

# Math 213 (3 Units)

## Fundamentals of Elementary Mathematics I

Time and Place: TR 2:30-3:45 p.m. LBST 202  
Instructor: Greg Crow, Ph.D.  
Contact Information: 619-849-2604  
RS 220  
gcrow@pointloma.edu  
Office Hours: Posted beside office door

You can come by my office any time and if I am free I will help you (you can also call me at home if you call before 8:45 p.m.) I keep a sign-up sheet to the right of my office door and you can sign up for any empty white time slot if you want to be sure that the time is reserved for you. If you have a question or just want to hang out, come by my office.

### University Mission:

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

### Department Mission:

The Mathematical, Information, and Computer Sciences department at Point Loma Nazarene University is committed to maintaining a curriculum that provides its students with the tools to be productive, the passion to continue learning, and Christian perspectives to provide a basis for making sound value judgments.

### Catalog Description

MTH 213 (3 Units) Fundamentals of Elementary Mathematics I  
A comprehensive approach to the mathematical knowledge necessary for a California multiple subject teaching credential (K-8). Topics covered in this course include whole numbers, numeration systems, fractions, decimals, ratios, proportions and an introduction to number theory. The integers, rational numbers, irrational numbers and real numbers are studied along with algebraic expressions, inequalities, graphs and polynomials. This class is highly interactive and emphasizes group work and cooperative learning. Not applicable toward a major in Mathematics. Passing an 8th grade mathematics proficiency test is a requirement for the completion of this course.

Prerequisite(s): MTH113 (Intermediate Algebra) or equivalent.

### Learning Outcomes

- Students will be able to demonstrate a facility with operations on the integers.
- Students will be able to demonstrate a facility with operations on the rational numbers.
- Students will be able to apply concepts from number theory to solve problems.

### Text:

*A Problem Solving Approach to Mathematics for Elementary School Teachers*  
by Billstein, Libeskind and Lott, 11<sup>th</sup> Edition, ISBN 0-321-75666-5

Note that you can access the textbook electronically via Canvas, you will not need to buy a physical copy of the book.

### Supplemental Materials:

A calculator, compass, protractor, ruler, and access to a computer.

### Content:

MTH213 (and MTH223 in the Spring) includes the college-level mathematics and instructional methods needed to teach elementary school mathematics in ways consistent with the recommendations of the Common Core <http://www.corestandards.org/Math/>. Material is selected for inclusion because teachers need to know it and understand it in order to teach elementary school mathematics effectively. Also, course activities and assignments are designed to assist you in gaining a deeper understanding of mathematics sufficient for effective teaching in elementary and middle school (grades K-8).

### Philosophy and Approach:

Research in Learning Theory shows that students who learn mathematics effectively must be actively involved in the process, not just passive listeners/observers. In particular, in order to really learn and understand mathematical ideas and processes you must become deeply involved in activities such as exploring, discussing, analyzing, explaining, conjecturing, defending, negotiating, testing, and evaluating. To do this, you need good problems to solve, interaction with others on solutions, and opportunities to write your conclusions.

The mathematical experience of the students in MTH213 and MTH223 varies widely. This means that different students will need to spend different amounts of time to learn the material. To help assist in this process, the class is designed as a blended class. You will be doing reading and some homework problems (you get two attempts at each problem) online this will allow you spend the amount of time that you need to learn the basics before we engage in activities in class.

**Grading:**

Grades are based on the number of points accumulated throughout the course with the following exception. A student must pass at least one of the Mid-Semester Examination or the Final Examination in order to pass the class. That is, a score of 60% must be achieved on one of the Examinations, or else the final grade will be an F regardless of all other point totals. Approximate minimal percentages required to obtain a given grade are:

Online Homework	15%
Written Homework	20%
Review Exercises for Exams	5%
In-Class Written Exam	25%
Cumulative Final Exam	35%
Total	100%

The grading scale for the course is:

	A	B	C	D
+		(87,90)	(77,80)	(67,70)
	[92,100]	[82,87]	[72,77]	[62,67]
-	[90,92)	[80,82)	[70,72)	[60,62)

**Graphical Schedule of Assignments**

A graphical representation of assignments can be seen in the Schedule at the end of this document.

**Credit Hour:**

In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for a 3 unit class delivered over 15 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

**Homework:**

You will have two types of homework:

**Online Homework** - this will be due at 11:59 pm on the Wednesday before our class face to face meeting. Your online homework will be graded by the computer. You will have two attempts to work each problem.

**Written Homework** - this will be **due at the start of class** the next Thursday. No late homework will be accepted except by prior arrangement or with a documented emergency. In your written homework I expect to see calculations using the terminology and methods of the class and not just an answer. A random selection (the same for all people) of the problems will be graded on any homework assignment.

