

**Quinsigamond Community College
School of Math and Science**

Instructor's Information:

Instructor: <Professor John Smith>
Office: <200A>
Email: <jsmith@qcc.mass.edu>
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Course Information:

Course: MAT 095 Beginning Algebra – Section ##
Meets on: <Mondays and Wednesdays from 8:00am – 9:15am>
Credits: 3 credit hours
Semester: <Spring 2023>

Course Description:

This course covers all basic operations of real numbers, linear and literal equations, graphing lines (using tables, x and y -intercepts), the arithmetic of polynomial expressions including properties of exponents, solving and graphing linear inequalities, perimeters and areas of basic figures, scientific notation and intrasystem metric conversions. Technology tools are utilized in this course. Taking the departmental final examination is a requirement of the course. The minimum passing grade for developmental mathematics courses is a "C".

Please Note: This developmental course cannot be used to satisfy degree or certificate requirements.

Pre-requisites:

MAT 090 with a grade of "C" or higher or appropriate placement score

Required Textbook/Materials/Website:

Textbook: *Introductory Algebra*, by Martin-Gay, Pearson, 6th ed., © 2020
Materials: Scientific calculator; graphing calculators are not allowed
Website: Access to www.mymathlab.com

Student Learning Outcomes & Instructional Objectives:

This course is designed to achieve the following student outcomes and objectives:

- Write the factors and the prime factorization of a number.
- Find the LCM of a list of numbers.
- Discover fraction properties having to do with 0 and 1.
- Write equivalent fractions.
- Write fractions in simplest form.
- Add, subtract, multiply, and divide fractions.
- Define the meaning of the symbols $=$, \neq , $<$, $>$, \leq , and \geq .
- Translate sentences into mathematical statements.
- Identify integers, rational numbers, irrational numbers, and real numbers.
- Find the absolute value of a real number.

- Define and use exponents and the order of operations.
- Evaluate algebraic expressions, given replacement values for variables.
- Determine whether a number is a solution of a given equation.
- Translate phrases into expressions and sentences into equations.
- Add and subtract real numbers.
- Find the opposite of a number.
- Evaluate algebraic expressions using real numbers.
- Solve applications that involve addition and subtraction of real numbers.
- Evaluate algebraic expressions using real numbers.
- Determine whether a number is a solution of a given equation.
- Multiply and divide real numbers.
- Find the reciprocal of a real number.
- Evaluate expressions using real numbers.
- Solve applications that involve multiplication or division of real numbers.
- Learn to use the commutative, associative, identity, inverse, and distributive properties.
- Simplify expressions containing parentheses; identify terms, like and unlike terms; combine like terms.
- Use the addition property of equality to solve linear equations.
- Simplify an equation and then use the addition property of equality.
- Use both the addition and multiplication properties of equality to solve linear equations.
- Apply the general strategy for solving a linear equation.
- Solve equations containing fractions or decimals.
- Recognize identities and equations with no solution.
- Use formulas to solve problems.
- Solve a formula or equation for one of its variables.
- Graph inequalities on a number line.
- Use the addition and multiplication properties of inequalities to solve and graph inequalities.
- Evaluate exponential expressions.
- Use the product rule, quotient rule, and power rule for exponents.
- Define a number raised to the 0 power.
- Decide which rule(s) to use to simplify an expression.
- Simplify expressions containing negative exponents.
- Use the rules and definitions for exponents to simplify exponential expressions.
- Write numbers in scientific notation.
- Convert numbers in scientific notation to standard form.
- Define term and coefficient of a term.
- Define polynomial, monomial, binomial, trinomial, and degree.
- Evaluate polynomials for given replacement values.
- Simplify a polynomial by combining like terms.
- Simplify a polynomial in several variables.
- Write a polynomial in descending powers of the variable and with no missing powers of the variable.
- Add or subtract polynomials in one variable or several variables.

- Multiply monomials. Multiply a monomial by a polynomial. Multiply two polynomials. Multiply polynomials vertically.
- Multiply two polynomials using the FOIL method. Square a binomial. Multiply the sum and difference of two terms. Use special products to multiply binomials.
- Divide a polynomial by a monomial. Use long division to divide a polynomial by a polynomial other than a monomial.
- Plot ordered pairs of numbers on the rectangular coordinate system.
- Find the missing coordinate of an ordered pair solution, given one coordinate of the pair.
- Graph a linear equation by finding and plotting ordered pair solutions.
- Identify intercepts of a graph.
- Graph a linear equation by finding and plotting intercept points.
- Identify and graph vertical and horizontal lines.
- Find the slope of a line through two points of the line.
- Use the slope-intercept form to write an equation of a line.
- Be able to convert units within systems and across different systems.

Teaching Procedures:

Most classes will be a combination of lecture, group activities, and in-class assignments. You will be given homework assignments to be completed outside of class, with due dates/times. There will occasionally be a quiz or exam given in class.

