Pine Grove Area

SCHOOL DISTRICT

Mathematics Curriculum

Second Grade

January 21, 2010

I. PHILOSOPHY

The second grade mathematics course of the Pine Grove Area School District has been structured to systematically introduce the eight core mathematical concepts including numbers and operations, computation and estimation, measurement, mathematical problem solving, data analysis and probability, algebraic concepts, geometry, and calculus. Exposure to and practice of these skills will provide a foundation on which to build an understanding of more complex mathematical concepts. Developmentally appropriate activities will include many opportunities for "hands-on" learning and integration into other curricular areas. The course will allow for the accommodation of many learning styles, motivational levels, and academic abilities.

II. CORE CONCEPTS

1. **Numbers and Operations**- Ability to understand numbers, number systems, and number relationships
2. **Computation and Estimation**- Application of estimates, addition and subtraction
3. **Measurement**- Make comparisons, use standard units of measurement, record time to 5 minute intervals
4. **Mathematical Problem Solving**- Use appropriate strategies to solve story problems using pictures or number sentences
5. **Data Analysis and Probability** -Describe, interpret and compare data from graphs and understand basic probability concepts
6. **Algebraic Concepts**- Identify, describe, and extend patterns
7. **Geometry**- Classify and name two and three dimensional figures by attributes
8. **Concepts of Calculus**- Compare quantities and values

III. COURSE OF STUDY

A. Course Name: Mathematics

B. Grade Level: Second Grade

C. Length of Course: Full Year

1. Frequency: Daily

2. Duration: 90 minutes

D. Academic Level: Second Grade

E. Credits: 0

F. Prerequisites: None

G. Course Description: The second grade math curriculum will build upon previously learned concepts and ideas and expose students to concepts of mathematics in the eight core areas. Emphasis will be placed on meeting each student's academic needs, learning styles and readiness. Accommodations and modifications will be made for those students who need additional assistance and/or remediation in specific areas.

IV. CONTENT: Grade 2 Mathematics
CORE CONCEPT 1: Numbers and Operations
MAJOR OBJECTIVE: Ability to understand numbers, number systems, and number relationships

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.1.3.A Count using whole numbers to 1,000 by 1's, 2's, 5's, 10's, 25's and 100's.	Teacher will guide students to: Count, read, and write numbers from 1 through 1,000. Demonstrate number patterns by skip counting	Teacher evaluation of: Teacher demonstration and student responses Publisher/teacher created assessment Student performance Independent activities Individuals during small group activities Oral question and answer	Place value blocks Number line Hundreds Chart Textbook resources Class work/homework skill sheets Dry erase boards/chalk boards Visual aids Number cards Supplemental materials

CONTENT: Grade 2 Mathematics
CORE CONCEPT 1: Numbers and Operations
MAJOR OBJECTIVE: Ability to understand numbers, number systems, and number relationships

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.1.3.C Represent equivalent forms of the same number through the use of concrete objects, drawings, word names and symbols to 1,000.	Teachers will guide students to*:* Match word name with the appropriate whole number up to 1,000. Represent a whole number up to 1,000 using manipulatives or drawings. Represent a given number in various ways (tallies, numerals, hundreds, tens, and ones, addition and subtraction, etc.)	Teacher evaluation of: Teacher demonstration and student responses Publisher/teacher created assessment Student performance Independent activities Individuals during small group activities Oral question and answer	Place value blocks Number line Hundreds Chart Textbook resources Class work/homework skill sheets Dry erase boards/chalk boards Visual aids Number cards Supplemental materials
PA Standard 2.1.3.F Apply number patterns (even and odd) and compare values of numbers on the hundred chart.	Teachers will guide students to*:* Differentiate between and/or give examples of even and odd number (limit two digits). Identify and describe the rule for a pattern. Use the rule to extend the pattern. Compare whole numbers using inequality signs.	Teacher evaluation of: Student performance Oral question and answer Independent activities	Hundreds Chart Dry erase boards/chalk boards Visual Aids Number cards

CONTENT: Grade 2 Mathematics
CORE CONCEPT 1: Numbers and Operations
MAJOR OBJECTIVE: Ability to understand numbers, number systems, and number relationships

