COURSE: Mathematics for Elementary Teachers (Math 41) - Section 4463, Fall 2002
PREREQ: Completion of Math 20 with a grade of C or better
OFFICE: MATH/MC 40V
HOURS: Mon. 1:00 – 2:00pm; Tue. 5:15 – 6:15pm; Wed. 9:30 – 10:30am; Thu. 1:00 – 2:00 in Math Lab
PHONE: Voicemail (310) 434-4722
MAIL: Students may leave written material/messages in the campus mailroom in the Liberal Arts Bldg
email: manion_fran@smc.edu (I try to check my email each evening.)
WEB Sites: http://homepage.smc.edu/manion_fran/
The Website contain syllabus, tentative lecture schedule, homework assignments, unit objectives, review sheets, announcements and links to course-related material.
http://www.smconline.org
This site is under development for Math 41 class. Instructor will advise you of accessibility.

Tutorial assistance, both “drop-in” and by appointment is available in the Math Lab located in MATH 34.


OPTIONAL: Student solutions manual

CONTENT
This course is designed for pre-service elementary school teachers. The course will examine five content areas:
- Numeration (historical development of numeration system);
- Set Theory (descriptions of sets, operations of sets, Venn Diagrams);
- Number Theory (divisibility, primes and composites, greatest common divisor, least common multiple);
- Properties of Numbers (whole numbers, integers, rational numbers and models for teaching binary operations); and
- Problem Solving (strategies, models to solve problems, inductive and deductive reasoning).

PREREQUISITE SKILLS
Your instructor will expect that prior to enrolling in this course you have learned to:
A. Solve equations (including linear, quadratic, rational, radical and literal equations).
B. Solve linear and quadratic inequalities
C. Use interval notation, number line notation, set-builder, and inequality notation to express the solution to a linear, quadratic, or rational inequality.
D. Solve application problems using equations.
E. Find the domain and range of functions including, polynomials, rational, and radical functions.
F. Perform operations on functions.
G. Graph simple (including; constant, linear, quadratic, cubic, absolute value, radical) functions by vertical and horizontal translation.
H. Graph linear equations and inequalities.
I. Simplify exponential expressions.
J. Recognize and use common mathematical language to describe mathematical processes in either written or verbal form.

COURSE OBJECTIVES
Upon completion of this course, students will be able to:
1. Perform operations (union, intersection, complement) with sets and draw and interpret Venn diagrams
2. Perform binary operations in a variety of numeration systems
3. Demonstrate models for teaching binary operations (addition, subtraction, multiplication and division) with whole numbers, integers, and rational numbers.
4. Recognize the properties of the real number system.
5. Use the rules of divisibility and prime factorization of composite numbers to find the least common multiple and greatest common factor.

6. Use problem solving strategies (looking at a simpler case, making a table, using indirect reasoning, looking for a pattern, examining a related problem) to solve application problems.

**REGULAR ATTENDANCE** at class is required. Attendance will be taken. The instructor may drop any student who misses two class meetings.

**HOMEWORK** assignments are listed on the tentative lecture schedule. Selected problems will be discussed in class. Practice with computational formulas and the solution of application problems are critical to your success in this class. The majority of the problems assigned are odd-numbered exercises for which answers are provided in the back of the text. Homework should be done as soon as possible after class. It is a good idea to review class notes before attempting the homework.

Each homework assignment also includes one or two 2 “starred” problems, selected from the “B” exercises. These problems will be collected at the next class meeting and graded. Homework problems should be presented on standard 8-1/2” x 11” paper. (Paper ripped out of a spiral notebook is not acceptable!!!) Be sure to write your name, the text section number and the problem number(s) for the assignment on the upper right hand corner of the first page. When two problems are assigned, present one problem on each side of the paper. Your homework problems will be graded on presentation, process and accuracy. For full credit, you must include a statement of the problem, a clear presentation/description of your work and a statement of the solution expressed in a complete English sentence.

Your homework also includes **reading** the sections scheduled for discussion at the next class. Frequent **QUIZZES** based on homework problems and lectures will monitor your understanding of the concepts, notation and terminology. Homework and quizzes will account for 10% of your final grade.

Selected **PROFESSIONAL DEVELOPMENT ACTIVITIES** will account for 10% of your final grade. Options for these activities will be discussed in class and posted on the course website. One particular activity of note is the Future Teachers Conference scheduled for Saturday, October 26, at SMC.

