# MTH 127: Mathematics for Elementary School Teachers I

This course develops understanding of the mathematical content of number and operations at the deep level required for successful elementary school teaching in ways that are meaningful to pre-service elementary teachers. Topics include: place value and arithmetic models; mental math; algorithms; prealgebra; factors and prime numbers; fractions and decimals; ratio; percentage and rates; integers; and elementary number theory. Prerequisite: Intermediate Algebra Competency. Three lecture hours per week. Gen. Ed. Competencies Met: Quantitative and Symbolic Reasoning.

## Course Student Learning Outcomes

1. Apply the properties of closure, commutativity, associativity, and identity to addition and multiplication of whole numbers.
2. Represent subtraction of whole numbers using the take-away and missing addend approaches.
3. Construct the addition and multiplication facts table for any base from 2 through 10 and read it "backwards" to find subtraction and division facts respectively.
4. Perform all arithmetic operations in bases 2 through 12.
5. Describe "less than" and "greater than" with whole numbers using the operation of addition.
6. Describe multiplication of whole numbers using repeated addition and rectangular array approaches.
7. Represent division of whole numbers using the missing factors and repeated subtraction.
8. Explain division problems involving zero.
9. Explain whole number exponents using repeated multiplication.

1

1. Use the sieve of Eratosthenes to find prime numbers.

1

1. State and apply the fundamental theorem of arithmetic.

1

1. Apply tests for divisibility by 2, 3, 4, 5, 6, 8, 9, 10, 11, and 12.

1

1. Find the prime factorization of a number to find all of its factors.

1

1. Find the Greatest Common Factor and Least Common Multiple of any given pair of numbers using the prime factorization method.

1

1. Determine equality of fractions.

1

1. Express a fraction in the simplest form.

1

1. Perform any arithmetic operation on rational numbers and integers, providing rationale for your computations.

1

1. Solve applied problems involving ratios, proportions, and percents.

1

1. Change any fraction to its decimal form and vice versa.

2

1. Define and apply the distributive property of multiplication over addition.

**Credits:** 3
**Program:** Mathematics