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.1.3.G Use concrete objects, pictures, or models to count, order and group to 1,000.	Teachers will guide students to: Order a set of whole numbers from least to greatest or from greatest to least up to 1,000. Describe when we use ordinal numbers.	Teacher evaluation of: Publisher/teacher created assessment Student performance Independent activities Individuals during whole group instruction	Place value blocks Manipulatives Hundreds Chart Textbook resources Class work/homework skill sheets Dry erase boards/chalk boards Number cards Supplemental materials
PA Standard 2.1.3.I Apply place-value concepts and numeration to counting, ordering and grouping.	Teachers will guide students to: Order a set of whole numbers from least to greatest or greatest to least (up through 1,000). Match a symbolic representation of numbers to appropriate whole numbers.	Teacher evaluation of: Independent activities Teacher demonstration and student responses Publisher/teacher created assessment Question and answer Student performance	Place value blocks Hundreds Chart Textbook resources Class work/homework skill sheets Dry erase boards/chalk boards Number cards Supplemental materials

CONTENT: Grade 2 Mathematics
CORE CONCEPT 1: Numbers and Operations
MAJOR OBJECTIVE: Ability to understand numbers, number systems, and number relationships

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.1.3.B Use whole numbers and fractions to represent quantities.	Teachers will guide students to*:* Match the fraction to the corresponding model (concrete and/or pictorially).	Teacher evaluation of: Teacher observation of students using manipulatives to represent fractions Publisher/teacher created assessment Student performance Independent activities	Pattern blocks Trade books Objects/food Publisher/teacher created assessments Fraction bingo and games Visual aids
PA Standard 2.1.3.D Use drawings or models to show the concept of fraction as part of a whole.	Teachers will guide students to*:* Identify fractional parts of a region or set. Represent a given fraction using drawings or concrete materials.	Teacher evalulation of: Teacher observation of students using manipulatives to represent fractions Publisher/teacher created assessment Student performance	Pattern blocks Objects/food Publisher/teacher created assessments Fraction bingo and games Visual aids

CONTENT: Grade 2 Mathematics
CORE CONCEPT 1: Numbers and Operations
MAJOR OBJECTIVE: Ability to understand numbers, number systems, and number relationships

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.1.3.J Estimate and approximate number quantities as groups of ten and 100	Teachers will guide students to*:* Round two digit numbers to the nearest 10 and round three-digit numbers to the nearest 100	Teacher evaluation of: Independent activities Teacher demonstration and student responses Publisher/teacher created assessment Question and answer Student performance	Place value blocks Hundreds chart Textbook resources Classwork/skill sheets Dry erase boards/chalk boards Number cards Supplemental materials
PA Standard 2.1.3.J Estimate and approximate number quantities as groups of ten and 100.	Teachers will guide students to*:* Round two digit numbers to the nearest 10 and round three-digit numbers to the nearest 100.	Teacher evaluation of: Independent activities Teacher demonstration and student responses Publisher/teacher created assessment Question and answer Student performance	Place value blocks Hundreds Chart Textbook resources Class work/homework skill sheets Dry erase boards/chalk boards Number cards Supplemental materials

CONTENT: Grade 2 Mathematics
CORE CONCEPT 1: Numbers and Operations
MAJOR OBJECTIVE: Ability to understand numbers, number systems, and number relationships

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.1.3.K Describe the inverse relationship between addition and subtraction.	Teachers will guide students to*:* Create four-part number fact families.	Teacher evaluation of: Whole class activities using counters or linking cubes Teacher demonstration and student responses Publisher/teacher created Assessment Independent work	Daily Fact Practice Quizmo or Bingo Counters, linking cubes Skill sheets Dry Erase boards/chalk boards Computer games Website resources
PA Standard 2.1.3.L Demonstrate knowledge of basic facts in addition and subtraction.	Teachers will guide students to*:* Use computation strategies to solve basic addition and subtraction problems.	Teacher evaluation of: Whole class activities using counters or linking cubes Teacher demonstration and student responses Publisher/teacher created Assessment Independent work	Daily Fact Practice Quizmo or Bingo Counters, linking cubes Skill sheets Dry Erase boards/chalk boards Computer games Website resources

