Mathematics 072 S01
Advanced Mathematics 1
Spring 2015

Instructor:	Crystal Lomas (May 4 - Jun 24)	Dr. Patrick Montgomery (Jun 24 - Aug 13)
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Office Hours:	Mondays and Wednesdays 4:30 pm – 5:20 pm	

Class Meeting Times: Mondays and Wednesdays 5:30 pm-7:50 pm
Class Location: Ewing 346

Course Objectives: The main goals for this course are:

- To learn the basic algebraic skills necessary to succeed in future math courses and in your chosen field of study. This involves learning the vocabulary, notation, rules, and techniques of intermediate algebra, as well as solving applied problems.
- To master arithmetic operations (without the help of a calculator).
- To learn to write mathematics correctly.
- To be able to explain the concepts involved in problem solving.

Important Dates:

May 4	First day of Math 072/073 Self-Paced Class
May 18	Victoria Day – College closed
May 19	Fee Deadline
July 1	Canada Day – College closed
July 6	Last day to withdraw from the course or change to audit
Aug. 3	BC Day – College closed
Aug. 13	Last day of instruction for Math 072/073 class
Aug. 13	Last day to write tests or Final Exam

Prerequisites: **Recent B or higher** in Applications of Math 11; OR
Recent C or higher in (Principles of Math 10 or Foundations of Math & Pre-calculus 10 or Foundations of Math 11 or Applications of Math 12 or MATH 053 or MATH 057); OR
Recent C- in (Principles of Math 11 or Pre-calculus 11); OR
Recent assessment

Required Grade: A **C+ or higher** is needed in MATH 072 to continue into Math 073, Math 109, Math 112, Math 113, or enter most college programs. A **B or higher** is needed to continue into Math 172.

Textbook: *Intermediate Algebra, 11th Edition, Marvin Bittinger (required)*
The new textbooks sold at the bookstore come packaged with the student solutions manual as well as a Trigonometry booklet which is used for MATH 073.

Calculator Policy:	The only calculator permitted for use in most Math courses at Camosun (including this one) is the **Sharp EL-531X** scientific calculator. No calculators will be allowed on Test 1, Test 3, and part of the final exam. It is good practice to only use a calculator when it is absolutely necessary, even in places where calculators are allowed.
Access Math Lab:	<u>Ewing 342 and Ewing 224</u> This drop-in centre is freely available for your use to work on math homework and to seek help from the tutor on staff (see hours posted on door).
Additional Resources:	**DVDs** are available on reserve in the main library; **videotapes** are available at the Math Help Centre E342.
Workload:	The course completion time will vary for each student, depending on a number of factors to be discussed with the instructor when the individual learning plan is developed. Factors include the students' beginning level of math skills, motivation, learning rate, and how much time they can actually study and attend class. It takes 2-4 hours to read through one section and do both the margin exercises and enough exercises in the exercise set to feel comfortable with the material. There are 35 sections in this course; this means that you have between **70-140 hours of work** ahead of you not including study time for tests and the final exam! If you work 5 days a week on this course, then you need to put in 2-4 hours a day to finish the course in one term. There is lots of help available; you can ask me questions during class or during office hours, and you can get help from the math tutors in the help centres.
Grades:	This course is comprised of 5 term tests (50% of your mark) and a final exam (50% of your mark). If you get less than 65% on a term test, you must rewrite it. If you get 65% or higher on a term test, you can choose to rewrite it once. There are no rewrites for the final exam. You can choose to write each test when you feel you are ready, but you must get permission from your instructor to write. All tests and the final exam are written in the math lab in E342 during math lab hours; the math lab hours are posted on the math lab door and also online. It will take approximately 1.5 hours to write each term test and approximately 3 hours to write the final exam. To re-register for this course for one extra term, you must have at least 75% of the work done or at least 75% attendance. If you wish to complete the course in one term, you should plan to write a test every 2-3 weeks.

Grade Scale:

0-49	50-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100
F	D	C	C+	B-	B	B+	A-	A	A+

NS   You will be assigned a "no show" grade if you do not attend the first class and you do not contact your instructor within two days of the first class. Your seat may have been given away to a waitlisted student. If room is available, you may re-register for the course with permission of the instructor.

W   If you find that you are too busy to work on the course, then you need to officially withdraw before July 6 to avoid getting an F for the course.

IP   An "in-progress" grade is only given in self-paced courses. If you have not finished the course at the end of the term but have attended at least 75% of the classes or have successfully completed at least 3 unit tests that term, then you may be awarded an IP grade. You may only receive two IP grades for a course; the third time you register for the course, you will be assigned an F if you do not complete the course.

