4.375%
		Module 2 TEST	Covers units 3 & 4	100	17%
Module 3	Unit 5 Circular Functions	Radian Measure – Angles in Standard Position	Lesson 1		
		Sine, Cosine and Tangent Functions of Angles in Standard Position	Lesson 2		
		Sine, Cosine and Tangent Functions of Special Angles	Lesson 3		
		Graphing Sine and Cosine Functions	Lesson 4		
		Transformations of Trigonometric Functions Part I	Lesson 5		
		Transformations of Trigonometric Functions Part II	Lesson 6		
		Sinusoidal Functions with Rational Periods	Lesson 7		
		Applications of Sinusoidal Functions	Lesson 8		
		Graphing the Tangent Functions	Lesson 9		
	Unit 5 Send in Assignment	Lessons 1-9	100	4.375%	
	Unit 6 Trigonometric Equations and Identities	Solving Trigonometric Equations Using a Graphing Calculator	Lesson 1		
		Solving Trigonometric Equations For Exact Values Without Calculator	Lesson 2		
		Reciprocal and Pythagorean Identities	Lesson 3		
More Trigonometric Identities		Lesson 4			
Sum and Difference Identities		Lesson 5			
Double Angle Identities		Lesson 6			
Unit 6 Send in Assignment		Lessons 1 – 6	100	4.375%	
	Module 3 TEST	Covers units 5 & 6	100	17%	
Module 4	Unit 7 Permutations & Combinations	The Fundamental Counting Principle	Lesson 1		
		Permutations Involving Different Objects	Lesson 2		
		Permutations Involving Identical	Lesson 3		

Module 4	Unit 7 Permutations & Combinations	Objects				
		Combinations	Lesson 4			
		Pascal's Triangle and the Binomial Theorem	Lesson 5			
		Unit 7 Send in Assignment	Lessons 1-5	100	4.375%	
	Unit 8 Function Notation and Operations	Function Notation	Lesson 1			
		Sum and Difference of Functions	Lesson 2			
		Products and Quotients of Functions	Lesson 3			
		Compositions of Functions	Lesson 4			
		Unit 8 Send In Assignment	Lessons 1-4	100	4.375%	
		Module 4 Test	Covers Units 7 and 8	100	15%	

You have 10 months from the date of registration to complete this course. You must progress a minimum of 10% to be considered on track and up-to-date. At reporting times, grades will be given to students who are up-to-date. An "I" (incomplete/in progress) report will be given to any student not up-to-date. This is of particular importance for Grade 12 students submitting marks to PSIs. We report in November, January, April and June.

Math 12 Pre-Calculus Prescribed Learning Outcomes

The following document is taken from:

http://www.bced.gov.bc.ca/irp/pdfs/mathematics/WNCPmath1012/2008math1012wncp_ccf.pdf

[C] Communication
 [PS] Problem Solving
 [CN] Connections
 [R] Reasoning
 [T] Technology
 [ME] Mental Mathematics and Estimation
 [V] Visualization

Trigonometry

General Outcome: Develop trigonometric reasoning.

- A1. Demonstrate an understanding of angles in standard position, expressed in degrees and radians.
[CN, ME, R, V]
- A2. Develop and apply the equation of the unit circle.
[CN, R, V]
- A3. Solve problems, using the six trigonometric ratios for angles expressed in radians and degrees.

[ME, PS, R, T, V]

- A4. Graph and analyze the trigonometric functions sine, cosine and tangent to solve problems.
[CN, PS, T, V]
- A5. Solve, algebraically and graphically, first and second degree trigonometric equations with the domain expressed in degrees and radians.
[CN, PS, R, T, V]
- A6. Prove trigonometric identities, using:
- reciprocal identities
 - quotient identities
 - Pythagorean identities
 - sum or difference identities (restricted to sine, cosine and tangent)
 - double-angle identities (restricted to sine, cosine and tangent).
- [R, T, V]

Relations and Functions

General Outcome: Develop algebraic and graphical reasoning through the study of relations.

- B1. Demonstrate an understanding of operations on, and compositions of, functions.
[CN, R, T, V]
- B2. Demonstrate an understanding of the effects of horizontal and vertical translations on the graphs of functions and their related equations.
[C, CN, R, V]
- B3. Demonstrate an understanding of the effects of horizontal and vertical stretches on the graphs of functions and their related equations.
[C, CN, R, V]
- B4. Apply translations and stretches to the graphs and equations of functions.
[C, CN, R, V]
- B5. Demonstrate an understanding of the effects of reflections on the graphs of functions and their related equations, including reflections through the:
- x -axis
 - y -axis
 - line $y = x$.
- [C, CN, R, V]
- B6. Demonstrate an understanding of inverses of relations.
[C, CN, R, V]
- B7. Demonstrate an understanding of logarithms.
[CN, ME, R]
- B8. Demonstrate an understanding of the product, quotient and power laws of logarithms.
[C, CN, R, T]
- B9. Graph and analyze exponential and logarithmic functions.
[C, CN, T, V]
- B10. Solve problems that involve exponential and logarithmic equations.
[C, CN, PS, R]
- B11. Demonstrate an understanding of factoring polynomials of degree greater than 2 (limited to polynomials of degree ≤ 5 with integral coefficients).
[C, CN, ME]
- B12. Graph and analyze polynomial functions (limited to polynomial functions of degree ≤ 5).
[C, CN, T, V]
- B13. Graph and analyze radical functions (limited to functions involving one radical).
[CN, R, T, V]
- B14. Graph and analyze rational functions (limited to numerators and denominators that are monomials, binomials or trinomials).
[CN, R, T, V]

Permutations, Combinations and Binomial Theorem

General Outcome: Develop algebraic and numeric reasoning that involves combinatorics.

C1. Apply the fundamental counting principle to solve problems.

[C, PS, R, V]

C2. Determine the number of permutations of n elements taken r at a time to solve problems.

[C, PS, R, V]

C3. Determine the number of combinations of n different elements taken r at a time to solve problems.

[C, PS, R, V]

C4. Expand powers of a binomial in a variety of ways, including using the binomial theorem (restricted to exponents that are natural numbers).[CN, R, V]