

1 Warning

Community College of Philadelphia is a firm adherent to the principle of academic freedom. In light of this, faculty are not required to follow a particular approach or a particular textbook for the courses they teach. Most faculty, however, have more or less uniform guidelines for specific courses, and indeed, many use a particular textbook or approach in order to conform to area institutions. Therefore, the sample syllabus found here is not binding to faculty, but represents a synthesis of what most faculty do or aspire to do when they teach a particular course. What follows should not be interpreted as a prescription, but rather, as a means to help the placement of our students in transfer institutions.

2 Catalogue Description

Integers, fractions, decimals, scientific notation, ratio and proportion, percents, geometry and measurement, applications, approximations, use of a scientific calculator. Credit will not apply toward graduation.

3 Allotted Time

Math 016 is a 3-credit course. Courses at Community College of Philadelphia run for about 42 55-minute periods. Instructors usually give three or four exams (generally lasting at least 55 minutes), and a 2-hour long final exam.

4 Topics Outline

- The Natural Numbers. Order of Operations. Divisibility.
- Fractions. Multiplying and Dividing Fractions.
- Adding and Subtracting Fractions. Mixed Numerals.
- Decimals. Decimal Arithmetic. Conversion Between Decimals and Fractions.
- Real Numbers: Signed Numbers and their Arithmetic. Scientific Notation.
- Ratio and Proportions. Applications.
- Percents. Conversion Between Percents, Fractions and Decimals.
- Systems of Measurement, Conversion Between Different Measures.
- Geometry: Perimeter, Area, Volume, Pythagorean Theorem.

5 Past Textbooks

- Marvin Bittinger's *Basic Mathematics, custom edition*.
- Alfred Brown's *Basic Mathematics*

6 Competencies

1. The student will demonstrate knowledge of integer arithmetic by:
 - (a) Performing operations of addition, subtraction, multiplication, and division of integers.
 - (b) Applying the algebraic order of operations to operations with integers.
 - (c) Listing the factors of small integers.
 - (d) Writing the prime factorization of of small integers.
2. The student will demonstrate knowledge of rational numbers by:
 - (a) Changing improper fractions to mixed numerals and mixed numerals to improper fractions.
 - (b) Performing operations of addition, subtraction, multiplication, and division on fractions or mixed numerals.
 - (c) Applying the order of operations agreement on fractions.
3. The student will demonstrate knowledge of decimal place value by:
 - (a) Identifying place value
 - (b) Writing numbers using word notation, standard notation, and expanded notation.
 - (c) Rounding whole numbers
4. The student will demonstrate knowledge of decimals by:
 - (a) Changing decimals to fractions
 - (b) Rounding off a given decimal.
 - (c) Performing operations of addition, subtraction, multiplication, and division on decimals.
 - (d) Applying the order of operations agreement on decimals.
5. The student will demonstrate knowledge of proportion by
 - (a) Setting up and solving problems with proportions.
6. The student will demonstrate knowledge of percent by:
 - (a) Converting any number from one form (fraction, decimal, percent) to another
 - (b) Solving problems that can be reduced to equations of the form : $x\%$ of a is b , where two of the three quantities x , a or b are known.

- (c) Solving applications involving percent.
7. The student will demonstrate knowledge of basic measurements of geometric figures by:
- (a) Finding the perimeter of polygons and the circumference of circles
 - (b) Finding the area of polygonal regions and circular regions
 - (c) Finding the volume of a rectangular solid