

Massasoit Community College
Preparing for College Math I
MATH001- XX
Spring 2018

INSTRUCTOR:

PHONE:

EMAIL:

OFFICE:

OFFICE HOURS:

CLASS TIME & LOCATION:

REQUIRED MATERIALS: Aleks access code
headphones (to be used every day as you work on the computer)
3 ring binder and dividers *or* notebook
Pencil or pen
Scientific calculator (you will NOT be allowed to use the calculator on
Modules 1 – 4)
*If you need to buy one, a couple of good (and reasonably priced)
calculators are CASIO fx-300MS Plus and Texas Instrument TI-30X IIS*

COURSE DESCRIPTION:

This is a computer-based learning course designed to provide the fundamental concepts of arithmetic and algebraic and examine some application of these concepts, i.e. word problems. Students are required to complete a minimum of 5 modules, but are encouraged to complete as many of the 15 modules as possible. Students who begin at module 12 or higher are required to finish through module 15. The modules cover whole numbers, signed numbers, fractions, decimals, ratios and proportions, percentages, descriptive statistics, algebraic expressions, linear equations and inequalities, graphing lines and inequalities, systems of equations, exponents, polynomials, factoring, rational expressions, quadratic equations, and related applications. Credits earned in this course cannot be applied towards graduation. Prerequisite: Placement testing is required.

ACCOMODATIONS STATEMENT:

Massasoit's Disability Services office provides accommodations to students who qualify for services based on a documented disability. Students interested in accessing classroom or testing accommodations must contact Disability Services directly. In an effort to avoid any lapse in services, new and returning students are encouraged to contact Disability Services at the beginning of each semester to receive an Accommodation Letter for the current semester. Students on all campuses can contact Disability Services at 508-588-9100 X 2132 or by e-mail at DisabilityServices@massasoit.edu for further information or questions.

TITLE IX STATEMENT:

Massasoit Community College is committed to providing a safe learning and work environment for all. If you believe you have experienced discrimination, sexual harassment, sexual assault, domestic/dating violence, stalking, or retaliation, we encourage you to report it to *Yolanda Dennis, Chief Diversity Officer and Title IX Coordinator, Office of Diversity and Inclusion, at 508-588-9100, x1309 or ODI@massasoit.edu*. While you may talk to a faculty member, understand that as a "responsible employee" of the College, the faculty member must report what you share to the College's Title IX Coordinator. On and off campus resources and interim measures are available to assist you. Information about both of these policies can be found at www.massasoit.edu/title-ix and www.massasoit.edu/eo. We are here to support you.

ATTENDANCE:

Attendance will be taken each class. Regular class attendance is absolutely essential.

- You will be allowed to miss the equivalent of one week of class without penalty to your grade
- You will be required to make up all other absences as arranged with your instructor). Failure to do so will decrease your semester average by six percentage points for each equivalent of a week that you miss.

TESTING POLICY:

Academic dishonesty will not be tolerated. Please see the Statement on Academic Honesty for more information on the college’s policies on academic integrity:

<http://www.massasoit.edu/academics/policies/academic-honesty/index>.

- Students are required to justify their answers in the blue book.
- Students should complete the test in one session.
- Students are expected to complete all tests without the use of cell phones, notes, websites, or other external resources.

Any violation of this will lead to a minimum loss of one letter grade from the final course grade. Further violations will result in a grade of F for the course.

GRADING POLICY

You are expected to complete at least FIVE modules in this course. To complete a module, you must:

- master all topics in the module
- pass the test with a grade of 70% or higher.

