BOROUGH OF MANHATTAN COMMUNITY COLLEGE
City University of New York

Department of Mathematics

Basic Arithmetic and Algebra **Class hours: 6**

MAT 012
Semester:
Credits: 0

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 percent. 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, graphing linear equations, and the Pythagorean theorem. This is an accelerated course for students who have scored relatively high on the placement examination in pre-algebra.

Pre/Co-Requisites:
Pre-Requisite: ESL 062. Students who score 30 up to 36 on the COMPASS Pre-algebra exam and less than 38 on the COMPASS algebra exam are eligible to take MAT 012. Students who have not yet obtained a score of 30 or more on the COMPASS pre-algebra exam will be required to do so before exiting the course. The COMPASS pre-algebra exam will be scheduled during the 8th week of classes.

Student Learning Outcomes and Assessment:

Course Student Learning Outcomes	**Measurements**
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.	**1.** Homework, quizzes, online problem assignments, midterm, COMPASS exam, final exam.
2. Students should be able to correctly convert between a variety of real number types and formats.	**2.** Homework, quizzes, online problem assignments, midterm, COMPASS exam, final exam.
3. Students should be able to make estimates and to check the reasonableness of solutions to calculations and problems involving real numbers.	**3.** Homework, quizzes, online problem assignments, midterm, COMPASS exam, final exam.
4. Students should be able to solve applied word problems, including correctly setting up problems and translating between words and algebraic expressions and equations.	**4.** Homework, quizzes, online problem assignments, midterm, COMPASS exam, final exam.
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.	**5.** Homework, quizzes, online problem assignments, midterm, COMPASS exam, final exam.
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.	**6.** Homework, quizzes, online problem assignments, midterm, COMPASS exam, final exam.

General Education Outcomes and Assessment:

General Education Learning Outcomes	Measurements
Communication Skills- Students will be able to write, read, listen and speak critically and effectively.	Homework, quizzes, online assignments, midterm, COMPASS exam, final exam.
Quantitative Reasoning- Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.	Homework, quizzes, online problem assignments, midterm, COMPASS exam, final exam.
Information & Technology Literacy- Students will be able to collect, evaluate and interpret information and effectively use information technologies.	Homework, quizzes, online problem assignments, midterm, COMPASS exam, final exam.

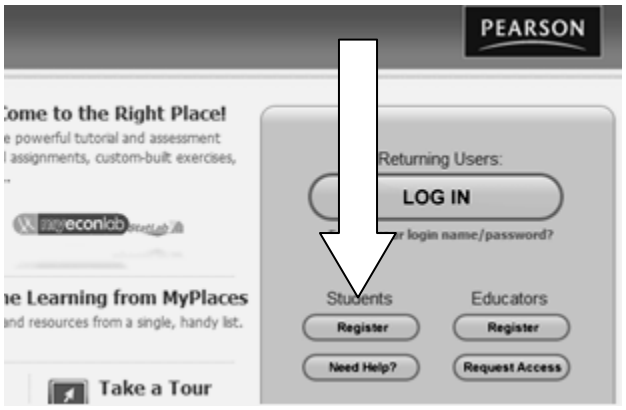
Required Text and Readings:
Geoffrey Akst and Sadie Bragg, *Introductory Algebra with Arithmetic Review, Third Custom Edition, book package with mymathlab access code*, Pearson Custom Publishing, 2009, ISBN 0558401651.
OR
Stand-alone mymathlab access code with eBook: Geoffrey Akst and Sadie Bragg, *Introductory Algebra with Arithmetic Review, Third Custom Edition*, Pearson Custom Publishing, 2008, ISBN 032119991X.

Math Lab Use: The Math Lab is located in S511. It is dedicated to helping students improve their understanding of mathematics at any level. 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 in stock, as well as computer- and video-based tutoring. Your instructor can require you to attend to tutoring in the Math Lab and they can also track how often you visit it and for how long. The Math Lab is typically open any day of the week when BMCC has classes in session; for current hours and more information about the Math Lab, see the webpage at http://www.bmcc.cuny.edu/mathlab/.

Use of Technology: All students 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. Students 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 (at www.coursecompass.com.) MyMathLab can be accessed on any computer that has internet access, on an iPod, and on some other PDAs/Smartphones.

To register once you have a student access card, or to buy access online:

1. Have your access code from the textbook ready or a credit card to pay for access on the website.
2. Make sure to get the **course ID** for your course from your instructor.
3. Go to www.coursecompass.com.
4. Under the word "**Students**," click on Register.



5. Choose "Get Access to a new course," and hit the Next ▶ button on the bottom right corner of the page -- you might have to scroll down to find it.
6. Type in the course ID that starts with your instructor's last name. Click "Find course."

7. When the new bottom part of the screen appears, if you already have an access code, choose "Access code." Enter the access code **from your textbook** in the boxes that look like this 

then click .

   If you want to purchase an access code, click "Buy now" and follow the instructions on the screen to complete your purchase.

8. On the next page, choose "I accept," and on the page after, select, "No, I am a new user."
9. Enter information about yourself and BMCC (the zip code for BMCC is 10007). Enter the email address you use regularly (it does not have to be your BMCC email address).

