

UNIVERSITY OF KENTUCKY
INDEPENDENT STUDY PROGRAM
LEXINGTON, KY. 40506

MA 201

27 Assignments

Mathematics for Elementary Teachers

1 Short Paper

3 Semester Hours

This Independent Study Mathematics course was prepared by Deborah Weber. She has a B.S. in Mathematics from the University of Pittsburgh (1971), a M.Ed. in Mathematics Education from the University of Pittsburgh (1973), and has completed several post-graduate courses in Mathematics and Education at the University of Kentucky. She has been an instructor in the Mathematics Department of the University of Kentucky, and has graded various Independent Study mathematics courses since 1985.

This course supplement was reviewed and approved by Dr. Richard Millman, the Math 201 coordinator at the University of Kentucky (2006).

Revised: September, 2006

GENERAL DIRECTIONS

SO THAT NO MISUNDERSTANDING OCCURS BETWEEN US, ESPECIALLY AT GRADUATION TIME, PLEASE READ THESE DIRECTIONS VERY CAREFULLY BEFORE BEGINNING THE COURSE!

1. **READ YOUR TEXTBOOK AS WELL AS THIS SUPPLEMENT. STUDY THE EXAMPLES PROVIDED.** You will find this textbook very understandable. Spend time trying to understand the examples as well as the concepts. You, more than likely, are familiar with the ideas presented. You need to constantly think about the conceptual reasoning behind these ideas.
2. **Assignments:** Make sure that the assignments are completed and submitted in the order they are presented. Assignments turned in out of sequence will be held. **IT IS HIGHLY RECOMMENDED THAT YOU COPY YOUR ASSIGNMENTS BEFORE MAILING THEM.** Although assignments get lost infrequently, should this occur, excessive time and aggravation will be avoided by already having a backup copy.

Give yourself plenty of time to finish this course. You may turn in up to four (4) assignments per week; five (5) will be accepted if an A average on assignments is maintained. Please **DO NOT** request to turn in more than this due to timing for graduation, etc. You know when you want to graduate, so, plan ahead.

Use only one side of 8 ½" x 11" paper when turning in assignments. Use of pencil is preferred, but pen is acceptable if the assignment is done neatly. Your correct address and enrollment number must be recorded on the cover sheet. Use **ONE** cover sheet per assignment.

Use Quadrille Paper on Assignments 8 and 9.

All assignments, including the short paper, must be completed, turned in and graded before taking the final exam. You will not be permitted to take a grade of “zero” for non-submitted assignments. All assignments must be submitted before a final grade will be given.

In order to receive full credit, all answers must be supported. Solutions are not accepted without an explanation. You are only required to complete the “black” problems or parts of problems found in the Problem Set of each assignment. The problems or parts of problems designated in “red” are answered in your textbook. You are not required to complete the “red” problems or parts of problems, but it is recommended that you do as many as possible for a better understanding. You will not be given credit for copied answers.

You are expected to do your own work. Get outside help if necessary, but make sure the work turned in is your own. Turning in another person’s work is cause for a failing grade.

3. Practice Tests: Assignments 11, 19, 27. It is recommended that you study the sections covered on these tests before actually completing them. Treat them as “exams” in order to evaluate how much material you really do or do not understand. Then, go back and review the necessary information.

When submitting the Practice Tests, tear out (or copy) the pages in this supplement and submit them as your assignment. Make sure to support your answers.

4. Short Paper: You are required to write a two or three page paper on one of the topics listed in on page 3. It may be submitted any time before you take the final exam. You are not permitted to take a grade of “zero” for this paper. Not completing it will result in an incomplete grade (I) for the course. Label the cover sheet on the Short Paper: Assignment 28.
5. Final Exam: The practice tests are long and cover most of the material presented in this course. They provide a good review. It is recommended that you review all your assignments before taking the final exam. Final exam questions will be similar to those questions on the practice tests. You must support your solutions on the final exam in order to receive any credit. Use of a calculator is not permitted on the final exam.
6. General Comments: It is essential to read the book and make sure that you understand every part of it. Every sentence in the book has a reason for being there and you are expected to understand it.

The main test of understanding the material is to be able to work out any problem based on the material covered. Work all assigned problems and more, if you need a boost in confidence. Do not work the problems just for some numerical grade; work them to enhance your own learning process.