A course percentage will be calculated where:

1. The average of your test grades (at least 5) will account for 80%
2. Your work on Aleks and your notebook will account for 20%

The final grade you earn in this class is dependent on two factors: the number of modules you successfully complete, and your course percentage, outlined above. Grades will be earned under the following conditions*

Number of Modules Completed	Grade Earned
5 or more	A, B or C range based on your course percentage
4	D range, based on course percentage
3	D range if significant progress is made towards completion of a fourth module and based on your course percentage F if significant progress is not made towards completion of a fourth module and based on your course percentage
less than 3	F

***Successful completion of Module 5 should result in at least a minimum grade of C-**

Your semester grade will be based on the following:

$B+ = 87 - 89\%$	$A = 94 - 100\%$	$A- = 90 - 93\%$
$C+ = 77 - 79\%$	$B = 84 - 86\%$	$B- = 80 - 83\%$
$D+ = 67 - 69\%$	$C = 74 - 76\%$	$C- = 70 - 73\%$
$F = \text{below } 60\%$	$D = 64 - 66\%$	$D- = 60 - 63\%$

ASSIGNMENTS:

Homework assignments will be to continue your work to complete your ALEKS pie in order to meet all deadlines.

TEACHING PROCEDURE:

During each class, students will work on ALEKS at their own pace. I will work individually with students on math skills and study skills. When a student has a question he/she should ask for help. Periodically some students who are approaching a difficult topic may be taken in small groups for a mini-lecture.

RECOMMENDED STUDY APPROACH:

- ❖ Attend all classes on time and work independently on your ALEKS pie. Spend at least 5 hours per week working in ALEKS.
- ❖ Notes should be kept in a notebook.
- ❖ Your notebook can be used for all ALEKS work **with the exception of TESTS**.
- ❖ Do all problems from ALEKS neatly on paper so when you ask for help, the professor can see where you made the error.
- ❖ Check the pacing guide to make sure you are on track (or ahead of schedule).
- ❖ If you are behind schedule or need extra help, work extra time using the computers in the ARC.

Pacing Guide

This schedule allows you approximately 3 weeks for each unit. Some units take longer than others so you should try to always stay ahead of this schedule so you will not run into problems at the end of the semester.

SUGGESTED DUE DATE	TOPIC	TEST GRADE
February 8	First Test	
March 2	Second Test	
March 29	Third Test	
April 19	Fourth Test	
May 9	Fifth Test	

Required Course Topics

Module 1

- Whole number place value
- Translating numbers
- Addition of whole numbers
- Subtraction of whole numbers
- Multiplication of whole numbers
- Division of whole numbers
- Applications involving addition, subtraction, multiplication and division of whole numbers
- Introduction to inequalities
- Ordering whole numbers
- Rounding whole numbers
- Exponents with whole numbers
- Area of a rectangle
- Perimeter of a rectangle
- Order of operation with whole numbers

Module 2

- Plotting integers on a number line
- Absolute value of an integer
- Addition of integers

- Subtraction of integers
- Multiplication of integers
- Division of integers
- Exponents and integers
- Order of operation with integers

Module 3

- Divisibility rules
- Factors
- Prime factorization
- Greatest common factor
- Least common multiple
- Equivalent fractions
- Simplifying a fraction
- Fractional position on a number line
- Ordering fractions
- Converting a mixed number to an improper fraction
- Converting an improper fraction to a mixed number
- Finding the least common denominator of fractions
- Addition of fractions
- Subtraction of fractions
- Multiplication of fractions
- Reciprocal of a number
- Division of fractions
- Order of operation with fractions
- Exponents and fractions
- Area of a triangle

Module 4

- Decimal place value
- Ordering decimals
- Rounding decimals
- Converting decimals to fractions
- Converting fractions to decimals
- Addition of decimals
- Subtraction of decimals
- Multiplication of decimals
- Division of decimals
- Applications involving decimals
- Order of operations with decimals

Module 5

- Writing ratios for real world situations
- Unit rates
- Solving a proportion
- Applications involving ratios, rates and proportions
- Conversions involving percents, decimals and fractions
- Solving equations using the additive property of equality
- Solving equations using the multiplicative property of equality
- Applying the percent equation

