

MATH

LENGTH OF TIME: one year

GRADE LEVEL: 2

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 2.6.3, 2.7.3, 2.9.3, 2.10.3)
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
- 2.10.3 Trigonometry
- 2.11.3 Concepts of Calculus

PERFORMANCE ASSESSMENTS:

Students will demonstrate achievement of the standards by:

1. Pre/post grade level tests, RSA in journals, and completing unit tests 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)
2. Self and peer assessment provided by the Everyday Math series. (Course Standards 1-7)
3. Teacher observation of 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 second 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.

The course will be presented to the students in a manner that appropriately follows the district's differentiated instruction initiative. Instruction will include, but not be limited to: addition and subtraction facts through 18; numeration and place value through 10,000 (including skip counting 1, 2, 5, 10, 25, 100); identifying coin currency; comparing money amounts; determine and compare times by the hour, half-hour, and five minutes; calendar days, weeks, and months; measurement units including centimeter, inch, liter, cups, pints, quarts, gallons, kilogram and pound; addition and subtraction of two and three digit whole numbers with limited renaming; multiplication by twos, threes, fours, and fives; construct and name squares, rectangles, triangles, circles; writing fractions and diagrams including halves, thirds, and fourths; constructs bar graphs, charts, pictographs, surveys, and tallies; with problem solving skills, estimation abilities, and technology integrated throughout the course.

TITLES OF UNITS/MATH STRANDS:

Spiral program – on-going

1. Number and Numeration
2. Measurement
3. Data and Chance
4. Patterns, Function, Algebra
5. Geometry
6. Operations and Computation

Unit Pacing Completion

Unit 1 – Numbers and Routines – mid September

- Unit 2 – Addition and Subtraction Facts – mid October
- Unit 3 – Place Value, Money and Time – mid November
- Unit 4 – Addition and Subtraction – mid December
- Unit 5 – 3-D and 2-D Shapes – mid January
- Unit 6 – Whole Number Operations and Number Stories – mid February
- Unit 7 – Patterns and Rules – end of February
- Unit 8 – Fractions – mid/end March
- Unit 9 – Measurement – beginning of April
- Unit 10 – Decimals and Place Value – end of April
- Unit 11 – Whole Number Operations Revisited – mid/end May
- Unit 12 – Year End Reviews and Extensions – end of year

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. Materials suggested by Everyday Math (Everyday Math games)
4. Computer software
5. Standard-related games and manipulatives
6. Base 10 blocks
7. Number lines and number grids
8. Counters
9. Everyday Math templates
10. Student reference books
11. Weekday Workouts for Math, Grade 2
12. Various children literature books

METHODS OF ASSISTANCE AND ENRICHMENT:

- A. Assistance
 1. IST
 2. Cooperative groups
 3. Peer helpers
 4. Volunteers/tutors
 5. Flexible/modified grouping

6. Re-teaching with alternative strategies
7. Extended instructional time
8. Differentiated grouping – based on recommendations in Differentiation Handbook
9. Modified testing
10. Teacher assessment CD – Everyday Math

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/post grade level district assessment

METHODS OF EVALUATION:

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