

## MATH 123A COURSE SYLLABUS

West Los Angeles College (WLAC)

Session: Fall 2014

Course Name & Number: Mathematics 123A

Section Number: 4478

Course Title: Elementary and Intermediate Algebra I

Course Units: 4

Time: MW 7:15 p.m. – 9:20 p.m.

Location: MSA 202

Instructor: Mr. Ulrich

E-mail address: [ulrichj@wlaac.edu](mailto:ulrichj@wlaac.edu)

Instructor's Office Hours: MW 6:30 p.m. – 7:00 p.m. (or by appointment) in room MSB 217

Prerequisites: You must meet one of the following requirements:

1. Mathematics 112 (Pre-Algebra) with a grade of "C" or better
2. Mathematics 110 (Introduction to Algebraic Concepts) with a grade of "C" or better
3. Appropriate placement level demonstrated through the Math Assessment process

Textbook: "Beginning & Intermediate Algebra," by Lial, Hornsby, and McGinnis (5<sup>th</sup> Edition)

Other Required Materials:

1. A ruler is required for all problems on tests and the Final Exam that require you to draw a straight line on a rectangular coordinate system.
2. A valid E-mail address is required to communicate with the instructor outside of class.

Optional Materials:

1. Any good Pre-Algebra textbook. (Your algebra textbook sometimes assumes that you have a thorough understanding of certain topics from Pre-Algebra. If you don't remember these topics very well, you may want to review them.)
2. You may use a scientific calculator (a) on the Final Exam, (b) to check your answers to arithmetic computations on homework, and (c) to perform arithmetic computations during classroom discussions. You may not use a scientific calculator to perform arithmetic computations on regular tests. (Graphing calculators are not allowed under any circumstances.)

Course Purpose:

The general purpose of this course is to introduce the basic concepts and techniques of algebra, and to show some of their applications.

Course Description: The course covers Chapters 1–5 in the textbook:

1. The Real Number System
2. Linear Equations and Inequalities in One Variable
3. Linear Equations in Two Variables
4. Exponents and Polynomials
5. Factoring and Applications

Tentative Course Outline: Items below like “1.4” refer to sections in the textbook. Items like “1.2.2” refer to objectives in the textbook. Items like “App A” refer to appendices at the end of the textbook.

|         |        |                               |        |   |
|---------|--------|-------------------------------|--------|---|
| Week 1  | Sep 1  | HOLIDAY                       | Sep 3  | App A, 1.4                                |
| Week 2  | Sep 8  | 1.5                           | Sep 10 | 1.6                                       |
| Week 3  | Sep 15 | least common multiple         | Sep 17 | fractions (basics)                        |
| Week 4  | Sep 22 | decimals (basics)             | Sep 24 | mult/div rational numbers, <b>TEST #1</b> |
| Week 5  | Sep 29 | add/sub rational numbers      | Oct 1  | 1.2.2, 1.2.3, 1.5.4, 1.6.5, 1.3.1, 1.6.6  |
| Week 6  | Oct 6  | 1.7, 1.8.1 – 1.8.4            | Oct 8  | 1.5.5, 1.6.7, 1.8.5                       |
| Week 7  | Oct 13 | 2.1, 2.2 (start)              | Oct 15 | 2.2 (end), 2.3 (start), <b>TEST #2</b>    |
| Week 8  | Oct 20 | 2.3 (end), 2.4 (start)        | Oct 22 | 2.4 (end), 2.5, 2.6 (start)               |
| Week 9  | Oct 27 | 2.6 (end), 2.7 (start)        | Oct 29 | 2.7 (end), 2.8 (start)                    |
| Week 10 | Nov 3  | 2.8 (end), 3.1 (start)        | Nov 5  | 3.1 (end), 3.2 (start), <b>TEST #3</b>    |
| Week 11 | Nov 10 | 3.2 (end), 3.3 (start)        | Nov 12 | 3.3 (end), 3.4, 4.1 (start)               |
| Week 12 | Nov 17 | 4.1 (end), 4.2 (start)        | Nov 19 | 4.2 (end), 4.3, 4.4 (start)               |
| Week 13 | Nov 24 | 4.4 (end), 4.5, 4.6 (start)   | Nov 26 | 4.6 (end), 4.7 (start), <b>TEST #4</b>    |
| Week 14 | Dec 1  | 4.7 (end), App C, 5.1 (start) | Dec 3  | 5.1 (end), 5.2, 5.3 (start)               |
| Week 15 | Dec 8  | 5.3 (end), 5.4, 5.5 (start)   | Dec 10 | 5.5 (end), 5.6                            |
| Week 16 | Dec 15 | REVIEW                        | Dec 17 | <b>FINAL EXAM</b>                         |

