

BOROUGH OF MANHATTAN COMMUNITY COLLEGE

City University of New York

Department of Mathematics**Basic Arithmetic and Algebra****MAT 12****Semester:****Credits: 0****Class hours: 6****Instructor Information****Name:****Email:****Phone:****Office:****Course Description**

This course is a combination of remedial arithmetic skills and elementary algebra. It includes the arithmetic of integers, fractions, decimals, and percents. In addition, the course covers topics such as algebraic representation, operations with polynomials, solving linear equations, solving systems of two linear equations in two variables, exponents and radicals, factoring, and graphing linear equations. This is an accelerated course for students who have scored relatively high on the placement examination in pre-algebra.

Pre-Requisites

Pre-requisite: ESL 62. Students will be placed based on their ACCUPLACER'S (or equivalent) scores in this class.

Student Learning Outcomes and Assessment**Course Student Learning Outcomes**

1. Students should be able to correctly compute a variety of operations involving real numbers in a number of different formats, including the correct usage of the order of operations.
2. Students should be able to correctly convert between a variety of real number types and formats.
3. Students should be able to make estimates and to check the reasonableness of solutions to calculations and problems involving real numbers.
4. Students should be able to solve applied word problems, including correctly setting up problems and translating between words and algebraic expressions and equations.
5. Students should be able to perform operations and solve equations involving algebraic expressions in the real numbers, including polynomial, rational, and radical expressions and equations, linear inequalities and systems of equations.
6. Students should be able to represent equations in the real numbers graphically, and translate between graphical and algebraic forms, and use both graphical and algebraic forms to solve problems.

Measurements

1. Homework, quizzes, online problem assignments, PAAE, final exam, CUNY-Wide MATH Exam (CEAFE).
2. Homework, quizzes, online problem assignments, PAAE, final exam, CEAFE Exam
3. Homework, quizzes, online problem assignments, PAAE, final exam, CEAFE Exam.
4. Homework, quizzes, online problem assignments, PAAE, final exam, CEAFE Exam.
5. Homework, quizzes, online problem assignments, PAAE, final exam, CEAFE Exam.
6. Homework, quizzes, online problem assignments, PAAE, final exam, CEAFE Exam.

General Education Outcomes and Assessment**General Education Learning Outcomes**

Communication Skills- Students will be able to write, read, listen and speak critically and effectively.

Quantitative Reasoning- Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.

Information & Technology Literacy- Students will be able to collect, evaluate and interpret information and effectively use information technologies.

Measurements

Homework, quizzes, online problem assignments, PAAE, final exam, CEAFE Exam.
Homework, quizzes, online problem assignments, PAAE, final exam, CEAFE Exam.
Homework, quizzes, online problem assignments, PAAE, final exam, CEAFE Exam.

Math Lab

The Math Lab is located in S535. You will need a valid BMCC student ID to visit the Math Lab. Tutors are available in the Math Lab for free to all BMCC students. The Math Lab has worksheets with practice problems, as well as computer- and video-based tutoring.

Course Requirements**Text and Readings:**

- 1) Geoffrey Akst and Sadie Bragg, *Basic Arithmetic and Algebra, Fourth Custom Edition, book package with MyMathLab access code*, Pearson Custom Publishing, 2012 ISBN # 9781269903530.

OR 2) Stand-alone MyMathLab access code with eBook (Code: 9781269899734).

Use of Technology: You are required to use the **MyMathLab** online courseware system. It contains videos, homework problems, chapter tests and quizzes, step-by-step help, an online version of the textbook, and more. You can access the online courseware only by buying a **new textbook** that contains a student access card or by buying a **separate access code** from the bookstore or the publisher. **MyMathLab** can be accessed on any computer that has internet access.

Registering for MyMathLab: Before registering, you will need the following information:

1. E-mail address: Your professor will communicate with you via this address.
2. Course ID: Your course ID will be provided by your instructor.
3. Access Code: The required access code comes either with your book or by itself at your bookstore. Alternatively, you can buy instant access with a credit card or PayPal account during registration.