Three **UNIT TESTS** will account for 60% of the final grade in the course. Topics included on each test are:

- **Unit 1 Test**: Sections 1.1-1.2; 2.1-2.4; 3.1-3.3
- **Unit 2 Test**: Sections 4.1-4.3; 5.1-5.2; 6.1-6.3
- **Unit 3 Test**: Sections 7.1-7.4; 8.1-8.2; 9.1-9.3

Your lowest test score will be replaced by your final exam score if the final exam score is higher. **No make-up tests will be given.**

A **COMPREHENSIVE FINAL EXAM** will be given according to the college final exam schedule and will account for 20% in the computation of the final grade. A student must receive a passing grade (D or better) on the final in order to pass the class.
**LETTER GRADES** on tests, quizzes, and the final exam will be assigned according to the following scale:

- A = 90% - 100%
- B = 80% - 89%
- C = 70% - 79%
- D = 60% - 69%
- F = below 60%

Your final grade will be calculated as a weighted average using the following formula:

$$\text{Final Grade} = 0.10 \times (\text{Hmwk & Quizzes}) + 0.10 \times (\text{Portfolio}) + 0.60 \times (\text{Test Average}) + 0.20 \times (\text{Final Exam})$$

Maintaining the appropriate **CLASSROOM CLIMATE** is the responsibility of each student.

- As a matter of courtesy, you should arrive on time for class.
- Pagers and cellular phones should be turned off or muted during class time to avoid creating a distraction.
- Food and beverages should be consumed outside the classroom.
- You are expected to be courteous to and respectful of your colleagues as well as the instructor.
- Talking during the lecture or announcements is a distraction to other students and the instructor and should be avoided.

Santa Monica College has a **STUDENT CONDUCT CODE** and may discipline students in accordance with its provisions. The College also has the authority to remove students from a class or program if they are disruptive of the instructional process, do not respect the civil rights of other students, cannot benefit from instruction, or present health and/or safety hazards in a class. Disciplinary sanctions include, but are not limited to, verbal or written reprimand, disciplinary probation, removal from class, ineligibility to participate in extracurricular activities, suspension, and expulsion.

Santa Monica College defines **ACADEMIC DISHONESTY** as the act of or assistance in deceiving, including fraud or deception, in any academic exercise. This includes, but is not limited to, the following actions not authorized by the instructor:

- Using testing aids such as calculators, tape recorders, or notes on any examination.
- Allowing another individual to assume one’s identity for the purpose of enhancing one’s grade in any of the following: testing, field trips, or attendance.
- Falsifying or attempting to falsify attendance records and/or grade rosters.
- Representing the words, ideas or work of another as one’s own in any academic exercise (plagiarism), including the use of commercial term paper companies.
- Changing answers on a previously scored test, assignment, or experiment with the intent to defraud.
- Copying or allowing another student to copy from one’s paper or answer sheet during an examination.
- Inventing information for the purpose of completing a laboratory exercise or case study with the intent to defraud.
- Giving and/or taking information during an examination by any means including sign language, hand signals, secret codes, or electronic transmission.

When taking a quiz or exam, you should keep your eyes on your own paper. Communicating (talk or body language) with another student during the exam without instructor permission is unacceptable. You are expected to do your own work on all quizzes and examinations. Students are encouraged to work together on the homework and review exercises. A first offense of academic dishonesty will result in a zero grade on that quiz or exam. A zero grade assigned as a result of academic dishonesty will NOT be dropped as the lowest score. In addition, a report will be filed with the Campus Disciplinarian.

For more detailed information, please refer to the **College Conduct Code and Academic Conduct Code** found posted in the classroom and in the **SMC Student Handbook/Guide**.
# Lecture Schedule and Homework Assignments

Homework should be done as soon as possible after class. It is a good idea to review class notes before attempting the homework. The “B” problems from each assignment will be collected at the next class meeting. If you are absent, your work is due the day you return to class.