College-Wide Student Learning Outcomes (SLOs) and Course Policies:

- A. **Critical Thinking:** Classroom activities will require sound reasoning to analyze, model, and solve problems.
- B. **Communication:** On in-class activities and tests, you will be expected to show and explain your work in a clear and well-organized manner.
- C. **Quantitative Reasoning:** This is the core of your mathematics learning experience and will be demonstrated in all the work you do in this course.
- D. **Apply self-assessment and reflection strategies** to learn from your mistakes and to seek better methods to solve particular problems.
- E. **Civic Responsibility:** Students are expected to respect classmates as well as the instructor. This includes refraining from disruptive behavior (coming late, leaving early, wandering in and out of class, eating/drinking during class, side conversations, instant messaging, etc.) and practicing positive behaviors (cooperation, civility, helpfulness, constructive engagement in class activity).
- F. **Technical Competence:** Students are expected to utilize web-based resources to complement classroom-based and textbook-based activities.
- G. **Cultural Diversity:** Respect for all classmates and appreciation of the universality of mathematics in diverse cultures.
- H. **Ethics:** All students will maintain the highest standards of academic honesty. You may NOT give or receive help on tests, and you may not turn in someone else’s work as your own. *NOTE: If you are discovered committing any act of academic dishonesty (cheating), you will receive no credit (“zero”) for the test or assignment AND you will be suspended from class AND the case will be referred to the Vice-President for Student Affairs for further disciplinary action. For further information, see the WLAC Catalogue and Schedule of Classes.*
- I. **Aesthetics:** Mathematicians often talk about a “beautiful” or “elegant” method of solving a problem.

Math 123A Course Student Learning Outcomes (SLOs):

| Math 123A Course SLOs   | Math Program SLOs  | Quantitative Literacy | Critical Thinking | Communication | Technical Competence | Ethics |
|---|--|-----------------------|-------------------|---------------|----------------------|--------|
| 1. Perform basic operations on rational numbers and polynomials, including correct use of order of operations | Apply quantitative thinking processes using basic mathematical operations                        | X                     |                   |               |                      | X      |
| 2. Use appropriate techniques to solve linear and factorable quadratic equations and linear inequalities      | Use mathematical tools essential for analyzing quantitative problems and for producing solutions | X                     |                   |               |                      | X      |
| 3. Write and graph linear equations in two variables; analyze slope and intercepts                            | Use mathematical tools essential for analyzing quantitative problems and for producing solutions | X                     | X                 | X             |                      | X      |
| 4. Factor polynomials   | Use mathematical tools essential for analyzing quantitative problems and for producing solutions | X                     | X                 |               |                      | X      |
| 5. Solve problems using ratio, proportion, and percent  | Select appropriate math strategies for solving and handling real life problems                   | X                     | X                 | X             |                      | X      |
| 6. Analyze, model, and solve "story" problems (applications) using the Course SLO #2 above                    | Select appropriate math strategies for solving and handling real life problems                   | X                     | X                 | X             |                      | X      |
| 7. Locate and utilize supplemental resources online and in textbooks  | Select appropriate math strategies for solving and handling real life problems                   |                       |                   |               | X                    | X      |

Student achievement of SLOs will be assessed by means of tests as well as informal measures such as class participation, classwork, and student self-assessment.

Grading: Homework – 15% of your final grade  
Tests – 60% of your final grade  
Final Exam – 25% of your final grade

In general, grades will follow these guidelines:

- A: 90% – 100%
- B: 80% – 89.99%
- C: 70% – 79.99%
- D: 60% – 69.99%
- F: below 60%

These standards may be relaxed slightly if the instructor so chooses. For example, the instructor may choose to give a “B” to a student whose overall score is 79.5%.

You may keep track of your grade by writing your test scores on scratch paper and performing the necessary computations. If you want help in determining your grade at any point in the course, send the instructor an E-mail message. However, since the instructor drops your lowest test score and your three lowest homework scores, it may be difficult to tell exactly where you stand until late in the course.

#### Homework:

Homework will be assigned during the first meeting of each week during Weeks 1–15. An assignment may be modified during the last meeting of the week if less material is covered than was planned.

The maximum possible score for each assignment will be 100%. Your score for each assignment will be your percentage score for the Scantron exercises in the assignment (minus a deduction if your work is late).

Only the first fourteen assignments will be graded (because there isn't time for the instructor to grade the last assignment and return it to you before the Final Exam). Your three lowest scores will be dropped. Your homework score for the course will be your average score on the remaining assignments. Your homework average for the course will be 15% of your course grade.