Modules 1 - 5

COURSE OUTCOMES	OUTCOMES ACTIVITIES
<p>At the end of this course, students will be able to</p> <p>Apply the understanding of place value and the operations on whole numbers in order to facilitate the use of these operations in related topics and problem solving in mathematics.</p>	<ol style="list-style-type: none"> 1. Add, subtract, multiply, and divide whole numbers. (QS) 2. Demonstrate an understanding of place value by writing a given numeral in standard notation, expanded notation, and in words. (R, QS) 3. Round whole numbers to a given place value. (QS) 4. Find the prime factorization of a number and express it in exponential notation. (QS) 5. Simplify an expression using the order of operations agreement. (CT) 6. Solve related application problems. (R, QS, W, CT)
<p>Apply the rules of integers and the order of operations agreement using integers in order to have the basic skills necessary to successfully complete this and future mathematics courses.</p>	<ol style="list-style-type: none"> 1. Add, subtract, multiply and divide signed numbers. (QS) 2. Demonstrate an understanding of absolute value by evaluating expressions in which it is used. (QS) 3. Simplify integer expressions according to the order of operations agreement. (QS, CT) 4. Solve related application problems. (R, QS, W, CT)
<p>Apply the operations on rational numbers and mixed numerals in order to facilitate the use of these operations in related topics and problem solving in this and future math courses.</p>	<ol style="list-style-type: none"> 1. Add, subtract, multiply, and divide rational numbers and mixed numerals. (QS) 2. Use the Property of One and the fundamental properties of fractions to form equivalent fractions in higher and lower terms. (QS) 3. Simplify rational expressions according to the order of operations agreement. (QS, CT) 4. Simplify complex fractions. (QS, CT) 5. Solve related application problems. (R, QS, W, CT)
<p>Understand the structure of a decimal number system and to apply the basic operations on decimals in order to facilitate the use of these operations in related topics and problem solving in this and other courses in mathematics.</p>	<ol style="list-style-type: none"> 1. Demonstrate the understanding of decimal place value by <ol style="list-style-type: none"> a. expressing a numeral in expanded notation, standard notation, and in words. (QS) b. rounding a decimal numeral to a given place value. (CT) c. comparing decimal numerals. (QS, CT) 2. Add, subtract, multiply, and divide decimal numerals. (QS) 3. Simplify decimal expressions according to the order of operations agreement. (QS, CT) 4. Convert fractions to their decimal equivalents. (QS, CT) 5. Convert terminating decimals to their fractional equivalents. (R, QS, W, CT)
<p>Understand the concept of percent and its relationship to fractions and decimals in order to develop techniques to solve problems involving percent applications.</p>	<ol style="list-style-type: none"> 1. Convert among decimal fraction and percent notation. (CT, QS) 2. Solve the basic 3 types of percent equations. (CT, W, QS, R) 3. Solve real life application problems, such as simple interest and sales tax, percent increase and decrease, sales discount and commission. (W, R, CT, QS) <p>Application problems to real life</p>

Apply the concepts of ratio and proportion to solve problems that can be modeled by these types of relationships in this and future courses.	<ol style="list-style-type: none"> 1. Write a ratio in its three forms. (QS,CT) 2. Find rate and unit rate. (QS,CT) 3. Solve proportions. (QS,CT) 4. Solving application problems using proportion. (W,R,QS,CT)
Use standard units of measurement to find the perimeter, area, and volume of geometric figures.	<ol style="list-style-type: none"> 1. Use the appropriate formula to find perimeter, area and volume. (CT,QS) 2. Use the appropriate unit of measure and equivalent conversions where applicable. (CT,QS,R,W)
Solve simple linear equations in order to solve problems that can be modeled by these forms in this and future courses.	<ol style="list-style-type: none"> 1. Use the addition principle to solve equations in the form $x + a = b$. (QS,CT) 2. Use the multiplication property to solve equations in the form $ax = b$. (QS,CT)
OPTIONAL: Use both the English and metric systems of measurements appropriately.	<ol style="list-style-type: none"> 1. Recognize the appropriate unit of measure for a given situation; e.g. liquid, distance, very large, very small, etc. (QS,CT) 2. Make conversions within each system and between systems. (QS,CT)
Strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.	Referenced above

