

math117 Syllabus

math 117: Number Sense For PK-8 Teachers

Text: *Mathematics for Elementary and Middle School Teachers with Activities, 6th Edition*, by Sybilla Beckmann, Pearson

Prerequisites: Minimum ACT math score of 19, or College Algebra with a grade of C or better, or MATH 107/103/105/109 with a grade of C or better. Restriction: Education majors only.

Course Description:

The content in this course aligns with that of K-8 schools, giving prospective teachers the knowledge of mathematics that they will need to effectively teach standards and content specified by both NCTM and CCSS.

Sections and Topics

- 1.1 The Counting Numbers
- 1.2 Decimals and Negative Numbers
- 1.3 Reasoning to Compare Numbers in Base Ten
- 1.4 Reasoning about Rounding
- 2.1 Defining and Reasoning About Fractions
- 2.2 Reasoning About Equivalent Fractions
- 2.3 Reasoning to Compare Fractions
- 2.4 Reasoning About Percent
- 3.1 Interpretations of Addition and Subtraction
- 3.2 The Commutative and Associative Properties of Addition, Mental Math, and Single-Digit Facts
- 3.3 Why the Standard Algorithms for Addition and Subtraction in Base Ten Work
- 3.4 Reasoning About Fraction Addition and Subtraction
- 3.5 Why We Add and Subtract with Negative Numbers the Way We Do
- 4.1 Interpretations of Multiplication
- 4.2 Why Multiplying by 10 Is Special in Base Ten
- 4.3 The Commutative and Associative Properties of Multiplication, Areas of Rectangles, and Volumes of Boxes
- 4.4 The Distributive Property
- 4.5 Properties of Arithmetic, Mental Math, and Single-Digit Multiplication Facts
- 4.6 Why the Standard Algorithm for Multiplying Whole Numbers Works
- 5.1 Making Sense of Fraction Multiplication
- 5.2 Making Sense of Decimal Multiplication
- 5.3 Extending Multiplication to Negative Numbers
- 5.4 Powers and Scientific Notation (Time Permitting)
- 6.1 Interpretations of Division

- 6.2 Division and Fractions and Divisions with Remainder
- 6.3 Why Division Algorithms Work
- 6.4 Fraction Division from the How-Many-Groups Perspective (Time Permitting)
- 6.5 Fraction Division from the How-Many-Units-in-1-Group Perspective (Time Permitting)
- 8.1 Factors and Multiples
- 8.2 Even and Odd
- 8.3 Divisibility Tests
- 8.4 Prime Numbers
- 8.5 Greatest Common Factor and Least Common Multiple

Last updated 12 September 2022.