   Create your own password and username. **It can be any username and password that you want.**Write this username and password in a safe place. **From now on, you will get in by going to www.coursecompass.com and clicking on LOG IN under Returning Users.**

Other Resources: The following are weblinks to COMPASS materials:
A description of the COMPASS exam: http://www.bmcc.cuny.edu/testing/CUNYskills/math.html
Practice COMPASS problems: http://www.bmcc.cuny.edu/math/studylinks.html
Practice departmental midterm and final exams:
http://www.bmcc.cuny.edu/math/instructional_materials.jsp

Evaluation and Requirements of Students:
The final grade in this course will be a passing letter grade of C- or higher, or a failing grade of R. To pass the course, the student must pass the COMPASS Pre-Algebra examination and the COMPASS Algebra examination with a score of at least 30, pass a departmental final examination with a grade of 70% or higher, and also satisfy any additional criteria stated by the instructor.

During the 7th week of classes, students will be required to take the departmental midterm examination. Those students who do not pass the midterm examination with a grade of 70% or better will be required to complete math intervention online before they will be permitted to take the final exam; in order to complete the intervention, students will be required to obtain a score of 75% or higher on all online Intervention Assignments (students may redo assignments until they obtain this score). During the 8th week of classes, any students who have not yet obtained a 30 or higher on the COMPASS Pre-Algebra examination will take that exam.

Students who qualify to take the final exam will take the test during the 14th week of classes. In order to qualify to take the COMPASS exam, students must pass the departmental final with a grade of 70% or better, and must not be absent for more than 15% of the total class meeting time during the semester (13 hours of class time). Students who do not pass the departmental final exam on their first try will be given a second chance to take the departmental final during the final exam period, and those students who pass the department final on their second try and also meet all attendance requirements will then be permitted to take the COMPASS exam toward the end of the final exam period.

College Attendance Policy:
1. Absences
At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For this course, you are allowed seven hours of absence (not seven days). In the case of excessive absence, the instructor has the option to lower the grade or assign an "F", "R", or "WU" grade.

2. Class Attendance
If you do not attend class at least once in the first three weeks of the course and once in the fourth or fifth weeks, the Office of the Registrar is required to assign a grade of "WU". Attendance in both regular and remedial courses is mandated by policy of the City University of New York. Instructors are required by New York State law to keep an official record of class attendance.

3. Lateness
Classes begin promptly at the times indicated in the Schedule of Classes. Arrival in classes after the scheduled starting time constitutes a lateness. Latecomers may, at the discretion of the instructor, incur an official absence.

Academic Adjustments for Students with Disabilities:
Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities. BMCC is committed to providing equal access to all programs and curricula to all students.

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 2	Fractions
Week 3	Decimals
Week 4	Percent
Week 5	Basic Statistics, Signed Numbers
Week 6	Algebraic Expressions, Translations and Exponents, Scientific Notation
Week 7	**Departmental Midterm Exam: Whole Numbers, Fractions, Decimals, Percents, Basic Statistics, Signed Numbers, Algebraic Expressions, Translations and Exponents, Scientific Notation** Solving Linear Equations and Inequalities
Week 8	Graphing Linear Equations and Inequalities
Week 9	Solving Systems of Linear Equations
Week 10	Exponents and Polynomials (includes scientific notation) **Compass practice**
Week 11	Factoring Polynomials
Week 12	Rational Expressions and Equations
Week 13	Radical Expressions and Equations
Week 14	**Department Final Exam**; Exam review and results
Week 15	**COMPASS Exam; Second try for Dept. Final Exam**

Outline of Topics **Pages in Text**

Arithmetic of Whole Numbers 1 -84

- 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 85-160

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

Decimals 161-218

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

Percents 219-266

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

Basic Statistics 267-303

- 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 29-77 (2^{nd} section)

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

Algebraic Expressions, Translations and Exponents 78-105

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

Scientific Notation supplemental worksheet available in Math Lab

- Converting numbers between standard form and scientific notation.
- Adding, subtracting, multiplying, and dividing numbers in scientific notation.
- Solving applied problems and word problems.

Solving Linear Equations and Inequalities 115-188

- 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 189-300

- Graphing the solution set of a linear inequality.
- Ploting points in the x-y plane.
- Graphing linear equations.
- Finding the slope of a line from given information.
- Graphing linear inequalities in 2 variables.

Solving Systems of Linear Equations 301-356

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

Exponents and Polynomials (includes scientific notation) 357-444

- Multiplying, dividing and simplifying expressions involving exponents.
- Adding, subtracting, multiplying, dividing and evaluating polynomials.
- Converting numbers between standard form and scientific notation.
- Adding, subtracting, multiplying, and dividing numbers in scientific notation.

Factoring Polynomials 445- 502

- 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 503-576

- Simplifying, adding, subtracting, multiplying and dividing rational expressions.
- Simplifying complex fractions.
- Solving rational equations.

Radical Expressions and Equations 577- 628

- Simplifying, adding, subtracting, multiplying and dividing radical expressions.
- Rationalizing the denominator of a radical expression.
- Solving radical equations.

The Remedial Course Exam Procedure Chart