Modules 6 – 10(Optional)

COURSE OUTCOMES	OUTCOMES ACTIVITIES
At the end of this course, students will be able to	
Apply the rules of signed numbers, the order of operations agreement, and the rules for simplifying algebraic expressions in order to have the basic skills necessary for successful completion of the other topics in this course and related topics in other courses.	<ol style="list-style-type: none"> 1. Add, subtract, multiply and divide signed rational numbers. (W,R,CT,QS) 2. Simplify numeric expressions according to the order of operations. (emphasis on integers) (W,R,CT,QS) 3. Evaluate variable expressions. (W,R,CT,QS) 4. Simplify algebraic expressions using the distributive law. (W,R,CT,QS) 5. Combine like terms. (W,R,CT,QS)
Solve first degree equations and inequalities in one variable in order to solve problems that can be modeled by these types of relationships.	<ol style="list-style-type: none"> 1. Determine whether a given number is a solution of an equation/inequality. (W,R,CT,QS) 2. Solve equations/inequalities of the form $ax = b$, $x + a = b$, $ax + b = c$, $ax + b = cx + d$. (W,R,CT,QS) 3. Solve equations/inequalities containing fractions and parentheses. (W,R,CT,QS) 4. Solve literal equations. (W,R,CT,QS) 5. Solve proportions. (W,R,CT,QS) 6. Translate and solve number problems, percent problems, ratio and proportion problems. (W,R,CT,QS)
Plot points and graph linear equations and inequalities on the Cartesian coordinate system in order to use these skills to solve related problems in this and related courses.	<ol style="list-style-type: none"> 1. Plot points and find the coordinates of a given point. (W,R,CT,QS) 2. Graph an equation/inequality by plotting points, by finding the x-, and y-intercepts, and by using the slope-intercept method. (W,R,CT,QS) 3. Graph an equation/inequality of the form $y = mx + b$, $Ax + By = C$, $y = b$, $x = a$. (W,R,CT,QS)

<p>Determine an equation of a given line in order to solve application problems in this and related courses.</p>	<ol style="list-style-type: none"> 1. Find the slope of a line given two points or given an equation of the line. (W,R,CT,QS) 2. Write an equation of a line given a point and the slope, two points, or information about parallel and perpendicular lines. (W,R,CT,QS) 3. Determine when two lines are parallel, perpendicular or neither.(W,R,CT,QS)
<p>Solve systems of linear equations in order to solve applications problems in this and related courses.</p>	<ol style="list-style-type: none"> 1. Solve a system of linear equations in two variables by graphing, the substitution method, and the addition method. (W,R,CT,QS) 2. Determine if a system of linear equations is inconsistent or dependent. (CT,QS,W,R) 3. OPTIONAL: Solve a system of linear equations using Cramer's Rule. (W,R,CT,QS) 4. Solve mixture, current, distance, and number word problems. (W,R,CT,QS)
<p>Solve simple descriptive statistics problems in order to analyze and interpret data in real word situations.</p>	<ol style="list-style-type: none"> 1. Read and interpret bar graphs, pie graphs, and line graphs. (W,R,CT,QS) 2. Calculate the mean, the median, and the mode for a given set of data. (W,R,CT,QT)
<p>Strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.</p>	<p>Reference above</p>