CONTENT: Grade 2 Mathematics
CORE CONCEPT 1: Numbers and Operations
MAJOR OBJECTIVE: Ability to understand numbers, number systems, and number relationships

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.1.3.E Count, compare and make change using a collection of coins and one dollar bills.	Teachers will guide students to*:* Count a collection of coins up to $1.00. Name and state the value of coins up to a half-dollar. Compare total values of combinations of coins up to $1.00. Make change for an amount up to $1.00.	Teacher evaluation of: Publisher/teacher created assessment Individuals during small group work Independent activities Teacher observation of students using money manipulatives to represent various coin amounts	Visual aids Money games Supplemental materials Money manipulatives Skill sheets Technology Resources

CONTENT: Grade 2 Mathematics
CORE CONCEPT 2: Computation and Estimation
MAJOR OBJECTIVE: Application of estimates, addition and subtraction

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.2.3.B Solve single- and double-digit addition and subtraction problems with regrouping in vertical form.	Teacher will guide students to: Find the solution to single-and double-digit addition and subtraction problems with and without regrouping. Describe when regrouping is necessary.	Teacher evaluation of: Whole class activities using place value blocks Teacher demonstration and student responses Publisher/teacher created Assessment Independent activities	Daily Fact Practice Place value blocks Quizmo or Bingo Textbook resources Class work/homework skill sheets Dry Erase boards/chalk boards Computer games Website resources

CONTENT: Grade 2 Mathematics
CORE CONCEPT 2: Computation and Estimation
MAJOR OBJECTIVE: Application of estimates, addition and subtraction

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.2.3.C Demonstrate the concept of multiplication as repeated addition and arrays.	Teacher will guide students to: Use pictures and/or concrete objects to represent the concept of multiplication. Use repeated addition, arrays, and counting mulitples to demonstrate the concept of multiplication.	Teacher evaluation of: Whole class activities using manipulatives Independent activities Publisher/teacher created assessment	Daily fact practice Flash cards Games Textbook resources Class work/homework skill sheets Dry Erase boards/chalk boards Manipulatives Graph paper
PA Standard 2.2.3.D Demonstrate the concept of division as repeated subtraction and equal sharing.	Teacher will guide students to: Use pictures and/or concrete objects to represent division as repeated subtraction and equal sharing.	Teacher evaluation of: Whole class activities using manipulatives Independent activities Publisher/teacher created assessment	Daily fact practice Flash cards Games Textbook resources Class work/homework skill sheets Dry Erase boards/chalk boards Manipulatives

CONTENT: Grade 2 Mathematics
CORE CONCEPT 2: Computation and Estimation
MAJOR OBJECTIVE: Application of estimates, addition and subtraction

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.2.3.E Use estimation skills to arrive at conclusions.	Teacher will guide students to: Use estimation to determine reasonableness of answers to addition and subtraction problems.	Teacher evaluation of: Whole class activities Teacher demonstration and student responses Publisher/teacher created Assessment Independent activities	Number cards Textbook resources Class work/homework skill sheets Dry Erase boards/chalk boards

CONTENT: Grade 2 Mathematics
CORE CONCEPT 2: Computation and Estimation
MAJOR OBJECTIVE: Application of estimates, addition and subtraction

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.2.3.F Determine the reasonableness of calculated answers.	Teacher will guide students to: Explain whether the answer is sensible or not.	Teacher evaluation of: Question and answer Student samples Whole group activities with manipulatives Publisher/teacher created assessment	Manipulatives Textbook resources Class work/homework skill sheets Dry Erase boards/chalk boards calculators
PA Standard 2.2.3.G Explain addition and subtraction algorithms with regrouping.	Teacher will guide students to: Demonstrate regrouping of a two or three digit addition/subtraction problem using concrete models or wrtitten explanations.	Teacher evaluation of: Whole class activities using place value blocks Teacher demonstration and student responses Publisher/teacher created assessment	Daily Fact Practice Place value blocks Textbook resources Class work/homework skill sheets Dry Erase boards/chalk boards Supplemental Resources Website resources