**Basic Competency Test:**

In order to pass MTH213 you must pass this test at the 80% level. It will be given the first Tuesday of classes and then retakes can be arranged on a one to one basis with the course professor. No more than a total of three attempts are allowed on this test.

**Examinations and the Final Examination:**

There will be one Mid-Semester Examination and a comprehensive Final Examination. The Mid-Semester Examination and the Final Examination will include problems and questions over material assigned in the text, readings and handouts, as well as material presented in class. The examination schedule is included in the daily schedule. The instructor will not accept excuses such as poor communication with parents, benefactors, surf team sponsors and/or travel agents. No examination shall be missed without prior consent or a well-documented emergency beyond your control. In such cases, all make-up exams will occur at 8:30 am on the Saturday between classes and Final Exam week. A score of zero will be assigned for an examination that is missed without prior consent or a well-documented emergency beyond your control.

**Attendance:**

Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See [http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Class\\_Attendance](http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Class_Attendance) in the Undergraduate Academic Catalog.

Because this course is a hybrid course, attendance will be calculated as follows:

Face-to-face portion of the class: You must be present on time for the full class for you to be considered present in the face to face meeting.

Online portion of the class: You are expected to work on material online every week. In order to earn credit for being “present” in the online portion of the class each week you must complete at least one online homework assignment or exam review assignment (for test weeks) before the due date/time for that week.

If you miss 10% of the classes, you will receive a warning. If you miss 20% of the classes, you will be automatically de-enrolled.

**Class Enrollment:**

It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

**Academic Accommodations:**

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at [DRC@pointloma.edu](mailto:DRC@pointloma.edu). See [Disability Resource Center](#) for additional information. For more details see the PLNU catalog:

[http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic\\_Accommodations](http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic_Accommodations)

Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

**Academic Honesty:**

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See

[http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic\\_Honesty](http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic_Honesty) for definitions of kinds of academic dishonesty and for further policy information.

**Copyright Protected Materials**

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

**E-mail and Messages:**

I expect that you regularly use e-mail. I will periodically send you information and updates via e-mail and/or via canvas. In the first week of class you must activate your PLNU e-mail account if you are not currently using it.

**Final Exam: 4:30-7:00 pm Thursday December 15<sup>th</sup>, 2016 in LBRT 204A**

The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in the course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

**The Final Exam is a Comprehensive Examination.**

**Some Tips About This Class:**

- Reading mathematics is a fairly slow process and will require you to read things more than once. Do not get behind; you want to be working on class material most days.
- Read with a pencil in hand. Be sure to fill in details and check the author's computations. It will probably help your studying if you write these calculations in a notebook.
- Read the material and work the online problems with the text before attempting quizzes and written homework.
- Work lots of problems. Part of becoming good at mathematics is practice.
- Work in groups. You learn a lot if you have to explain your solution to someone else (we will be doing this in class).
- Stay current with your assignments (cramming won't help)
- If you have a question, **ASK**.

# Weekly Schedule

Week and	Prior to Class			In Class	After Class
Start Date	Online	Online Assignments	Open Lab Tuesday	Thursday	Homework (problems from the textbook to be done on paper).
		Due 11:59 pm Wednesday			Due in class the next Thursday (By section in the textbook, with the page number that will show in the online copy of the book)
1 8/28/16			None (1 <sup>st</sup> week)	Introduction to the Class Introduction to Sections 2.1-2.2	None (1 <sup>st</sup> week)
2 9/4/16	2.1-2.2 Read	2.1-2.2 Assigned Online Problems (Pearson HW)	Basic Competency Test	Sections 2.1-2.2 Activities Introduction to Sections 2.3 and 3.1	2-1B: 3, 10, 11, 15 (a,b), 16 (Pg. 64) 2-2B: 3, 5(a,b), 11, 14, 16 (Pg. 79)
3 9/11/16	2.3 and 3.1 Read	Sections 2.3 and 3.1 Assigned Online Problems (Pearson HW)	Optional Session for Help	Sections 2.3 and 3.1 Activities Introduction to Sections 3.2-3.3	2-3B: 5(a,b,c,d), 9, 10, 11,13 (Pg. 90) (Hint: look at the example from our face to face meeting to think about how to do 13 in the textbook) 3-1B:1, 5(a,b), 8, 15, 18, 20 (Pg. 110)
4 9/18/16	3.2-3.3 Read	3.2-3.3 Assigned Online Problems (Pearson HW)	Optional Session for Help	Chapter 3.2-3.3 Activities Introduction to Sections 3.4-3.5	3-2B: 1, 6, 10, 11, 12(a,b,c), 16, 17 (Pg. 123) 3-3B: 5, 6, 10, 12, 13 (Pg. 140)
5 9/25/16	3.4-3.5 Continue reading	3.4-3.5 Assigned Online Problems (Pearson HW)	Optional Help Session this week.	Sections 3.4-3.5 Activities Introduction to Chapter 4	3-4B: 2, 4 (a,b,c), 5, 12, 14 (Pg. 155) 3-5B: 2, 3, 4, 5(a,b), 6, 13(a,b) (Pg. 166)
6 10/2/16	4.1-4.3 Read	Chapter 4 Assigned Online Problems (Pearson HW)	Optional Session for Help	Sections 4.1-4.3 Activities Test Review	4-1B: 4(a,b,c), 8, 11, 12(a,b), 14 (Pg. 187) 4-2B: 3, 5, 15 (Pg. 202) Mathematical Connections 4.2 (bottom of Pg. 202) (Hint: 3, 6 pay attention to the fact that these two problems need answers that should be written in sentences.) 4-3B: 1(b,c), 2 (c, d), 3, 9, 19 (Pg. 214)
7 10/9/16	ONLINE Review Quizzes for Chapters 2-4	Test Review Activities Review Homework Chapters 2-4	Optional Session for Help	Exam (1 hour) Introduction to Chapter 5	No written homework this week.