Course Topics & Required Assignments/Readings:

Prealgebra Review

- Factors and the Least Common Multiple
- Fractions

Real Numbers and Introduction to Algebra

- Symbols and Sets of Numbers
- Exponents, Order of Operations, and Variable Expressions
- Adding Real Numbers
- Subtracting Real Numbers
- Multiplying and Dividing Real Numbers
- Properties of Real Numbers
- Simplifying Expressions

Equations, Inequalities, and Problem Solving

- The Addition Property of Equality
- The Multiplication Property of Equality
- Further Solving Linear Equations
- Formulas and Problem Solving
- Linear Inequalities and Problem Solving

Exponents and Polynomials

- Exponents
- Negative Exponents and Scientific Notation
- Introduction to Polynomials
- Adding and Subtracting Polynomials

- Multiplying Polynomials
- Special Products
- Dividing Polynomials

Graphing Equations and Inequalities

- The Rectangular Coordinate System
- Graphing Linear Equations
- Intercepts
- Slope and Rate of Change
- Equations of Lines

Metric Conversions

Assignment & Test Schedule:

<list all assignments, quizzes, & exam dates>

Grading Breakdown:

<20% Homework >

<10% Quizzes>

<10% Attendance/Other>

<35% Exams>

<25% Comprehensive Final Exam>

A	95 – 100	B –	80 – 82	D +	67 – 69
A –	90 – 94	C +	77 – 79	D	63 – 66
B +	87 – 89	C	73 – 76	D –	60 – 62
B	83 – 86	C –	70 – 72	F	0 – 59

Attendance Policy:

Students are expected to attend all classes, for the entire period. Attendance will be taken during every class, and counts towards your final course grade. If you are absent from class, a doctor's note will excuse your absence.

Accessibility Statement:

Quinsigamond Community College is committed to providing access and inclusion for all persons with disabilities. Students who require an accommodation in this course should notify the professor as soon as possible. Students are responsible for forwarding the Accommodation Letter to the professor (via email or hard copy). Students may request accommodations at any time during the semester, which begin upon receipt (accommodations are not retroactive). Please discuss any barriers which may arise during the semester with your professor or coordinator in the Student Accessibility Services office.

Contact Information for Student Accessibility Services (SAS):

Call: 508-854-4471

Sorenson Video Phone: 508-502-7647

Email: sas@qcc.mass.edu

Services for Veterans:

If you are a veteran of the armed forces, please visit the Veteran Affairs Office located in 258A (Administration Building) or contact them at veteranaffairs@qcc.mass.edu

Diversity, Equity, and Inclusion Statement for the School of Math & Science

The School of Math and Science is motivated to teach and learn from the diverse community we have at QCC. In Science, Technology, Engineering, and Mathematics (STEM), it is advantageous to approach problems from multiple perspectives. The power of diversity, equity and inclusion allows us to persevere and overcome challenges.

The faculty of the School of Math and Science pledge to help students meet the demands of STEM regardless of race/ethnicity, gender identity and expression, sexual orientation, faith, abilities/disabilities, age, socioeconomic background, political leaning, ancestry, national origin, home language and all other identities. We are dedicated to nurturing a culture of collaboration, mutual respect and understanding; and to empowering members of our community to embrace their full potential.

Academic Honesty and Plagiarism:

Our purpose in the classroom is to seek the truth; this work requires trust and honesty between teacher and student. If we are not honest about what we know and don't know, our learning will always be impaired. Because our teaching and learning depends on this honest communication, we expect all students to understand what plagiarism is and why it is unacceptable.

Plagiarism means taking someone else's ideas or words and presenting them as one's own. The offense can take many forms including cheating on a test, passing in a paper taken from the Internet or from another student, or failing to properly use and credit sources in an essay. Sometimes the issue is subtle, involving getting too much help on an assignment from someone else. In every instance, plagiarism means cheating both oneself and the owner of the source. Since cheating sabotages a student's learning experience, consequences range from no credit for the assignment to failure for the course and possible expulsion from the college.

For further information concerning plagiarism, refer to the QCC Student Handbook.

Math Center & QCC Math YouTube Channel

The Math Center provides free, drop-in tutoring assistance for students in any QCC mathematics course. Located on the second floor of the Harrington Learning Center (HLC), the Math Center is a welcoming place where students have the opportunity to work collaboratively with tutors and classmates. Students can work intensively to improve their mathematical skills or simply drop by to ask a few questions. In addition to tutoring, the Math Center houses various math-related resources, and computers and software for math coursework. Visit their website for details and the semester schedule: <https://www.qcc.edu/services/tutoring/math-center>

For further help, visit the QCC Math YouTube channel. This channel has a playlist specifically for this course, with many short videos created with students like you in mind, covering many of the topics in this course: <https://www.youtube.com/user/QCCmath>