

MATH M10: Mathematics for Elementary Teachers

Course Objectives (COR)

- Write numbers in Hindu-Arabic, Babylonian, Roman and other numeration systems.
- Convert numbers from base ten into place value systems in other bases and perform basic arithmetic operations in bases other than ten.
- Define addition and subtraction of integers and state the properties of addition and subtraction.
- Define multiplication and division of integers and state the properties of multiplication and division.
- Evaluate the equivalence of numeric algorithms and explain the advantages and disadvantages of equivalent algorithms in different circumstances.
- Apply algorithms from number theory to determine divisibility in a variety of settings.
- Define prime and composite numbers and factor a composite into primes.
- Determine the greatest common divisors and least common multiples of sets of numbers and explain their role in standard algorithms.
- Define the set of rational numbers using both ratio and decimal representations; analyze the arithmetic algorithms for these two representations and justify their equivalence.
- Define the set of real numbers and state the properties of real numbers.
- Analyze the structure and properties of whole, rational, and real number systems; define rational and irrational numbers, including their decimal representation and illustrate the use of a number line representation.
- Define rates, ratios and proportions and use ratios and proportions to solve real life problems.
- Define percentages and use percents to solve problems.
- Use patterns, problem solving, communication, connections, modeling, reasoning, and representation to reinforce conceptual understanding of mathematical topics.
- Develop activities implementing national, state and Common Core curriculum standards.

Course Learning Outcomes (CLO)

- Students completing this course will be able to solve a variety of problems using multiple problem-solving techniques.
- Students completing this course will be able to demonstrate understanding of standard and non-standard algorithmic procedures for performing operations on subsets of real numbers.
- Students completing this course will be able to define, identify, and use the fundamental properties of real number operations.
- Students completing this course will be able to use mathematical language and notation appropriately to communicate ideas effectively in multiple formats--verbally, and in writing.