CONTENT: Grade 2 Mathematics
CORE CONCEPT 3: Measurement
MAJOR OBJECTIVE: Make comparisons, use standard units of measurement, time to 5 minute intervals

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.3.3.A Compare measurable characteristics of different objects on the same dimensions (e.g., time, temperature, area, length, weight, capacity, perimeter).	Teacher will guide students to: Collect two objects and compare them by a defined attribute (length, capacity, or weight).	Teacher evaluation of: Use of measuring tool to monitor student performance Publisher/teacher created assessments Small group and individual activities	Rulers, yardsticks, meter sticks Concrete objects to measure with Liquid containers for measurement Scale Trade books Thermometer Measuring cups and spoons
PA Standard 2.3.3.B Determine the measurement of objects with non-standard and standard units (e.g., US customary and metric).	Teacher will guide students to: Determine and use and appropriate non-standard measuring tool (unifix cube, paper clip). Estimate and measure the lengths and/or heights of objects in inches, feet or yards using a ruler or yardstick. Estimate and measure the the length of objects in centimeters or meters using a meter stick.	Teacher evaluation of: Use of measuring tool to monitor student performance Publisher/teacher created assessments Small group and indivdual activities	Rulers, yardsticks,meter sticks Liquid containers for measurement Concrete objects to measure with Scale Trade books Thermometer Measuring cups and spoons

CONTENT: Grade 2 Mathematics
CORE CONCEPT 3: Measurement
MAJOR OBJECTIVE: Make comparisons, use standard units of measurement, time to 5 minute intervals

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.3.3.C Determine and compare elapsed times.	Teacher will guide students to: Find elapsed time to nearest ¼ hour, ½ hour, or hour.	Teacher evaluation of: Use of clocks to monitor student performance Publisher/teacher created assessments Small group or individual activities	Clocks Time learning centers Time Bingo, games Clock stampers Supplemental materials
PA Standard 2.3.3.D Tell time (analog and digital) to the minute.	Teacher will guide students to: Read and represent a given time to the nearest half hour and five minute intervals.	Teacher evaluation of: Use of clocks to monitor student performance Publisher/teacher created assessments Small group or individual activities	Clocks Time learning centers Time Bingo, games Clock stampers Supplemental materials

CONTENT: Grade 2 Mathematics
CORE CONCEPT 3: Measurement
MAJOR OBJECTIVE: Make comparisons, use standard units of measurement, time to 5 minute intervals

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.3.3.E Determine the appropriate unit of measure.	Teacher will guide students to: Select an appropriate unit for the attribute being measured.	Teacher evaluation of: Use of measuring tool to monitor student performance Publisher/teacher created assessments Small group and indivdual activities	Rulers, yardsticks, meter sticks Liquid containers for measurement Concrete objects to measure with Scale Trade books Measuring cups and spoons Thermometer
PA Standard 2.3.3.F Use concrete objects to determine area and perimeter.	Teacher will guide students to: Find the perimeter or area of a given shape using an appropriate unit of measure.	Teacher evaluation of: Use of rulers to monitor student performance Publisher/teacher created assessments Small group and individual activities	Rulers Trade books Supplemental materials Graph paper Concrete objects to measure with

CONTENT: Grade 2 Mathematics
CORE CONCEPT 3: Measurement
MAJOR OBJECTIVE: Make comparisons, use standard units of measurement, time to 5 minute intervals

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.4.3.A Make, check and verify predictions about the quantity, size and shape of objects and groups of objects.	Teacher will guide students to: Compare and/or order objects according to length, weight or volume. Use the attributes of length, weight, and volume to describe the objects. Estimate the length and/or weight of an object.	Teacher evaluation of: Use of measuring tool to monitor student performance Publisher/teacher created assessments Small group and indivdual activities	Rulers, yardsticks, meter sticks Liquid containers for measurement measuring cups and spoons Concrete objects to measure with Scale Supplemental materials
PA Standard 2.3.3.G Estimate and verify measurements.	Teacher will guide students to: Match the object with its appropriate measurement (utilize the same system for each measurement). Use everyday objects to demonstrate measurement concepts.	Teacher evaluation of: Use of measuring tool to monitor student performance Publisher/teacher created assessments Small group and individual activities	Rulers, yardsticks,meter sticks Liquid containers for measurement measuring cups and spoons Concrete objects to measure with Scale Supplemental materials Graph paper Thermometer

