

QUANTITATIVE REASONING

City College of New York: Fall 2026

Math 18000

Instructor: Elijah Gadsby
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Course Supervisor: Mathew Auth

Location: NAC 5/102
Time: Monday/Wednesday 6:00-7:40pm

Content

Text: Billstein, Boschmans, Libeskind, Lott: A Problem Solving Approach to Mathematics for Elementary School Teachers 13th ed.

Content	Textbook Chapter
Logic and sets	2
Numeration systems and whole number operations	3
Number Theory	4
Integers	5
Rational Numbers and Proportional Reasoning	6
Rational numbers as decimals and percent	7
Real numbers and algebraic thinking	8

Assignments

Homework: 5 percent
Quizzes: 10 percent
Midterms x 3: 40 percent (30th September, 4th November, 2nd December)
Final Exam: 40 percent (21st December)
Attendance and Participation: 5 percent

Technology Policy

The use of technology during this course is limited to a scientific calculator. The use of AI tools is not permitted for assessments during this course.

Academic Integrity

Students must adhere to the CUNY Academic Integrity Policy.

Course Learning Outcomes

1. apply a number of different strategies (Including visual and numerical) to solve a variety of problems, and explore patterns and sequences (a,b,c)
2. use set theoretic concepts to reason and to describe relationships among various categories of objects and numbers, and use set operations and understand their properties (a,c,e1)
3. solve problems using the concept of ordered pairs (a,c)
4. develop a fluency with, and an appreciation of, our whole number numeration system and operations through a study of historical numeration systems and bases other than ten (a)
5. use simple number-theoretic concepts (e.g., primes, divisibility) to solve problems to deepen the understanding of fraction and decimal operations (a,e1)
6. apply the concepts of least common multiple and greatest common divisor of two integers to operations on fractions (a,e1)
7. model and solve real world problems involving fractions and decimals using set and number theoretic concepts (a,c,d)
8. demonstrate a knowledge of the concept of irrational numbers and their approximations using both algebra and a scientific calculator (a,c,d,e1)
9. estimate results of calculations given the numbers or given only partial information about the numbers (a,d)
10. understand rational numbers as decimals and percents, solve problems with percents (a,c,d)
11. explain orally and in written form the meaning of mathematical terms, operations and theorems, as well as solutions to problems (a,e1,e2)

Department Learning Outcomes

The mathematics department, in its varied courses, aims to teach students to:

- a. perform numeric and symbolic computations
- b. construct and apply symbolic and graphical representations of functions
- c. model real-life problems mathematically
- d. use technology appropriately to analyze mathematical problems
- e. state (e1) and apply (e2) mathematical definitions and theorems
- f. prove fundamental theorems
- g. construct and present (generally in writing, but, occasionally, orally) a rigorous mathematical argument.