

Fundamentals of Mathematics I
Math 130A

Student Learning Outcomes

- 1 The students will demonstrate factual knowledge including the mathematical notation and terminology used in this course.** Students will read, interpret, and use the vocabulary, symbolism, and basic definitions used in arithmetic, geometry, and beginning algebra.
- 2 The students will describe the fundamental mathematical principles, generalizations, and properties arising from the concepts covered in this course.** Students will identify and apply the basic operations on the real numbers and polynomials; the properties of the real numbers; solving first-degree equations; and the formulas for finding perimeter, area, volume, surface area, and circumference.
- 3 The students will apply course material along with techniques and procedures covered in this course to solve problems.** Students will use the facts, formulas, and techniques learned in this course to solve a wide variety of application problems to include percent, geometry, and proportions.
- 4 The students will develop the basic skills and knowledge necessary to be successful in college-level mathematics courses.** Students will acquire a level of proficiency in the fundamental concepts of arithmetic, geometry, and beginning algebra to promote success in college-level math courses.

Course content

Textbook: *Prealgebra, Fifth Edition*, by Aufmann, Barker, Lockwood. The following chapters including particular sections listed are covered. (See textbook “Contents.”)

- 1. Whole numbers.** Standard notation; addition, subtraction, multiplication, and division; rounding; estimating; application problems; divisibility rules; properties of whole numbers; order of operations; exponents; evaluating algebraic expressions; and solving equations with whole numbers.
- 2. Integers.** Number line; addition, subtraction, multiplication, and division; properties of integers; absolute value; order of operations; applications; and solving equations with integers.
- 3. Fractions.** Factors; multiples; addition, subtraction, multiplication, and division; mixed numerals; complex fractions; application problems; exponents; order of operations; and solving equations with fractions.
- 4. Decimals/Real number system.** Notation; addition, subtraction, multiplication, and division; rounding; fractions to decimals and decimals to fractions; application problems; approximation; number line; reducing radicals; and solving equations with decimals.
- 5. Variable Expressions.** Addition, subtraction, multiplication, and division of polynomials; laws of exponents; use of distributive property; translation of verbal expressions into variable expressions; and properties of real numbers.
- 6. First-Degree Equations.** Techniques in solving first-degree equations; application problems; the rectangular coordinate system; translating sentences into equations; and graphing linear equations.
- 7. Measurement and Proportion.** Dimensional analysis; ratios and rates; proportions and applications; and metric and U.S. customary systems.
- 8. Percents.** Basic percent equation; percent problems; and writing percents as fractions and as decimals.
- 9. Geometry.** Classifying angles; sum of angle measures of triangles; classifying polygons; perimeter and area of squares, rectangles, triangles, parallelograms, and trapezoids; area and circumference of circles; volume and surface area of rectangular solids and cylinders; vertical, corresponding, and alternate interior angles; similar triangles; and the Pythagorean theorem.
- 10. Statistics and Probability.** Mean, median, and mode.
- 11. Factoring.** Trinomials; greatest common factor.