Academic Progress: The College has an academic progress policy to improve your likelihood of success. To view the policy, see Sec E-1.1 on the policy webpage http://camosun.ca/about/policies/policies.html

Learning Support: There are a variety of services available to assist you throughout your learning. This information is available in the College calendar, at Student Services, or the college web site at camosun.ca.

Student Conduct: There is a Student Conduct Policy which includes plagiarism. It is your responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, at Student Services and on the College website in the Policy Section http://camosun.ca/about/policies/policies.html

Course Content: MATH 072 is an algebra course that articulates as the first half of Principles of Math 11. However, those of you who have taken Math 11 will notice that 072 has quite a different flavour; we emphasize algebra skills and we only use a calculator when necessary. Topics include an arithmetic and algebra review; linear equations and inequalities in one variable; an introduction to functions; a comprehensive study of linear functions; systems of linear equations in two variables; linear inequalities in two variables; polynomials; and rational exponents. Applications are sprinkled throughout the course. We cover the following sections in the textbook:

Unit 1: Ch R	Review of Basic Algebra	R.1 - R.7
Unit 2: Ch 1	Solving Linear Equations and Inequalities	1.1 - 1.6 (omit 1.6e)
Unit 3: Ch 2	Graphs, Functions, and Applications	2.1 - 2.6
Unit 4: Ch 3	Systems of Equations	3.1 - 3.4, 3.7ab
Unit 5: Ch 4	Polynomials and Polynomial Functions	4.1 - 4.7

Unit 1	Section	Margin Exercises	A Bit More Practice	Lots More Practice
R.1	The set of real numbers	All	1-23, 69-73	1-73
R.2	Operations with real numbers	All	23, 45-55, 67-77, 85, 99, 111-121, 129, 133-142 all, 143	1-129, 133-142 all, 143
R.3	Exponential notation and order of operations	All	31, 35, 37, 61, 67, 85, 91, 97, 105, 107, 123, 129	1-107, 111-122 all, 123, 129
R.4	Introduction to algebraic expressions	All	7, 23, 25, 35, 37, 41	1 – 43, 47 – 56 all, 57, 59
R.5	Equivalent algebraic expressions	All	7 – 27, 37, 39, 47, 51, 55, 59, 63 – 63 all	5 – 59, 63 – 68 all
R.6	Simplifying algebraic expressions	All	9, 21, 35, 41, 43, 53, 57, 65, 67, 93	1 – 69, 71 – 86 all, 91, 93
R.7	Properties of exponents and scientific notation	All	11, 19, 29, 37, 61, 65 – 75, 99, 119, 121	1 – 107, 113 – 118 all, 119, 121
Important Properties		Also review the definitions of the sets of real numbers on pages 2 – 5. Making and using flash cards are a great way to learn definitions.		
Reinforce Concepts		True and false questions can be hard; don't be discouraged		
Ch R Test		No calculators and no checking answers until you have finished this practice test! Grade yourself; hard questions are worth 2 marks each and other questions are worth 1 mark each. If you are satisfied with the results, then you are ready for the Unit 1 Test. If you want more practice, choose from the suggestions below.		
Review Exercises		Find questions in these exercises that are similar to the ones that you had trouble with in the chapter test.		

HOMEWORK for Unit 2 (Ch 1)

Unit 2	Section	Margin Exercises	A Bit More Practice	Lots More Practice
1.1	Solving Equations	Start at #9	33, 35, 47, 77 – 83, 103	13 – 83, 103
1.2	Formulas and Applications	All	23 – 29, 35, 47 – 51	1 – 29, 35, 47 – 51
1.3	Applications and problem solving	All	1 – 31	1 – 31
1.4	Sets, inequalities, and interval notation	All	33, 35, 57 – 87, 101, 105	1 – 87, 101, 105
1.5	Intersections, unions, and compound inequalities	All	9, 11, 35, 37, 55, 59 – 67, 69 – 78 all, 79 – 91	1 – 67, 69 – 78 all, 79 – 91
1.6	Absolute value equations and inequalities	1 – 19	47 – 55, 59, 63, 67, 109 – 116 all	1 – 69, 109 – 116 all
Important Properties		You may omit the Principles for Solving Inequalites Involving Absolute Value at the bottom of the page.		
Ch 1 Test 1-42		No checking answers until you have finished this practice test! Grade yourself; hard questions and word problems are worth 2 marks each		

		and other questions are worth 1 mark each. If you are satisfied with the results, then you are ready for the Unit 2 Test. If you want more practice, choose from the suggestions below.
Review Exercises		Find questions in these exercises that are similar to the ones that you had trouble with in the chapter test.

