



Class Syllabus

Course Title:

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NUMBER AND OPERATIONS, ALGEBRA, GEOMETRY, MEASUREMENT, DATA (K - 4TH GRADE STANDARDS)

Course Foundation:

- **Common Core State Standards for Mathematics**, pages 11 through 88
- **Principles and Standards for School Mathematics, 2000**, pages 392, 394, 396, 398, 400, 402
- Studies by authors such as Baroody, Hiebert, Clements, and others. See research.

Course Purpose: To provide K - 4th grade educators and their students with a dictionary where **fundamental mathematical concepts** are clearly and accurately defined in words and by example. To provide students with problem solving activities and games that encourage concept and language development. To provide **common definitions** and **terminology** across the grades!

Dictionary: **DICTIONARY OF MATHEMATICAL TERMINOLOGY FOR THE ELEMENTARY STUDENT**

Modeling Tools: ✕ 72 dot cards, 5 five-frames, and 12 ten-frames with **266 problem-solving activities** written on the backs of the cards for developing fundamental concepts

Learning Outcomes: Concepts explored at the one and two-day workshop will be selected from the dictionary and include but are *not limited to*:

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| 1) meaning of numbers, | 21) order of operations, |
| 2) types of numerals, | 22) solving analogies, |
| 3) questions numbers answer, | 23) all possible word problems for the operations, |
| 4) three classifications of numbers and how they are used, | 24) relative position, |
| 5) number combinations, | 25) magnitude of numbers, |
| 6) meaning of the four operations and three representations for each meaning, | 26) Venn diagram, |
| 7) story problems, | 27) formulas, |
| 8) three representations of a set, | 28) identify and using relationships between operations to solve problems, |
| 9) spacial reasoning, | 29) transformations, |
| 10) properties of sets of numbers: whole numbers, even numbers, odd numbers, negative numbers, fractions, | 30) types of graphs used to record data, |
| 11) properties of addition and multiplication, | 31) relations between numbers, |
| 12) fact family for addition and subtraction; multiplication and division, | 32) prefixes for numbers, |
| 13) counting, | 33) names of the polygons, |
| 14) writing number sentences, | 34) grouping objects by attributes, |
| 15) writing algebraic equations, | 35) measurement: length, perimeter, area, volume, size of angles, time, temperature, |
| 16) range, mean, median, mode, | 36) four strategies for estimating measures, |
| 17) place value, | 37) recognize, describe, and extend patterns, |
| 18) writing numbers in expanded form, | 38) symmetry, |
| 19) money, | 39) identifying polygons and solids, |
| 20) array, | 40) representing the three relations between lines |

Course Length: **One-day Workshop:** Selected topics from the dictionary.

Two-day Workshop: Selected topics from the dictionary.

Who Should Attend: Kindergarten through fourth grade educators and support staff

- *All educators whose students struggle with basic mathematical concepts.*

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: not a part of workshop fee.*

Optional Materials: Dictionary and a template for drawing the representations of basic shapes is \$72. This dictionary will significantly impact your students learning!

Participants Bring: ✓ 3 by 5 Cards (50) ✓ Popsicle Sticks (30) ✓ Two, 2 inch 3-ring binders if purchasing dictionary