CONTENT: Grade 2 Mathematics
CORE CONCEPT 3: Measurement
MAJOR OBJECTIVE: Make comparisons, use standard units of measurement, time to 5 minute intervals

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.4.3.B Use measurements in everyday situations (e.g., determine the geography of the school building).	Teacher will guide students to: Explain and identify how a set or group of items has been sorted. Find measurements of familiar objects using non-standard and standard units.	Teacher evaluation of: Use of measuring tool to monitor student performance Publisher/teacher created assessments Small group and individual activities	Rulers, yardsticks, meter sticks Liquid containers for measurement measuring cups and spoons Concrete objects to measure with Scale Supplemental materials Thermometer

CONTENT: Grade 2 Mathematics
CORE CONCEPT 4: Mathematical Problem Solving
MAJOR OBJECTIVE: Use appropriate strategies to solve story problems by using pictures or number sentences

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.5.3.A Use appropriate problem-solving strategies (e.g., guess and check, make a model, draw a picture, working backwards).	Teacher will guide students to: Select an appropriate problem solving strategy (guesss and check, draw a picture, create a number sentence, or cross out information) to solve/explain a given problem and check whether and answer makes sense. Use appropriate mathematical vocabulary to explain how to solve a problem.	Teacher evaluation of: Student work samples Small group actitives Publisher/teacher created assessments Oral question and answer	Math journals Graphic sources Chart with key terms Textbook resources Concrete objects Problem solving teacher resources Dry erase boards, chalk boards
PA Standard 2.5.3.B Determine when sufficient information is present to solve a problem and explain how to solve a problem.	Teacher will guide students to: Use a variety of strategies to solve/defend problems. Analyze and solve different types of problems using addition, subtraction or multiplication Describe the steps necessary to solve a problem. Communicate these steps orally as well as in written form.	Teacher evaluation of: Student work samples Small group activities Publisher/teacher created assessments Oral question and answer	Math journals Graphic sources Chart with key terms Textbook resources Concrete objects Problem solving teacher resources Dry erase boards, chalk boards

CONTENT: Grade 2 Mathematics
CORE CONCEPT 4: Mathematical Problem Solving
MAJOR OBJECTIVE: Use appropriate strategies to solve story problems by using pictures or number sentences

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.5.3.C Select and use an appropriate method, materials and strategy to solve problems, including mental mathematics, paper and pencil and concrete objects.	Teacher will guide students to: Use appropriate problem solving strategy (guess and check, draw a picture, create a number sentence, or cross out information) to solve/explain a given problem and check whetehr and answer makes sense Show appropriate solution to a story problem using manipulatives, drawings or number sentences	Teacher evaluation of: Student work samples Small group activities Publisher/teacher created assessments Oral question and answer	Math journals Graphic sources Chart with key terms Textbook resources Concrete objects Problem solving teacher resources Dry erase boards, chalk boards

CONTENT: Grade 2 Mathematics
CORE CONCEPT 5: Data Analysis
MAJOR OBJECTIVE: Describe, interpret and compare data from graphs and understand basic probability concepts

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.6.3.A Gather, organize and display data using pictures, tallies, charts, bar graphs and pictographs.	Teacher will guide students to: Read and compare data (bar graphs, pictographs, chart, Venn Diagram, or table). Use concepts of greatest and least. Organize and record data using a table, chart, bar graph, pictograph or Venn Diagram	Teacher evaluation of: Individual graph project Whole class graph project Publisher/teacher created assessments	Teacher created visual aids Over head graphs, tables, charts Supplemental resources
PA Standard 2.6.3.B Formulate and answer questions based on data shown on graphs.	Teacher will guide students to: Read and compare data (bar graphs, pictographs, chart, Venn Diagram, or table). Use concepts of greatest and least. Describe, interpret and/or answer questions based on data shown from (bar graphs, pictographs, chart, Venn Diagram, or table).	Teacher evaluation of: Individual graph project Whole class graph project Publisher/teacher created assessments	Teacher created visual aids Over head graphs, tables, charts Supplemental resources