Mathematics is a science; the only thing you take on faith is the set of algorithms, axioms and definitions. Do not be satisfied by just knowing how a certain problem is solved. You need to be able to figure out for yourself why the method works. Solve enough problems until you reach this understanding! Your text and supplement can show solutions and explain the reason for procedure, but you, yourself, have to understand the process and the concept behind the process. Your goal should be to teach this notion to your students.

7. Extra Credit Points: You will be rewarded with 25 extra credit points if all of the above directions are followed (especially #2, 3, 4) throughout the entire course. If earned, these points will be added to your assignment score total before calculating assignment average.

ASSIGNMENTS

Assignment Number	Topic	Section Number
1	NCTM Principles and Standards	
2	Sets and Operations of Sets	2.1
3	Sets, Counting and Whole Numbers	2.2
4	Addition and Subtraction of Whole Numbers	2.3
5	Multiplication and Division of Whole Numbers	2.4
6	Numeration Systems Past and Present	3.1
7	Non-decimal Positional Systems	3.2
8	Algorithms for Adding and Subtracting Whole Numbers	3.3
9	Algorithms for Multiplication and Division of Whole Numbers	3.4
10	Mental Arithmetic and Estimation	3.5
11	Practice Test 1 Chapters 2 & 3 NCTM Principles and Standards	
12	Polya's Problem Solving	1.2
13	More Problem Solving Strategies	1.3
14	Additional Problem Solving Strategies	1.4
15	Reasoning Mathematically	1.5
16	Divisibility of Natural Numbers	4.1
17	Tests for Divisibility	4.2
18	Greatest Common Divisors and Least Common Multiples	4.3
19	Practice Test 2 Chapters 1 & 4	
20	The Basic Concepts of Fractions and Rational Numbers	6.1
21	The Arithmetic of Rational Numbers	6.2
22	The Rational Number System	6.3
23	Decimals and Real Numbers	7.1
24	Computations with Decimals	7.2
25	Ratio and Proportion	7.3
26	Percent 7.4	
27	Practice Test 3 Chapters 6 & 7	
32	SHORT PAPER	

Textbook

Mathematical Reasoning for Elementary Teachers by Calvin Long and Duane DeTemple, Addison-Wesley Publisher, 4th Edition, 2006.

Grading

The percentage grading scale:

[90, 100]	A
[80, 90)	B
[65, 80)	C
[50, 65)	D
[0, 50)	F

This scale is used for the final exam grade as well as the course grade.

The course grade is obtained from a weighted average of the total assignment score and the final exam score. The weight distribution depends on the final exam grade. It is described as follows:

Final Exam Grade	Final Exam Score Weight	Assg. Score Weight
A	1/2	1/2
B	2/3	1/3
C	3/4	1/4
D	4/5	1/5
F	1	0

Finding Your Course Average and Percentage

Example: Suppose a student's total assignment score is 87.1% (Calculation of this average is shown on the next page.) and his/her grade on the final exam is 76%. His/her course grade is:

$$\frac{3(76)}{4} + \frac{1(87.1)}{4} =$$

$$\frac{3(76) + 1(87.1)}{4} = .788 = 78.8\% \text{ C for the course.}$$

As one can see, the final exam is a major factor in determining the course grade. **Please note that a minimum of 50% is required on the final exam to pass this course.**

Finding Your Total Assignment Average and Percentage

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|-----|--|-----------------------------|
| (1) | Look at your 24 regular assignment scores.
(Ignore the 3 Practice Test scores – Assignments 11, 19 and 27.)
Delete the two (2) lowest scores.* | |
| | Find the sum of the remaining 22 assignment scores. | Total possible: 2200 points |
| (2) | Find the sum of your three (3) Practice Test scores. | Total possible: 600 points |
| (3) | Identify the score on your Short Paper | Total possible: 200 points |
| (4) | Find your Total Score | Total possible: 3000 points |
| (5) | Find your Average and Percentage Score | |

Example

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|-----|---|-----------------------------|
| (1) | Total number of points on 22 assignments: | 2013 out of 2200 |
| (2) | Total number of points on 3 Practice Tests: | 442 out of 600 |
| (3) | Total number of points on Short Paper | <u>158 out of 200</u> |
| (4) | Total number of points | 2613 out of 3000 |
| | Add Extra Credit Points** | 0 out of 25 |
| (5) | Find the average and percentage: | $2613/3000 = .871 = 87.1\%$ |

* Non-submitted or incomplete assignments will not be deleted.

**This is an all or nothing option. See General Directions, page iv, #7.