MATH

LENGTH OF TIME: one year

GRADE LEVEL: 1

COURSE STANDARDS:
Students will:
1. Use numbers, number systems, and equivalent forms (including numbers, words, objects, and graphics) to represent theoretical and practical situations. (PA Academic Std 2.1.3)
2. Compute, measure, and estimate to solve theoretical and practical problems using appropriate tools which include modern technology such as calculators and computer software. (PA Academic Std 2.2.3, 2.3.3)
3. Apply the concepts of patterns, functions, and relations to solve theoretical and practical problems. (PA Academic Std 2.8.3, 2.11.3)
4. Formulate and solve problems while being able to communicate the mathematical processes used and the reasons for using them. (PA Academic Std 2.4.3, 2.5.3)
5. Understand, apply and use mathematical vocabulary to describe the basic concepts of algebra, geometry, probability, and statistics to solve theoretical and practical problems. (PA Academic Std 2.7.3, 2.9.3)
6. Evaluate and draw references from charts, tables, and graphs showing the relationships between data and real-world situations. (PA Academic Std 2.6.3)
7. Make decisions based upon the collection, organization, analysis, and interpretation of statistical data and predictions of outcomes based upon the application of probability. (PA Academic Std 2.7.3)

RELATED PA ACADEMIC STANDARDS FOR MATHEMATICS
2.1.3 Numbers, Number Systems and Number Relationships
2.2.3 Computation and Estimation
2.3.3 Measurement and Estimation
2.4.3 Mathematical Reasoning and Connections
2.5.3 Mathematical Problem Solving and Communication
2.6.3 Statistics and Data Analysis
2.7.3 Probability and Predictions
2.8.3 Algebra and Functions
2.9.3 Geometry
2.11.3 Concepts of Calculus

PERFORMANCE ASSESSMENTS:
Students will demonstrate achievement of the standards by:
1. Completing unit tests, pre/post grade level tests, and RSA in journals using pencil, paper, and calculator activities with/without rubrics. (Course Standards 1-7)

2. Demonstration of the problem solving process with routine and non-routine problems. (Course Standards 1-7)
3. Oral questioning and interviewing. (Course Standards 1-7)
4. Self and peer assessment provided by the Everyday Math series. (Course Standards 1-7)
5. Teacher observation at completion of task or activity. (Course Standards 1-7)
6. Student portfolio to maintain student work. (Course Standards 1-7)
7. Math journal. (Course Standards 1-7)
8. Oral or written presentation to demonstrate a solution, concept, project, survey, etc. with/without rubrics. (Course Standards 1-7)
9. Free response questions with/without rubrics. (Course Standards 1-7)
10. Class and homework assignments. (Course Standards 1-7)

DESCRIPTION OF COURSE:
This course stresses the fundamentals, application, and appreciation of mathematics. The course focuses on the NCTM Standards suggested for first grade to include problem solving, communication with the use of math language, reasoning ,estimation, number sense and numeration, whole number concepts and computation, geometry, measurement, fractions, patterns, statistics, and probability. Technology will be integrated throughout the course.

This course will be presented to students in a manner that appropriately follows the districts differentiated instruction initiative. Instruction will include, but not be limited to: compare and order whole numbers to 1,000, addition facts through eighteen; subtraction facts through eighteen; addition and subtraction of whole numbers without regrouping; comparing and counting pennies, nickels, dimes, and quarters; telling time by hour and half hour; days of the week, months of the year; linear measurement in inches; standard measurements of cups, pints, quarts, and pounds; measuring temperature to the nearest 10ºC/F; geometry with recognition of triangles, rectangles, circles, squares, cubes, cylinders, spheres, and cones; identification of fractions ½, 1/3, and ¼; describe events using certain, likely, unlikely or impossible.