Week and	Prior to Class			In Class	After Class
Start Date	Online	Online Assignments	Open Lab Tuesday	Thursday	Homework (problems from the textbook to be done on paper).
8 10/16/16	5.1-5.2 Read	5.1-5.2 Assigned Online Problems (Pearson HW)	Optional Session for Help	Section 5.1-5.2 Activities Introduction to Sections 6.1-6.2	5-1B: 4, 5, 8, 15, 21, 24 (Pg. 238) 5-2B: 5, 8, 11, 13, 20(a,b,c,d), 21(a,b,c), 27 (Pg. 252)
9 10/23/16	6.1-6.2 Read	6.1-6.2 Assigned Online Problems (Pearson HW)	Optional Session for Help	Section 6.1-6.2 Activities Introduction to Sections 6.3-6.4	6-1B: 1, 3, 6, 12, 16, 17, 22 (Pg. 273) 6-2B: 1(a,b,c), 2, 6, 7, 12, 13, 19 (Pg. 286)
10 10/30/16	6.3-6.4 Reading	6.3-6.4 Assigned Online Problems (Pearson HW)	Optional Session for Help	Sections 6.3-6.4 Activities Introduction to Sections 7.1-7.2	6-3B: 2, 3(a,b,c), 5, 6, 12, 14, 18 (Pg. 308) 6-4B: 2, 3, 8, 10, 14, 20 (Pg. 321)
11 11/6/16	7.1-7.2 Read	7.1-7.2 Assigned Online Problems (Pearson HW)	Optional Session for Help	Sections 7.1-7.2 Activities Introduction to Sections 7.3-7.4	7-1B: 1(c,d), 2(a,b), 10, 13, 14, 16 (Pg. 340) 7-2B: 1, 3, 6, 8, 10, 14, 16 (Pg. 356)
12 11/13/16	7.3-7.4 Reading	7.3-7.4 Assigned Online Problems (Pearson HW)	Optional Session for Help	Section 7.3-7.4 Activities Introduction to Sections 8.1-8.3	7-3B: 1(a,b,c,d), 2(a,b,c), 4, 5, 8, 16 (Pg. 366) 7-4B: 1(a,b,c), 2(c,d), 4, 9, 14, 16 25 (Pg. 381)
13 11/20/16	Chapter 8.1 Read	8.1 Assigned Online Problems (Pearson HW)	Optional Session for Help	Thanksgiving Break - No face to face class this week	8-1B: 2, 3, 4, 9, 13, 14 (Pg. 401)
14 11/27/16	8.2-8.3 Reading	8.2-8.3 Assigned Online Problems (Pearson HW)	Optional Session for Help	Section 8.1-8.3 Activities Introduction to Sections 8.4-8.5	8-2B: 1, 2, 3, 5, 8(c,d,e), 9 (Pg. 413) (Hint: write the sentence as an algebraic equation and then simplify) 8-3B: 2(a,b,c), 3, 5, 8 (Pg. 423)
15 12/4/16	8.4-8.5 Reading	8.4-8.5 Assigned Online Problems (Pearson HW)	Optional Session for Help	Section 8.4-8.5 Activities Discuss Final Exam Review	8-4B: 1, 2, 3, 6, 9, 11, 14 (Pg. 440) 8-5B: 2, 3, 6(a,b), 11(b,c), 16, 17 (Pg. 463)  Start Online Review listed next week
Finals Week 12/11/16	<b>Wednesday December 14<sup>th</sup></b> Final Exam Study Session 7:30 pm  Be sure to work in the review activities before coming to this study session. ONLINE Review Quizzes: Chapters 5-8 ONLINE Review Homework: Chapters 5-8			<b>Thursday December 15<sup>th</sup> in LBRT 204A</b> Final Exam 4:30-7:00 pm	