HOMEWORK for Unit 3 (Ch 2) - NO CALCULATOR

Unit 3	Section	Margin Exercises	A Bit More Practice	Lots More Practice
2.1	Graphs of equations	All	45, 49	1 – 53, 55 – 58 all
2.2	Functions and graphs	All	5, 9,19c, 19f, 25f, 31, 39, 43, 49,61,67 – 74, 75	1 – 65, 67 – 74 all, 75
2.3	Finding domain and range	All	1, 11, 19, 21, 23, 33, 37, 41 – 50 all	1 – 39, 41 – 50 all
2.4	Linear functions: graphs and slope	All	15, 17, 19, 27, 33, 37, 41 – 50 all	1 – 35, 39 – 47 all
2.5	More on graphing linear equations	All	1 – 10, 11, 13, 19, 29, 33, 35, 39, 47, 55, 71 – 81	1 – 55, 71 – 81
2.6	Finding equations of lines; applications	All	35, 41, 45 – 53, 62, 63, 65	1 – 53, 62, 63, 65
Important Properties		Also learn the definitions of function, domain and range and know the vertical line test		
Ch 2 Test		When you finish a test, check the answers and grade yourself. No peeking at the answers until you have completed a test. Use your calculator sparingly		
Review Exercises		All		

HOMEWORK for Unit 4 (Ch 3)

Unit 4	Section	Margin Exercises	A Bit More Practice	Lots More Practice
3.1	Systems of equations	1-7	3, 13, 15, 21, 23, 25, 30	1 – 25, 30
3.2	Solving by substitution	All	17, 19, 21, 31, 33	1 – 21, 27, 31, 33
3.3	Solving by elimination	All	13, 21, 25, 27, 29, 31, 49, 51	1 – 31, 49, 51
3.4a	Applied problems in two variables (Motion problems are only tested in Math 073)	All	5, 7, 11, 13, 15, 17, 21, 23, 25, 27	1 – 39
3.7ab	Systems of ineqalities (omit c)	1-6	1 – 7, 9, 10 17, 25	1 – 7, 9, 10, 1 – 29
Vocabulary and Rules		Know the meaning of consistent & inconsistent systems of equations and dependent & independent equations		
Ch 3 Test		1 – 11, 13, 15, 16		
Review Exercises		All		

Unit 5	Section	Margin Exercises	A Bit More Practice	Lots More Practice
4.1	Introduction to polynomials and polynomial functions	All	25, 29, 75, 79	1 – 29, 35 - 79
4.2	Multiplication of polynomials	All	41, 43, 75, 79, 81, 89, 91, 103	1 – 91, 103
4.3	Introduction to factoring	All	23, 27, 37 – 41, 49, 57 – 64 all, 65, 67, 75, 77	11 – 49, 57 – 64 all, 65, 67, 75, 77
4.4	Factoring trinomials: $x^2 + bx + c$	All	13, 17, 23, 25, 39	1 – 39
4.5	Factoring trinomials: $ax^2 + bx + c, a \neq 1$	All	Start with the FOIL method (trial and error); switch to the ac-method as needed 33 – 51, 69 – 81	1 – 51, 69 – 81
4.6	Special factoring	All	Matching p378: 1 – 10 , 27, 29, 41, 51, 59 – 67, 89, 91, 99, 103, 105, 125, 131	Matching p378: 1 – 10, 1 – 105, 125, 131
4.7	Factoring: a general strategy		21 – 27, 33, 37, 41 – 53, 59 – 69	1 – 53, 59 – 69
Properties and Formulas		1. classification of polynomials by the number of terms and degree 2. squaring a binomial (in your head) 3. factoring formulas (diff. of squares, sum/diff of cubes) 4. Principle of Zero Products		
Function Notation: Sections 2.2, 4.1, 4.2		Study about evaluating functions or how to find function values, and also how to find x-values for which the function value is given		
Ch 4 Test: All		No peeking at the answers until you have finished the test! Grade yourself; hard questions are worth 2 marks each and the other questions are worth 1 mark each. If you are satisfied with the results, then great! If you want more practice, choose from the suggestions below.		
Review Exercises		All		

HOMEWORK for Final Exam

- Work through the Cumulative Review questions. If you are having trouble with a question, return to that objective and redo some extra problems Take note that questions from sections 1.6e, 3.5, 3.6, and 4.8 are not included.
- The first part (about 40%) of the final exam is done without calculator and the second part (about 60%) is done with calculator. There are no rewrites for the final exam.