Each assignment (except the last one, which will not be collected) is due on the first meeting of the week after it was given. Thus Homework Assignment #1 (given on Wednesday, Sep 3) is due on Monday, Sep 8. Homework Assignment #2 (given on Monday, Sep 8) is due on Monday, Sep 15. And so on.

On the day an assignment is due, it will be collected after attendance has been taken. You are eligible to receive 100% for an assignment if you turn it in by then. Your score will be reduced by 10% if you turn in the assignment later that meeting. Your score will be reduced by 12% if you turn in an assignment one meeting late. Your score will be reduced by 14% if you turn in an assignment two meetings late. Your score will be reduced by 16% if you turn in an assignment three meetings late. Assignments turned in after that will receive a score of zero. **In other words, you may turn in a homework assignment up to three meetings late.** (It is better to turn an assignment late than not at all.) At the end of the semester, assignments not turned in by the meeting on Dec 15 (the last meeting before the Final Exam) will receive a score of zero.

If you know beforehand that you will be absent or late on the day an assignment is due, give your homework to a classmate to hand in for you, or make arrangements with the instructor to turn it in early.

Each homework assignment has five parts:

#### *General Information*

This includes the assignment number and the due date.

#### *Read and Study*

This lists the material in the textbook and supplementary notes that will be covered in class during the week. It also lists the material that will be covered during the first meeting of the next week.

### *Scantron Exercises (These MUST be handed in)*

This part of the assignment consists of up to 50 multiple-choice questions. **Your answers must be on one side of a Scantron sheet that meets the following requirements:**

- The Scantron sheet must be Form No. 882-E (which is 11 inches long, 4¼ inches wide, and has room for 50 answers on each side).
- **Print your name (or write clearly) in ink where it says “NAME”.** Write your name in the form “John Doe” or “Jane Roe”.
- Write “123A” or “Math 123A” in ink where it says “SUBJECT”.
- **Write the assignment number in ink where it says “TEST NO.”** For the first assignment, you may write “1” or “#1”. Write the assignment number for later assignments in similar fashion.
- Write the date you hand in the assignment in ink in the form “9/8/2014” where it says “DATE”.
- Write “Ulrich” in ink where it says “PERIOD”.
- Write your answers to the exercises that were assigned **using a No. 2 pencil** on the side with answers for Problems 1–50.
- Follow the instructions on the left side of the box labeled “IMPORTANT”.

Mark your answers to the Scantron Exercises on your copy of the assignment (as well as on the Scantron sheet) and use these to help you study for quizzes and tests.

When you get your graded Scantron sheet back, your score will be printed in red ink under the “TEST RECORD” box in the form “*number of correct answers / percentage score*”. For example, if an assignment has 33 problems and you get 32 correct, your score will be printed as “32/97%”. (The percentage score is rounded to the nearest percent.)

If your answer to a problem is wrong, the correct answer (A, B, C, D, or E) will appear in red ink next to the E-answer for the problem you missed.

When you get your graded Scantron sheet back, your work is not done yet. Go over each problem you missed, find out why your answer is wrong, and see why the indicated answer on the Scantron sheet is correct. Otherwise you will keep making the same mistakes. Mark the correct answers on your copy of the assignment.

Do NOT be discouraged if a lot of your answers are wrong. Use the assignment as a learning experience. Identify your mistakes and learn how to avoid them in the future.

All of the Scantron exercises will give you valuable practice using the material you are being taught. However, pay particular attention to the exercises for which the options are solutions rather than answers. These exercises will help you learn how to write good solutions to exam problems that require supporting work. Every incorrect solution contains at least one common error that you must learn to avoid if you want to get the maximum possible score when a similar problem occurs later in the course on a homework assignment, test, or the Final Exam.

### *Optional Exercises (These should NOT be handed in)*

Doing only the Scantron Exercises will not give you enough practice to gain a complete understanding of the material. You will need to do some or all of the Recommended Exercises (and maybe even some of the Additional Exercises) for that.

The Recommended Exercises consist of problems from the book or notes. The answers to most of these problems are in the book or notes, but there may also be problems whose answers are not given. The Recommended Exercises contain important types of problems you should be able to solve or important special cases you may encounter.

The Additional Exercises also consist of problems from the book or notes. The answers to most of these problems are in the book or notes, but there may also be problems whose answers are not given. Some of the Additional Exercises may be like the Scantron Exercises and Recommended Exercises; they will give you more

practice solving important types of problems. Some of the Additional Exercises may extend the topics presented in class or offer a challenge to the student.