CONTENT: Grade 2 Mathematics
CORE CONCEPT 5: Data Analysis
MAJOR OBJECTIVE: Describe, interpret and compare data from graphs and understand basic probability concepts

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.6.3.C Predict the likely number of times a condition will occur based on analyzed data.	Teacher will guide students to: Describe, interpret and/or answer questions based on data shown from (bar graphs, pictographs, chart, Venn Diagram, or table).	Teacher evaluation of: Individual graph project Whole class graph project Publisher/teacher created assessments	Teacher created visual aids Over head graphs, tables, charts Supplemental resources
PA Standard 2.6.3.D Form and justify an opinion on whether a given statement is reasonable based on a comparison to data.	Teacher will guide students to: Describe, interpret and/or answer questions based on data shown from (bar graphs, pictographs, chart, Venn Diagram, or table).	Teacher evaluation of: Individual graph project Whole class graph project Publisher/teacher created assessments	Teacher created visual aids Over head graphs, tables, charts Supplemental resources

CONTENT: Grade 2 Mathematics
CORE CONCEPT 5: Data Analysis
MAJOR OBJECTIVE: Describe, interpret and compare data from graphs and understand basic probability concepts

PA Standard 2.7.3.A Predict and measure the likelihood of events and recognize that the results of an experiment may not match predicted outcomes.	Teacher will guide students to: Predict outcome(s) before an experiment. Determine the likelihood of events occuring using basic probability terms; more likely, equally likely, less likely, certain, probable, and impossible. Explain possible reasons why the results of an experiment may not match predicted outcomes.	Teacher evaluation of : Publisher/teacher created assessments Cooperative probability experiment Teacher demonstration and student responses Student predictions for class probability experiments	Concrete objects Spinners Supplemental resources
PA Standard 2.7.3.C List or graph the possible results of an experiment.	Teacher will guide students to: Record data from experiments in an organized manner. Analyze the results of the experiment to determine if the actual results make sense.	Teacher evaluation of : Publisher/teacher created assessments Cooperative probability experiments Student predictions for class probability experiments	Concrete objects Spinners Supplemental resources

CONTENT: Grade 2 Mathematics
CORE CONCEPT 5: Data Analysis
MAJOR OBJECTIVE: Describe, interpret and compare data from graphs and understand basic probability concepts

PA Standard 2.7.3.D Analyze data using the concepts of largest, smallest, most often, least often and middle.	Teacher will guide students to: Evaluate data and verify results using the concepts of largest, smallest, most often, least often and middle.	Teacher evaluation of : Publisher/teacher created assessments Cooperative probability experiments Student predictions for class probability experiments	Concrete objects Spinners Supplemental resources

CONTENT: Grade 2 Mathematics
CORE CONCEPT 6: Algebraic Concepts
MAJOR OBJECTIVE: Identify, describe, and extend patterns

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.8.3.C Substitute a missing addend in a number sentence.	Teacher will guide students to: Find a missing number that makes a number sentence true.	Teacher evaluation of: Publisher/teacher created assessment Independent activities	Number cards Textbook materials Number line Concrete objects
PA Standard 2.8.3.D Create a story to match a given combination of symbols and numbers.	Teacher will guide students to: Create a story to match a combination of symbols and numbers in a mathematical problem Choose the number sentence that matches a given story	Teacher evaluation of: Publisher/teacher created assessment Student performance on story creation Whole class participation in story creation Independent activities	Teacher created visual aids Math vocabulary key chart Textbook materials
PA Standard 2.8.3.A Recognize, describe, extend, create and replicate a variety of patterns including attribute, activity, number and geometric patterns.	Teacher will guide students to: Identify, describe, and extend repeating and continuing shapes and number patterns.	Teacher evaluation of: Publisher/teacher created assessment Student performance on creating and extending patterns Whole class participation in skip counting Independent activities	Hundreds charts Skip counting songs Counting pattern visuals Color or shape pattern blocks Supplemental skill sheets

CONTENT: Grade 2 Mathematics
CORE CONCEPT 6: Algebraic Concepts
MAJOR OBJECTIVE: Identify, describe, and extend patterns

