MATHEMATICS FOR ELEMENTARY SCHOOL TEACHERS I

MTCH 2000

Course Description:

A course for prospective elementary school teachers that involves mathematical reasoning, conjecturing, problem-solving, and connecting mathematical thought to its applications. Topics include fractions, decimals, arithmetic operations, and proportional reasoning. **3 credits**

Prerequisites:

at least C in MATH 1310 and TED 2100 (EDUC 2020) or TED 2200 (EDUC 2030); OR at least C in MATH 1310 and passing the Praxis I - Core

Major Topics:

1) Fractions
   a. The Meaning of Fractions
   b. Equivalent Fractions
   c. Comparing Fractions
   d. Percents

2) Addition and Subtraction
   a. Interpretations of Addition and Subtraction
   b. Commutative and Associative Properties of Addition and Subtraction
   c. Standard Algorithms for Addition and Subtraction
   d. Adding and Subtracting Fractions
   e**.** Adding and Subtracting Negative Numbers

3) Multiplication
   a. Interpretations of Multiplication
   b. Commutative and Associative Properties of Multiplication
   c. The Distributive Property
   d. Properties of Arithmetic and Mental Math and Single Digit Multiplication Facts
   e. Why the Common Algorithm for Multiplication works
   f. Multiplying Fractions
   g. Multiplying Decimals
   h**.** Multiplying Negative Numbers

4) Division
   a. Interpretations of Division
   b. Division and Fractions and Division with Remainder
   c. Why Division Algorithms Work
   d. Fraction Division from a "How Many Groups" perspective
   e. Fraction Division from a "How Many in each Group" perspective
   f**.** Dividing Decimals

5) Ratios and Proportions
   a. Interpretations of Division
   b. Motivating and Defining Ratio and Proportional Relationships
   c. Solving Proportional Problems by Reasoning with Multiplication and Division
   d. Unit Rates and Values of a Ratio
   e. Proportional Relationships versus Inversely Proportional Relationships
   f. Percent Increase/Percent Decrease

<u>**Textbook:**</u> Mathematics for Elementary Teachers, 4th Edition, Sybilla Beckmann, Pearson

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