Answers to the odd-numbered exercises in the textbook can be found in the back of the textbook. Some sets of supplementary notes contain the answers to all of the exercises in the notes, while other sets of supplementary notes contain the answers to only the odd-numbered exercises.

If you are stumped on an exercise whose answer is in the book or notes, try to find an example in the book or notes that is similar to your problem and use the solution to that example as a model for your own solution. After you solve the problem, compare your answer to the answer in the book or notes. If your answer is wrong, examine your work, find the error, and fix it (or start over at the beginning).

If the answer to a problem that stumps you is in the book or notes, an approach that sometimes shows you how to solve the problem is to start with the answer and work backwards.

If you are stumped on an exercise whose answer is not in the book or notes, try to find an example in the book or notes that is similar to your problem and use the solution to that example as a model for your own solution. After you solve the problem, find a way to check your answer.

### *Additional Remarks on Homework*

After each meeting, do the Scantron Exercises and Recommended Exercises for the material covered in class as soon as possible, preferably before the next meeting. Do the Additional Exercises whenever you can.

For each section of the book or notes, study the material in the section before doing the homework for the section. Some students try to do the homework first; they look at the material only if they run into trouble. This is likely to produce gaps in the student's knowledge (because the student never looks at certain parts of the book or notes) as well as inferior homework (because the student tries to solve problems without looking at the examples in the book or notes and using the solutions to those examples as models for his/her own solutions).

A certain amount of class time will be set aside to answer questions about homework, but this time is limited because it is also necessary to cover new material. If you don't get all of your questions answered in class or during breaks, see the instructor after class or during office hours (or make a special appointment).

#### Tests:

There will be four 50-minute tests during the semester. Each test will cover all material presented in the course up to and including the previous week. For example, Test #1 (on Wednesday of Week 4) will cover all material presented during Weeks 1–3. The maximum possible score for each test will be 100%. Your lowest score will be dropped. Your test score for the course will be your average score on the remaining tests. Your test average for the course will be 60% of your course grade.

All exams will be closed book. Notes or formula sheets are not allowed. You are not allowed to use a scientific calculator or a graphing calculator. You will not need a Scantron sheet or a blue book. Bring scratch paper to every exam. If a problem requires only the answer, there will be space on the exam paper for your answer, but you may need to use scratch paper for your computations. If a problem requires supporting work, there will be space on the exam paper for your solution, but you may need more room and have to continue your work on scratch paper. Some exams will have one or more problems that require the use of a ruler, so bring a ruler to every exam. Some exams will have one or more problems that require you to graph something on a number line or a rectangular coordinate system. The exam paper will include a number line or a rectangular coordinate system, respectively, for your answer.

When the instructor returns a graded exam to you, he will also hand out an answer sheet for the exam. For each problem, compare the solution on the answer sheet with your own solution on your graded exam, and note the instructor's comments on your graded exam. Make sure that you know how to solve every problem on the exam. In your future work, correct every mistake pointed out by the instructor. (Sometimes there is more than one way to solve a problem, so your solution may be acceptable even if it differs from the one on the answer sheet. Be guided by the instructor's comments in such cases.)

If you miss an exam, your score for the exam will be zero. If you know beforehand that you will be absent on the day of an exam, send an E-mail message to the instructor ahead of time explaining the situation, and make arrangements with the instructor to take the exam at a mutually acceptable place and time.

If you miss an exam, the instructor will not create a special make-up exam for you. However, you may be able to take the exam before the next meeting of the class. First, send an E-mail message to the instructor as soon as you can explaining why you missed the exam. If the instructor accepts your explanation, he will see if it is possible for you to take the exam before the next meeting of the class. One possibility is the Sunday after the exam at 9:30 a.m. at a location chosen by the instructor. It may also be possible for you to take a missed exam on the Thursday, Friday, or Saturday after the exam at a mutually acceptable place and time.

#### Final Exam:

The Final Exam will be on Wednesday, Dec 17. It will be closed book. Notes or formula sheets are not allowed. You will be allowed to use a scientific calculator, and you should bring a ruler with you in case you need to draw a straight line. Part of the Final Exam will be a multiple-choice test, so **you must bring a Scantron sheet with you and a No. 2 pencil.** (Scantron sheets and pencils will NOT be provided.) Part of the Final Exam will consist of free-response questions for which you must include supporting work. You will receive your own copy of the exam and several pieces of scratch paper, and you must return all of these materials when you turn in your exam. You will NOT be allowed to use your own scratch paper.

