



## Class Syllabus

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### Course Title:

## PLACE VALUE, TRADING PROCESS FOR WHOLE NUMBERS, ALGORITHMS

### Course Foundation:

- **Common Core State Standards for Mathematics**, pages 15, 16, 19, 24
- **Principles and Standards for School Mathematics, 2000**, page 398, 402
- Studies by authors such as Ashcraft, Barnard, Broody, and Carpenter. See Research

**Course Purpose:** To teach the language that clearly and accurately describes the step by step trading process for the four operations. To bridge modeling on a place-value mat to writing the algorithm representing the trade. To teach the methods educators will use to insure their students master multi-digit calculations of addition and subtraction **by the end of second grade**; multi-digit calculations of multiplication and division **by mid-term third grade**.

**Modeling Tools:** ✕ Place-value Mat and Pieces For Representing Trade for Addition and Subtraction  
 ✕ Place-value Mat and Pieces For Representing Trade for Multiplication and Division

**Learning Outcomes:** With our methods and materials, your students will:

- 1) know the place-value structure of our base-ten numeration system for whole numbers.
- 2) write numbers in expanded form.
- 3) approximate numbers by rounding.
- 4) use place-value mats and pieces to model the trading process for addition, and subtraction **and/or** multiplication and division.
- 5) use mathematical terminology when describing the trading process.
- 6) write traditional algorithms representing the trading process for multi-digit calculations.

**Course Length: Half-day Workshop:** Place Value and Trade for Addition and Subtraction **or** Multiplication and Division

**One-day Workshop:** Place Value and Trade for Addition, Subtraction, Multiplication, and Division

**Who Should Attend:** First through fourth grade educators, special education teachers, teacher's aids, paraprofessionals, administrators

- *All educators whose students struggle with place value and trade regardless of age or grade should attend this workshop.*

**Graduate Credit:** Minot State University, Minot, North Dakota  
**Minot State UNIVERSITY** With 15 contact hours, educators can receive one semester hour of graduate credit, Math 500, for \$50; CEU's, \$20.

- *Fee for graduate credit and CEU's are not a part of the workshop fee.*

**Optional Materials:** Price of the place-value mat and pieces for addition and subtraction plus activity booklet is \$35. Price of the place-value mat and pieces for multiplication and division plus activity booklet is \$34. We encourage schools to purchase addition and subtraction materials for first and second grade educators; both sets of materials for grades three and four.

**Participants Bring:** ✓ 3 by 5 Cards (25) ✓ Popsicle Sticks (25) ✓ Tablet of wide lined paper and a pencil