<table>
<thead>
<tr>
<th>Date</th>
<th>Text</th>
<th>Homework</th>
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<tbody>
<tr>
<td>Tu 08/27</td>
<td>1.1 The Problem Solving Process</td>
<td>1.1A: #1,3,6,7,9,11,13,15,16,19; 1.1B: #7,13</td>
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<tr>
<td></td>
<td>2.1 Set Theory</td>
<td>2.1A: #1,3,6,8,10,16; 2.1B: #4,7,21</td>
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<td>Tu 09/03</td>
<td>1.2 Problem Solving: Add’l Strategies</td>
<td>1.2A: #1,2,3,6,7,9,11,12,13,17,18,22,23,24,28; 1.2B: #16,32</td>
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<td></td>
<td>2.2 Whole Numbers and Numeration</td>
<td>2.2A: #1,7ac,8ac,9ac,10ac,11acegik,13,14,18,19; 2.2B: #13,18</td>
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<tr>
<td>Tu, 09/10</td>
<td>2.3 The Hindu-Arabic System.</td>
<td>2.3A: #1ace,2ace,3ac,5,6,8,10,12ace,13,14,21,22; 2.3B: #10,23</td>
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<td>2.4 Relations and Functions</td>
<td>2.4A: #2,3,4,5,8,11,16,19,21; 2.4B: #20,22</td>
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<tr>
<td>Tu, 09/17</td>
<td>3.1 Whole Number Addition &amp; Subtraction</td>
<td>3.1A: #1,2,3aceh,4,5,6,7,10,11,14,15; 3.1B: #11,19</td>
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<td>3.2 Whole Number Multiplication &amp; Division</td>
<td>3.2A: #2,4-7,8bd,9,11,12acd,14,15,17,19,23,26; 3.2B: #14,23</td>
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<td>3.3 Whole Number Ordering &amp; Exponents</td>
<td>3.3A: #1-4,5ace,6,7bd,8,9,11,12,17; 3.3B: #8,12</td>
</tr>
<tr>
<td>Tu, 09/24</td>
<td>Test #1: 1.1-1.2; 2.1-2.4; 3.1-3.3</td>
<td>4.1 Mental Math, Estimation and Calculators</td>
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<td>4.1A: #1-16 all,19,29,32,34; 4.1B: #14,33</td>
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<tr>
<td>Tu, 10/01</td>
<td>4.2 Written Algorithms for Whole Number Operations</td>
<td>4.2A: #2,3ac,4,5,7,8,10ac,11,14,15,23,24,28,29; 4.2B: #22,24</td>
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<td>4.3 Algorithms for Other Bases; Number Theory</td>
<td>4.3A: #1,3,4,5,6,9,10,12,15; 4.3B: #1,10</td>
</tr>
<tr>
<td>Tu, 10/08</td>
<td>5.1 Primes, Composites, Tests for Divisibility</td>
<td>5.1A: #2-5,9,11,12,17,24,29,30,36,37; 5.1B: #11,28</td>
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<td>5.2 Counting Factors, GCF and LCM</td>
<td>5.2A: #1,4ac,5ac,6ace,7ace,8ac,9ac,10,11,13,19,20,22,25; 5.2B: #6,15</td>
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<tr>
<td>Tu, 10/15</td>
<td>6.1 The Set of Fractions</td>
<td>6.1A: #1-5,7,8,9,11,12,14,15,20,22; 6.1B: #15,20</td>
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<td>6.2 Fractions: Addition and Subtraction</td>
<td>6.2A: #1,2aceg,3,4,5ace,6ac,7,8,9ac,10ac,11,22,28; 6.2B: #12,30</td>
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<tr>
<td>Tu, 10/22</td>
<td>6.3 Fractions: Multiplication and Division</td>
<td>6.3A: #1-6,7aceg,8ace,9,10,11ac,12-15,22,24; 6.3B: #4,29</td>
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<td>7.1 Decimals</td>
<td>7.1A: #1-8,10,11ace,12,14ace,15,16ace,17; 7.1B: #8,15</td>
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<tr>
<td>Tu, 10/29</td>
<td>Test #2: 4.1-4.3; 5.1-5.2; 6.1-6.3</td>
<td>7.2A: #1,2,4-7,10,12,14,15,16ace,17ace,18ace,19ace,21,27; 7.2B: #10,32</td>
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<td>6.2 Operations on Decimals</td>
<td>7.3A: #1-5,6ac,7ace,8,10,11,13,16,21,24,27,31; 7.3B: #12,25</td>
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<td>7.4 Percent</td>
<td>7.4A: #1-7,8acegik,10-13,17,20,25,29,31,37; 7.4B: #24,28</td>
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<tr>
<td>Tu, 11/05</td>
<td>6.3 Ratio and Proportion</td>
<td>8.1A: #1-18,19,22,23,25; 8.1B: #10,20</td>
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<td>6.4 Percent</td>
<td>8.2A: #1-9,10ace,11-17,19-24,27,31; 8.2B: #5,36</td>
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<tr>
<td>Tu, 11/12</td>
<td>8.1 Integers: Addition and Subtraction</td>
<td>9.1A: #1-11,13,15,16,20,21,22,23; 9.1B: #6,31</td>
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<td>8.2 Integers: Multiplication and Division</td>
<td>9.2A: #1-11,15,16,19bd,20ace,21ac; 9.2B: #11,33</td>
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<tr>
<td>Tu, 11/19</td>
<td>9.1 The Rational Numbers</td>
<td>9.3 Functions and their Graphs</td>
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<td>9.2 The real Numbers</td>
<td>9.3A: #1ac,2-9,13,20; 9.3B: 20,21</td>
</tr>
<tr>
<td>Tu, 12/03</td>
<td>9.3 Functions and their Graphs</td>
<td>Final Exam Review</td>
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<tr>
<td>Tu, 12/10</td>
<td>Final Exam, 6:45pm – 9:45pm</td>
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</tbody>
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