If you want to find out your course grade as soon as possible and find out how you did on the Final Exam, you may leave a self-addressed stamped envelope with the instructor on the night of the Final Exam. You may also send an E-mail message to the instructor asking him to send you an E-mail reply with your course grade and your score on the Final Exam. Your E-mail address must NOT be accessible to anyone else.

Your Final Exam score will be 25% of your course grade.

#### Attendance:

Attendance will be taken during every meeting that does not have a test. The instructor will usually take attendance by calling out every name on the roster at the start of class, but sometimes he will pass around an attendance sheet for students to sign. On days with a test, your exam paper will be proof of attendance. Students are expected to attend every meeting. If you miss more than four meetings, you may be excluded from the course.

#### Dropping the Class:

The deadline for dropping the class with a refund (no fee owed) is Friday, Sep 12. The deadline for dropping the class without a "W" is Friday, Sep 12.

**If you decide to drop the course, you may drop online or go to the Admissions Office and drop in person. Don't just stop coming to class and rely on the instructor to exclude you. Students who don't follow the correct procedure for dropping will receive a grade of "F" for the course. The last day to drop the course with a "W" is Friday, Nov 21.**

#### Daily Schedule:

There will be one ten-minute break during each meeting. The following schedule is typical:

|                       |       |            |
|-----------------------|-------|------------|
| 7:15 p.m. – 8:10 p.m. | Class | 55 minutes |
| 8:10 p.m. – 8:20 p.m. | Break | 10 minutes |
| 8:20 p.m. – 9:20 p.m. | Class | 60 minutes |

However, this schedule will not be followed rigidly. For example, if the instructor requires 60 minutes for the first class period, the break will occur later than listed above and the other class period will be shorter.

During the first meeting of each week, the instructor will take attendance at the start of class and pass out graded test papers. Answer sheets for tests, supplementary notes, and the next homework assignment will be available at the back of the room. The instructor will then answer questions about the most recent homework

assignment, the upcoming test, etc. This will normally continue until the break. The instructor will present new material during the rest of the evening.

If the second meeting of the week does not have a test, the instructor will take attendance by passing around an attendance sheet for students to sign. At the start of class, the instructor will answer questions about material covered in the previous meeting. He will then present new material during the rest of the evening.

If the second meeting of the week has a test, the instructor will not take attendance. Your exam paper will be proof of attendance. At the start of class, the instructor will answer questions about material covered in the previous meeting. He will then present new material until it is time for the break. If there is a test, it will be given after the break.

#### Class Participation:

To help the class learn new concepts, the instructor may ask students to answer questions and/or solve problems on the new material. When asking a question, the instructor may call on a specific student, or he may call for a volunteer to answer. When giving the class a problem to solve, the instructor may ask a group of students to put the solution on the board while the rest of the class works on the problem at their desks. Alternatively, the instructor may ask the entire class to work on the problem at their desks.

#### Class Conduct:

1. Every effort should be made to get to class on time. Plan to arrive 10 minutes early so you won't be late. (One advantage of coming early is that you can use the time before class to discuss course-related topics with classmates, as you would in a study group.) Students are expected to stay in the room except during the break, and they are expected to remain until the class is dismissed. If you must leave early because of special circumstances, notify the instructor before class or during the break.
2. **All pagers and cell phones must be turned off during class.** If you believe that special circumstances make it imperative for you to leave your pager or cell phone on during class, discuss it with the instructor beforehand. Students who repeatedly ignore this rule may be asked to leave the room until the next break or for the rest of the evening.
3. **Eating and drinking are not allowed during class.** This is school policy. If you believe that special circumstances (such as a medical condition) make it imperative for you to eat and/or drink during class, discuss it with the instructor beforehand. However, you may bring a water bottle to class. It must be sealed except when you are taking a drink.
4. **When the instructor is speaking or a student is asking a question, all other students should be quiet.** Students who talk inappropriately in class interfere with the ability of the instructor to teach and the ability of other students to learn. Students who ignore warnings to end inappropriate talking may be asked to move to another seat or leave the room.
5. **You are not allowed to sharpen pencils during class** (unless you use a small, personal pencil sharpener that is quiet). You may sharpen pencils before class and during the break. To be safe, bring two sharpened pencils to each class, or use a mechanical pencil.
6. Bring a pencil and paper to every class so that you can take notes and/or work on problems in class.
7. Bring your textbook to every class. Also bring any relevant supplementary notes.
8. All "Standards of Student Conduct" (see the Fall 2014 Schedule of Classes) will be strictly enforced. In particular, cheating and classroom disruption will not be tolerated.