Once you have this information, you may register by following the directions below:

1. Go to www.mymathlab.com
2. Under the large **Register Now** section on the right side of the page, click on the **Student** button.
3. Read the on-screen instructions and click **OK! Register now.**
4. Next, enter the **Course ID** for your course. You will receive this from your professor.
5. **Create** a new Pearson account if you do not have one, or, if you have a Pearson account already, sign in with your username and password.
6. On the next page, you have three choices:
 - i) Click the **Access Code** button if you purchased a package with an access code from the bookstore
 - ii) Purchase instant access now by clicking on the purchase options under the **Use a Credit Card or PayPal** section.
 - iii) Choose Get temporary access without payment for 14 days, toward the bottom of the page to start your work. **MAKE SURE YOU BUY THE CODE BEFORE YOUR TEMPORARY ACCESS EXPIRES.**

Evaluation and Requirements of Students

- The final course grade will be either a passing grade of S (satisfactory), or a non-passing grade of R (repeat). (See complete grade distribution table below).

REQUIRED Grade Distribution:

| | | | |
|---------------------------|-------------|------------------------------|-------------|
| PAAE: | 20 % | Departmental Final: | 20 % |
| CUNY Exam (CEAFE): | 35 % | Homework and Quizzes: | 25 % |

- To pass the course, you must have an overall course average of 70% or higher.**
- A passing grade for the Departmental Pre-Algebra Assessment Exam (PAAE) is 70% or higher.
- If your score on the first try of the PAAE Exam is below 70%, you are required to complete each of the online Intervention Assignments (on **MyMathLab**) with a score of 70% or higher on each. All other students are strongly encouraged to complete these intervention assignments for extra practice and/or course grade improvement.
- If your score on the first try of the PAAE is below 70%, a second try of PAAE Exam will be given to you during Finals Week.

BMCC is committed to the health and well-being of all students. It is common for everyone to seek assistance at some point in their life.

There are free and confidential services on campus that can help:

A. **Single Stop:** www.bmcc.cuny.edu/singlestop room S230, 212-220-8195.

If you are having problems with food or housing insecurity, finances, health insurance or anything else that might get in the way of your studies at BMCC, come by the Single Stop Office for advice and assistance. Assistance is also available through the Office of Student Affairs, S350, 212-220- 8130.

If you are having problems with food or housing insecurity, finances, health insurance or anything else that might get in the way of your studies at BMCC, come by the Single Stop Office for advice and assistance. Assistance is also available through the Office of Student Affairs, S350, 212-220- 8130.

B. **Counseling Center:** www.bmcc.cuny.edu/counseling room S343, 212-220-8140

Counselors assist students in addressing psychological and adjustment issues (i.e., depression, anxiety, and relationships) and can help with stress, time management and more. Counselors are available for walk-in visits.

C. **Office of Compliance and Diversity:** www.bmcc.cuny.edu/aac room S701, 212-220-1236

BMCC is committed to promoting a diverse and inclusive learning environment free of unlawful discrimination/harassment, including sexual harassment, where all students are treated fairly. For information about BMCC's policies and resources, or to request additional assistance in this area, please visit or call the office, or email olevy@bmcc.cuny.edu, or twade@bmcc.cuny.edu. If you need immediate assistance, please contact BMCC Public safety at 212-220-8080.

D. Academic Adjustments for Students with Required Accommodations:

Office of Accessibility www.bmcc.cuny.edu/accessibility, room N360 (accessible entrance: 77 Harrison Street), 212-220-8180 This office collaborates with students who have documented disabilities, to coordinate support services, reasonable accommodations, and programs that enable equal access to education and college life. To request an accommodation due to a documented disability, please visit or call the office.

BMCC Policy on Plagiarism and Academic Integrity Statement:

Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.

Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's web site, www.bmcc.cuny.edu. For further information on integrity and behavior, please consult the college bulletin (also available online).

Suggested Schedule

| | | | |
|--------|---|---------|--|
| Week 1 | Arithmetic of Whole Numbers | Week 9 | Solving Systems of Linear Equations |
| Week 2 | Fractions | Week 10 | Exponents and Polynomials (includes |
| Week 3 | Decimals | Week 11 | Factoring Polynomials |
| Week 4 | Percents | Week 12 | Rational Expressions |
| Week 5 | Basic Statistics, Signed Numbers | Week 13 | Radical Expressions |
| Week 6 | Exponents, Scientific Notation Departmental Pre-Algebra Assessment Exam(PAAE): Whole Numbers, Fractions, Decimals, Percents, Basic Statistics, Signed Numbers and Scientific Notation | Week 14 | Exam review; Departmental Final Exam |
| Week 7 | Algebraic Expressions, Translations. Solving Linear Equations and Inequalities | Week 15 | CUNY-Wide Exam (CEAFE) and second try of PAAE |
| Week 8 | Graphing Linear Equations and Inequalities | | |

Outline of Topics

Arithmetic of Whole Numbers

- Writing, rounding, adding, subtracting, multiplying, and dividing whole numbers.
- Estimating the sum, difference, products and quotients of whole numbers.
- Problems involving exponents, simple averages, and order of operations.
- Prime factorizations of whole numbers.
- Applied problems and word problems.

Fractions

- Forming, reducing, adding, subtracting, multiplying, dividing, comparing and ordering fractions.
- Converting between mixed numbers and improper fractions.
- Solving applied problems and word problems.

Decimals

- Writing, rounding, adding, subtracting, multiplying, dividing, comparing and ordering decimals.
- Converting between decimals and fractions.
- Solve applied problems and word problems.

Percents

- Writing and simplifying ratios and rates as fractions.
- Finding unit rates and best buys.
- Setting up and solving proportion problems.
- Solving applied problems and word problems.
- Converting between decimals, percent and fractions.
- Solving percent problems, including applications.

Basic Statistics

- Finding the mean, median, mode, and range of a given set of numbers.
- Reading and interpreting tables, line graphs, bar graphs and pie charts.
- Solving applied problems and word problems involving basic statistics and bar graphs.

Signed numbers (2nd section)

- Adding, subtracting, multiplying, dividing, comparing and order of operation on signed numbers.
- Determining absolute value.
- Completing word problems involving signed numbers.

Algebraic Expressions, Translations and Exponents

- Evaluating algebraic expressions via substitution.
- Adding, subtracting, multiplying, dividing and simplifying algebraic expressions.
- Using algebraic expressions to solve applied problems.

Scientific Notation (supplemental worksheet)

- Converting numbers between standard form and scientific notation.
- Solving applied problems and word problems.

Solving Linear Equations and Inequalities

- Solving linear and literal equations.
- Defining a linear equation in x and y using given information.
- Solving applied problems using linear equations in one variable.

Graphing Linear Equations and Inequalities

- Graphing the solution set of a linear inequality.
- Plotting points in the x-y plane.
- Graphing linear equations.
- Finding the slope of a line from given information.

Solving Systems of Linear Equations

- Solving systems of linear equations in 2 variables using graphical, substitution and elimination methods.
- Solving applied problems involving systems of equations.

Exponents and Polynomials

- Multiplying, dividing and simplifying expressions involving exponents.
- Adding, subtracting, multiplying, dividing and evaluating polynomials.

Factoring Polynomials

- Factoring polynomials using the greatest common factor and grouping.
- Factoring trinomials and difference of squares.
- Solving quadratic equations in one variable by factoring.
- Solving applied problems involving factoring.

Rational Expressions and Equations

- Simplifying rational expressions.
- Solving rational equations.

Radical Expressions and Equations

- Simplifying, adding, subtracting, multiplying and dividing radical expressions.