COURSE OUTCOMES	OUTCOMES ACTIVITIES
<p>At the end of this course, students will be able to</p> <p>Apply the properties of rational exponents in order to facilitate the use of these properties in further topics and problems in mathematics.</p>	<ol style="list-style-type: none"> 1. Simplify exponential expressions using: <ol style="list-style-type: none"> a. $b^n \cdot b^m = b^{n+m}$ b. $(b^n)^m = b^{nm}$ c. $(ab)^n = a^n b^n$ d. $\frac{b^n}{b^m} = b^{n-m}$ when $b \neq 0$ e. $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$ when $b \neq 0$ f. $b^0 = 1$ when $b \neq 0$ g. $b^{-n} = \frac{1}{b^n}$ when $b \neq 0$ (CT, QS) 2. Translate between exponential and radical forms using: <ol style="list-style-type: none"> a. $b^{\frac{1}{n}} = \sqrt[n]{b}$ when n is a positive integer greater than 1 b. $b^{\frac{m}{n}} = \sqrt[n]{b^m} = (\sqrt[n]{b})^m$ when n is a positive integer greater than 1 and m is any integer. (CT, QS) 3. Scientific Notation (CT, QS)
<p>Perform the operations of addition, subtraction, multiplication, and division on polynomials in order to apply these skills to factoring, solving equations, and problem solving.</p>	<ol style="list-style-type: none"> 1. Find sums and differences of polynomial expressions. (W,R,CT, QS) 2. Multiply polynomial expressions including: monomial by monomial, monomial by polynomial, and polynomial by polynomial. (W,R,CT, QS) 3. Find special products including: square of a binomial and binomial times conjugate. (W,R,CT, QS) 4. Divide a polynomial by a monomial. (W,R,CT, QS) 5. Solve applied problems using operations on polynomials. (W,R,CT, QS)
<p>Solve various types of factoring problems in order to apply these skills to further topics and problems in mathematics.</p>	<ol style="list-style-type: none"> 1. Factor a monomial from a polynomial. (W,R,CT, QS) 2. Factor by grouping. (W,R,CT, QS) 3. Factor a trinomial of the form $x^2 + bx + c$. (W,R,CT, QS) 4. Factor a trinomial of the form $ax^2 + bx + c$. (W,R,CT, QS)

	<ol style="list-style-type: none"> 5. Factor the difference of two perfect squares. (W,R,CT,QS) 6. Factor a perfect square trinomial. (W,R,CT,QS) 7. OPTIONAL: Factor the sum or difference of two cubes. (W,R,CT,QS) 8. Use multiple factoring techniques to factor completely any expression. (W,R,CT,QS) 9. Solve equations by factoring. (W,R,CT,QS) 10. Solve applied problems using factoring. (W,R,CT,QS)
Simplify and perform operations on rational expressions in order to apply these skills to further topics and problems in mathematics.	<ol style="list-style-type: none"> 1. Simplify rational expressions (reduce to lowest terms). (CT,QS,R) 2. Multiply and divide rational expressions. (CT,QS,R) 3. Add and subtract rational expressions with like denominators and with unlike denominators. (CT,QS,R) 4. Solve rational equations. (CT,QS,R) 5. Simplify complex fractions. (CT,QS,R) 6. Solve applied problems. (CT,QS,R)
Demonstrate the ability to simplify and perform operations with radicals in order to apply these skills to further topics and problems in mathematics.	<ol style="list-style-type: none"> 1. Simplify radical expressions. (CT,QS,R) 2. Add, subtract, and multiply radical expressions. (CT,QS,R) 3. Rationalize denominators (monomial square root denominators and binomial square root denominators). (W,R,CT,QS) 4. Solve radical equations. (W,R,CT,QS) 5. Solve applied problems. (W,R,CT,QS)
Solve quadratic equations in order to apply these skills to further topics and problems in mathematics.	<ol style="list-style-type: none"> 1. Solve by factoring. (CT,QS) 2. Solve by the square root method. (CT,QS) 3. Solve by the quadratic formula. (CT,QS) 4. OPTIONAL: Solve by completing the square. (CT,QS) 5. Solve applied problems. (CT,QS,W,R)
Strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.	Referenced above

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); Technology Skills (TS); Oral Communications (OC); Quantitative Skills (QS); Reading (R); Writing (W)