#### Taking Notes:

Sometimes the instructor will follow the textbook closely. Sometimes the instructor will follow a set of supplementary notes that were handed out in class. However, occasionally the instructor will present material that is not in the textbook or supplementary notes. You should take your own notes on such occasions. In addition, you should take notes when the instructor goes over problems from homework assignments in class, because similar problems may appear on tests and the Final Exam.

### Students with Disabilities:

Students with disabilities who believe they may need accommodations in this class should contact “Disabled Students Programs and Services” on the first floor of the HLRC building or call (310) 287-4450 as soon as possible to better ensure such accommodations are implemented in a timely fashion.

### Arithmetic Computations:

You may use a scientific calculator during the Final Exam, to check arithmetic computations on homework, and to perform arithmetic computations during classroom discussions. **You may not use a calculator to perform arithmetic computations on tests.** All computations on tests must be done in your head or with pencil and paper.

Although some simple computations can be done in your head, many computations (especially those with decimals) will require pencil and paper. Your solution to a problem must include your scratch work. Do not put your scratch work on the back of the page or on a separate piece of paper. Put your scratch work in the same general area as the rest of your solution. One way to do this is to put your solution to a problem on the left side of the page and your scratch work on the right side.

If your solution to a problem has a computation that cannot be done in your head, you will lose points if the computation is not in your scratch work. How will the instructor decide whether or not a computation must be included in your scratch work? If the instructor cannot do the computation in his head, he will assume that you cannot do it in your head.

### How Written Solutions Are Graded:

Some students believe that getting the final answer right is the only thing that matters.

These students believe that as long as their final answer to a problem is correct, they deserve full credit (or only minor deductions) even if their solution contains errors. For these students, errors such as missing and/or incorrect equal signs, missing and/or incorrect negative signs, missing and/or incorrect percent signs, missing and/or incorrect parentheses, missing and/or garbled explanations, omitting essential steps, using variables without explaining what they represent, vague and/or ambiguous statements, not following directions, etc., are of little or no importance.

That philosophy will NOT be followed in this class. **In this class, how you get the answer is more important than the answer itself.**

In this course, you will be taught specific methods for solving various types of problems, and you will be graded on how well you know, understand, and execute these methods. Every essential step of the applicable method must be included, and each step must be mathematically correct.

**In this class, work that is careless and/or sloppy will not be graded as highly as work that is careful and meticulous simply because the final answer happens to be correct.**

To improve your ability to write good solutions, follow the guidelines in the next section of the syllabus; study the examples in the textbook and supplementary notes; observe carefully how the instructor solves problems in class; study the instructor’s comments on graded tests; and study the instructor’s solutions on answer sheets for tests.

### Writing Solutions to Problems:

When you write in a diary, it is for your eyes only. It doesn’t matter if no one else can read your handwriting. It doesn’t matter if you write in an abbreviated language only you understand. It doesn’t matter if your thoughts ramble from one topic to another.

Writing solutions to exam problems is different. In these cases, your audience is the instructor, not you. The instructor must be able to read your handwriting. Your language must be detailed enough to be unambiguous. Each solution should consist of an easy-to-follow sequence of steps written in a logical order. Your work must be reasonably neat.

The following guidelines will help you write acceptable solutions to problems on exams:

1. Read each problem carefully until you understand clearly what you are being asked to find. Make sure that you don't solve for the wrong unknown quantity or solve for fewer unknown quantities than required. If the answer to a problem must be written in a specific form, write it in that form.
2. For each problem, follow the directions given in the problem. If you are told to solve a problem by a particular method, use that method. If a group of problems is preceded by directions that apply to every problem in the group, follow those directions for each problem in the group.
3. For each problem, be careful to copy down the information in the problem correctly. If you make a mistake, you will not be solving the problem that was given.
4. Don't write down two or more solutions to a problem. You may submit only one solution. Cross out or erase the others. If you don't do this, you will lose points.
5. After you solve a problem, indicate clearly what the answer is. One way to do this is to write "answer:" or "answer =" followed by the answer. Another way is to draw a rectangle around the answer with the word "answer" next to it. Still another way is to write the word "answer" next to an arrow pointing toward the answer. If you wish to emphasize your answer, use two of these methods.
6. If a problem you are working on is similar to an example in the textbook or supplementary notes, model your solution after the solution in the book or notes. (Sometimes the instructor may tell you to do something slightly different from what's in the book, such as to include steps that the book omits.)
7. Include all necessary equal signs. If you claim that two expressions are equal, you must put an equal sign between them. The following convention is often useful: an equal sign at the beginning of a line means that the expression following the equal sign is equal to the last expression on the previous line.
8. Omit all incorrect equal signs. Never put an equal sign between two expressions that are not equal. When you use an equal sign, there must be something on the left side of the equal sign, something on the right side of the equal sign, and those two somethings must be equal.
9. Don't omit steps or try to combine several steps into one step. The more steps you skip, the easier it is to make a mistake. If you leave out a specific step that the instructor requires, you will lose points.
10. Before you use a variable in an expression, equation, inequality, or table, you must explain what it represents (unless the variable is defined in the problem or is part of a standard formula).
11. Don't try to fill every square centimeter of paper. Leave room for the instructor to make corrections and write comments.
12. If you reach the bottom of the page while solving a problem, don't try to squeeze the rest of the solution onto the lower right corner of the page. (Remember, you must leave room for the instructor to write on your paper.) Finish your solution on a separate piece of paper.
13. Write large enough and dark enough so that the instructor can read your work. Make sure that he can see your decimal points, multiplication dots, minus signs, etc., without a magnifying glass.
14. Write numbers and symbols neatly. Make sure that the instructor can distinguish 1 from 7, x from y, a multiplication dot from a minus sign or decimal point, etc.
15. Keep each solution separate from all other solutions on the page. Keep all of your work for a problem together. Don't intertwine solutions to different problems and expect the instructor to untangle them.
16. Use a pencil rather than a pen. It will be easier to correct mistakes.
17. If you decide to erase a piece of work, erase it completely. Don't leave vestiges of your old work on the paper. The instructor may be unable to tell if a particular mark (such as a minus sign) is part of your new solution or an unwanted remnant of your old solution.
18. Whenever possible, check your answers to exam problems. For certain types of problems, there are standard ways to check your answer. For other types of problems, more ingenuity may be required.
19. If you realize that you have made a mistake, you must fix the error (or cross out everything and start all over). It is NOT enough to correct the mistake in the next step. You must fix ALL previous steps that are incorrect. If you don't, parts of your solution will be wrong, and you will lose points.
20. Use "mathematical common sense" to see if your answer to a problem is reasonable. For example, if the answer to a problem must be positive and your answer is negative, then either you made a mistake or the problem has no solution. If the answer to a problem must be an integer and your answer is not an integer, then either you made a mistake or the problem has no solution. If the answer to a problem must

be less than a certain number and your answer is greater than the number, then either you made a mistake or the problem has no solution. There are many situations where reasoning like this can be applied. If you notice that your answer can't possibly be correct, go back and examine your work carefully (or cross out everything and start over at the beginning). If your answer doesn't make sense but you don't realize that fact, you will think that you have the right answer.

21. Make sure that what you write down means what you think it means. If it doesn't, your solution will be wrong. Students sometimes use equal signs incorrectly, omit necessary parentheses, put parentheses in the wrong places, etc. Such errors can change the meaning of what you write.
22. Before you hand in an exam, proofread your paper for careless mistakes like omitting problems on the exam (particularly on the back of the last page), copying numbers down incorrectly, making simple errors in arithmetic, and omitting terms, variables, numbers, equal signs, minus signs, percent signs, parentheses, etc.

### Study Suggestions:

How much time should you spend studying for this course? The standard guideline is: at least two hours outside of class for every hour in class. Since this is a four-unit course, **you should spend 8–12 hours weekly outside of class on homework and associated studying.**

After each class, go over the material presented in class as soon as possible (while it is fresh in your mind). Study the relevant sections of the textbook and/or supplementary notes. Then do the associated homework problems. If you have any questions, ask them at the start of the next meeting. Since each meeting lasts about two hours, try to spend at least 4 hours before the next meeting studying and doing homework. If you are unable to devote this much time during the week to the class, spend at least one hour each weekday on the class and make up the balance on the weekend. Don't wait until Sunday night to begin studying and doing your homework.

When studying an Objective in the textbook, go over every Example and Now Try exercise in the Objective. Do the Now Try exercise (which is similar to the Example) after studying the Example. Compare your answer to the Now Try exercise with the answer at the bottom of the page. Problems like the Examples and Now Try exercises in the textbook may appear on tests and the Final Exam.

When studying a section of the supplementary notes, go over every example in the section. If there is a Practice problem following one or more examples, do the Practice problem after studying the example(s). Compare your solution to the Practice problem with the solution at the end of the notes. Problems like the examples and Practice problems may appear on tests and the Final Exam. (Similar problems on homework assignments, tests, and the Final Exam should be solved the way they are solved in the notes.)

After you have studied the material for a section of the textbook or supplementary notes, do the homework for that section. Don't try to do the homework before studying the material.