Word problems	Sections 1.3, 1.4, 2.6, 3.2, 3.3, 3.4, 3.8, 4.8
Rearranging formulas	Section 1.2
Exponent rules	Sections R.7
Function notation	Sections 2.2, 4.1, 4.2

Tips for Success

1. Come to class every day. If you don't attend class, it's easy to fall behind and much tougher to catch up as you have to relearn the material.

2. Do the suggested exercises from your course outline. Work through the problems thoughtfully, not just to get them done. Think about what the instruction means, what a similar question might look like on the test and what are some of the pitfalls that you need to avoid.

3. Try to find time to do at least a bit of math at least 5 days a week. On your timetable, schedule time each day for your math homework; it is really important to establish a routine. You can't put your math course on the back burner and hope to cram it in at the end.

4. Do the questions thoughtfully rather than just trying to get them over with! Think about the principles and strategies involved.

5. If you don't understand something, seek help right away from your instructor or from the tutors in the Math Lab in <u>E224 and E342</u>.

6. Keep working, stay positive and do the best you can given all the other demands in your life.

Class Protocol

1. Sign in so your instructor knows that you're attending.

2. Bring your textbook, calculator and work materials to every class.

3. Work quietly. I encourage you to help each other but please keep the noise level down and keep cell phones on vibrate mode. If you would like to work with a partner or in a group, please feel free to use the math lab. If you would like to take a break from math (and this is totally understandable) please chat outside the classroom.

4. If you bring snacks to class please tidy up afterwards. Let me know if you have any relevant allergies.

5. If you need help and I'm with another student, please put your name on the board so I know you're waiting. If others are waiting, I may have to limit the time I spend with you (e.g. 2 questions at a time).

6. When doing the exercises, label each question clearly, write out the question and show your work. This makes it easy to review for the test and to get help if you don't understand.

7. If you have trouble with an exercise, highlight the question and make a note in your margin about what you don't understand. When you ask for help in class, bring the question and your work for the instructor to see. Be organized!

MATH 072 Suggested Pacing Schedule Spring 2015

- Please note that you can take up to 2 terms to complete a course if you need it.
- Some chapters may require more time, others less. You can write tests anytime the math lab is open, not just on class days.

Wk		Monday	Tuesday	Wednesday	Thursday	Friday
1	May	4 R.1	5 R.1	6 R.2	7 R.2	8 R.3
2		11 R.4	12 R.4	13 R.5	14 R.5	15 R.6
3		18 *Victoria Day*	19 R.6	20 R.7	21 R.7	22 Review Ch R
4		25 **Unit 1 Test**	26 1.1	27 1.2	28 1.3	29 1.3
5	June	1 1.4	2 1.5	3 1.6	4 1.6	5 Review Ch 1
6		8 **Unit 2 Test**	9 2.1	10 2.1	11 2.2	12 2.3
7		15 2.3	16 2.4	17 2.5	18 2.6	19 2.6
8		22 Review Ch 2	23 Review Ch 2	24 **Unit 3 Test**	25 3.1	26 3.2
9	July	29 3.3	30 3.4	1 *Canada Day*	2 3.4	3 3.7
10		6 3.7	7 Review Ch 3	8 Review Ch 3	9 **Unit 4 Test**	10 4.1
11		13 4.1	14 4.2	15 4.3	16 4.4	17 4.5
12		20 4.5	21 4.6	22 4.6	23 4.6	24 4.7
13		27 Review Ch 4	28 Review Ch 4	29 Review Ch 4	30 **Unit 5 Test**	31 Final Review
14	Aug	3 *BC Day*	4 Final Review	5 Final Review	6 Final Review	7 Final Review
15		Aug 10-13: **Catch-up week**; last chance to write a test or final exam is **Thursday, Aug 13th.**				

My MATH 072 Pacing Schedule Spring 2015

Wk		Monday	Tuesday	Wednesday	Thursday	Friday
1	May	4	5	6	7	8
2		11	12	13	14	15
3		18 *Victoria Day*	19	20	21	22
4		25	26	27	28	29
5	June	1	2	3	4	5
6		8	9	10	11	12
7		15	16	17	18	19
8		22	23	24	25	26
9	July	29	30	1 *Canada Day*	2	3
10		6	7	8	9	10
11		13	14	15	16	17
12		20	21	22	23	24
13		27	28	29	30	31
14	Aug	3 *BC Day*	4	5	6	7
15	Aug 10-13: **Catch-up week**; last chance to write a test or final exam is **Thursday, Aug 13th.**					