TITLES OF UNITS:
Spiral program – on-going throughout the year
1. Number and Numeration
2. Operations and Computation
3. Data and Chance
4. Measurement
5. Geometry
6. Technology, estimation and problem solving (including algebra, graphs, charts, functions, and patterns) are integrated throughout the course.

<u>Unit Pacing Completion</u>
Unit 1 – Establishing Routines – middle September
Unit 2 – Everyday Uses of Numbers – middle October

Unit 3 – Patterns and Counting – middle November
Unit 4 – Measurement and Basic Facts – middle December
Unit 5 – Place Value, Number Stories and Basic Facts – middle January
Unit 6 – Developing Fact Power – middle February
Unit 7 – Geometry and Attributes – middle March
Unit 8 – Mental Arithmetic, Money and Fractions – middle April
Unit 9 – Place Value and Fractions – middle May
Unit 10 – Year end review - June

SAMPLE INSTRUCTIONAL STRATEGIES:

1. Teacher/student made activities
2. Teacher/student led discussions and activities
3. Problem solving strategies
4. Calculators and computer software
5. Individual and group explorations and investigations
6. Games and manipulatives
7. Written explanations and journal activities
8. Teacher/peer modeling
9. Math Word Wall

MATERIALS:

1. Everyday Mathematics: The University of Chicago School Mathematics Project, Everyday Learning Corporation, 2007, Chicago, Illinois.
2. Calculators, TI-108
3. Computer software
4. Materials suggest by Everyday Math
5. Computer software
6. Standard related games and manipulatives
7. Base 10 blocks
8. Weekday Workouts for Math, Grade 1
9. Various children's literature books
10. Number lines and number grids
11. Counters
12. Everyday Math templates
13. Student reference books

METHODS OF ASSISTANCE AND ENRICHMENT:

A. Assistance
    1. IST
    2. Cooperative groups
    3. Peer helpers
    4. Volunteer helpers/tutors
    5. Flexible/modified grouping (differentiated groups based on recommendation in Differentiation Handbook)
    6. Re-teaching with alternative strategies

7. Extended instructional time
8. Modified tests

B. Enrichment
1. Enhanced curriculum
2. Peer tutoring
3. Modified testing
4. Math journal and/or projects
5. Individual mathematical investigations
6. IST
7. PAL
8. Differentiated lessons, paper and pencil tests and activities, games suggested in Differentiation Handbook
9. Teacher assessment CD – Everyday Math

PORTFOLIO DEVELOPMENT:
1. Teacher/student assessments
2. Math journals
3. Individual/group investigations, projects, and/or activities
4. Written explanation of problem solving strategies
5. Student reflections
6. Pre and post district grade level assessment

METHODS OF EVALUATION:
1. Written unit assessments – Everyday Math
2. Recognizing student achievement checklists
3. Self-assessments – Everyday Math
4. Investigations, projects, and/or journals – on-going assessments
5. Problem solving activities – open-ended responses provided by Everyday Math
6. Written and oral presentations
7. Pre and Post district grade level assessment

INTEGRATED ACTIVITIES:
1. Concepts
   -demonstrate knowledge of the basic concepts and principles for the above mentioned standards

2. Communication
   -compose and make oral presentations using appropriate mathematical language
   -written entries in math journal using appropriate mathematical terms and vocabulary
   -explains solutions and strategies clearly and logically with supporting evidence
   -listen to, and understand, oral math presentations

3. Thinking/Problem Solving
   -apply the concepts of the above mentioned standards to formulate and solve problems
   -make critical judgments using the learned skills
   -draw conclusions and show relationships in mathematical settings
   -make decisions and predictions based upon the application of learned skills

4. Application of Knowledge
   -use learned skills to solve authentic problems
   -exhibit skills with calculators and computer software and application programs
   -examine, evaluate, and solve routine and non-routine problems

5. Interpersonal Skills
   -work cooperatively with others on projects and investigations
   -work effectively with others on projects and investigations
   -communicate effectively using appropriate mathematical language