Before each meeting, read the material in the textbook and supplementary notes that will be covered in the meeting. This will help you understand what the instructor says in class. Reading a math text must be done at a slower pace than reading a newspaper or magazine, so set aside an adequate amount of time. While you are reading, have a pencil and paper with you so you can write down any questions you want to ask in class. When you go over an example in the book or notes, cover the solution and try to solve the problem on your own first.

Do not fall behind. Catching up will require more time and effort than usual, and it will be harder to understand new material until you have caught up.

### Studying for Tests:

Don't wait until the night before the test to begin studying. Start reviewing on the preceding weekend (or even earlier). If you belong to a study group, devote at least one meeting to reviewing for the test.

The instructor will not provide a study guide for tests. However, each chapter summary (near the end of the chapter) in the textbook is essentially a study guide for the material in that chapter.

Studying for tests can be divided into two phases: (1) studying the material in previously completed chapters, and (2) studying the material in the current chapter (if not completed).

Study the material in the current chapter (if not completed) by including homework from earlier parts of the chapter in your study procedure.

Begin studying the material in completed chapters by going over each chapter summary: review the key vocabulary, definitions, formulas, rules, and procedures introduced in the chapter, and look at the examples given there. After you have done this, there are three possible ways to continue studying for the test.

The first approach is to study all previous tests. For each test, go over your exam paper and note the instructor's comments. Then look at the answer sheet for the exam. Make sure that you understand every solution. For each problem you missed, review the relevant material in the textbook and notes.

The second approach is to study all previous homework assignments. Study any notes taken in class on problems gone over by the instructor. Review the Additional Exercises that you solved along with the Recommended Exercises. Finally, do some or all of the remaining Additional Exercises in the assignment to get more practice solving similar problems.

The third approach is to do the Cumulative Review Exercises at the end of the last completed chapter of the book.

If you have time, consider using two or more of these approaches.

#### Studying for the Final Exam:

The Final Exam will cover Chapters 1–5 in the textbook and all material in the supplementary notes.

Start reviewing for the Final Exam two weekends before the exam (or even earlier). If you belong to a study group, devote at least one meeting to reviewing for the Final Exam.

The instructor will not provide a study guide for the Final Exam. However, each chapter summary (near the end of the chapter) in the textbook is essentially a study guide for the material in that chapter.

Begin studying for the Final Exam by going over each chapter summary: review the key vocabulary, definitions, formulas, rules, and procedures introduced in the chapter, and look at the examples given there.

After you have done this, there are three possible ways to continue studying for the Final Exam.

The first approach is to study all of the tests. For each test, go over your exam paper and note the instructor's comments. Then look at the answer sheet for the exam. Make sure that you understand every solution. For each problem you missed, review the relevant material in the textbook and notes.

The second approach is to study all of the homework assignments. Study any notes taken in class on problems gone over by the instructor. Review the Additional Exercises that you solved along with the Recommended Exercises. Finally, do some or all of the remaining Additional Exercises in the assignment to get more practice solving similar problems.

The third approach is to do the Cumulative Review Exercises at the end of Chapter 5 in the book.

If you have time, consider using two or more of these approaches.

#### Reviewing:

For the most part, you must review for all exams on your own and/or in your study group.

The only review meeting scheduled is on Monday, Dec 15 (the meeting before the Final Exam).

During this meeting, the instructor will answer questions and solve problems on anything in the course. Each student should prepare a list of questions and/or problems. Ask about types of problems that YOU find difficult. This is your last opportunity to strengthen your weak spots. The instructor will prepare some problems for the class to work on in case the class runs out of questions to ask.

There is not enough time for a systematic review of the whole course during this one meeting, so you will need to do additional reviewing for the Final Exam on your own and/or in your study group.

#### Additional Study Ideas:

1. Exchange names and phone numbers with at least one other person in the class. This contact can be a big help if you miss all or part of a meeting (especially if you miss an assignment), or if you want to discuss math concepts and/or exercises you find difficult.

2. Form a study group consisting of 2–5 people and meet once or twice weekly for an hour to discuss the current week’s material among yourselves. A study group can help you prepare for tests and the Final Exam.
3. On the first floor of the HLRC building, free tutoring is available for students who need help. If you are interested, go to the first floor of the HLRC building and talk to someone on staff. Say that you are taking Math 123A.
4. Read the Preface at the start of your textbook. Also read the Study Skills material interspersed throughout the textbook (pages 14, 22, 36, 48, 75, 107, 164, 187, 223, and 328).
5. Read Appendix D (“An Introduction to Calculators”).