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.8.3.E Use concrete objects and symbols to model the concepts of variables, expressions, equations and inequalities.	Teacher will guide students to: Choose the correct operation (addition or subtraction). Then draw a picture or write an equation to solve a story problem. Identify the missing symbol (+, -,x,<,>,=) that makes a number sentence true.	Teacher evaluation of: Publisher/teacher created assessment Student performance on story creation Whole class participation in story creation Independent activities	Teacher created visual aids Textbook materials Concrete objects
PA Standard 2.8.3.B Use concrete objects and trial and error to solve number sentences and check if solutions are sensible and accurate.	Teacher will guide students to: Solve a variety of story problems by first identifying the operation involved. Choose the correct operation (addition or subtraction) and check if solution is sensible and accurate.	Teacher evaluation of: Publisher/teacher created assessment Whole group discussion Student performance Oral question/answer Independent activities	Textbook materials Concrete objects Dry erase board, chalkboards

CONTENT: Grade 2 Mathematics
CORE CONCEPT 6: Algebraic Concepts
MAJOR OBJECTIVE: Identify, describe, and extend patterns

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.8.3.J Analyze simple functions and relationships and locate points on a simple grid	Teacher will guide students to: Identify locations of points with whole number coordinates on a 2-dimensional coordinate system.	Teacher evaluation of: Publisher/teacher created assessment Student performance on story creation Whole class participation in story creation Independent activities	Teacher created visual aids Textbook materials Concrete objects
PA Standard 2.8.3.I Demonstrate simple function rules**.**	Teacher will guide students to: Identify/describe the rule for a pattern shown (pattern must show three repetitions-if multiples are used, limit to 2, 3 or 5).	Teacher evaluation of: Publisher/teacher created assessment Student performance on story creation Whole class participation in story creation Independent activities	Teacher created visual aids Textbook materials Concrete objects

CONTENT: Grade 2 Mathematics
CORE CONCEPT 6: Algebraic Concepts
MAJOR OBJECTIVE: Identify, describe, and extend patterns

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.8.3.H Interpret data displayed in tables and charts.	Teacher will guide the student to: Explain the meaning of the given data on a chart or table.	Teacher evaluation of: Publisher/teacher created assessment Student performance on story creation Whole class participation in story creation Independent activities	Teacher created visual aids Textbook materials Concrete objects

CONTENT: Grade 2 Mathematics
CORE CONCEPT 7: Geometry
MAJOR OBJECTIVE: Classify and name two and three dimensional figures by attributes

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.9.3.A Name and label geometric shapes in two and three dimensions (e.g., circle/sphere, square/cube, triangle/pyramid, rectangle/prism)	Teacher will guide students to: Classify, name and compare two and three dimensional figures by attributes	Teacher evaluation of: Student identification of geometric figures and attributes Publisher/teacher created assessment	Geometric figures Visual aids Geoboards Concrete objects

CONTENT: Grade 2 Mathematics
CORE CONCEPT 7: Geometry
MAJOR OBJECTIVE: Classify and name two and three dimensional figures by attributes

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.9.3.B Build geometric shapes using concrete objects (e.g., manipulatives).	Teacher will guide students to: Construct rectangles, squares, and triangles on the geoboard. Draw above shapes on graph paper so that sides are exact to form.	Teacher evaluation of: Geoboard constructions Graph paper projects	Graph paper Geo boards Pattern blocks
PA Standard 2.9.3.C Draw two- and three-dimensional geometric shapes and construct rectangles, squares and triangles on the geoboard and on graph paper satisfying specific criteria.	Teacher will guide students to: Construct rectangles, squares, and triangles on the geoboard. Draw above shapes on graph paper so that sides are exact to form.	Teacher evaluation of: Geoboard constructions Graph paper projects	Graph paper Geo boards Pattern blocks
PA Standard 2.9.3.D Find and describe geometric figures in real life.	Teacher will guide students to: Construct rectangles, squares, and triangles on the geoboard. Draw above shapes on graph paper so that sides are exact to form.	Teacher evaluation of: Geoboard constructions Graph paper projects	Graph paper Geo boards Pattern blocks

CONTENT: Grade 2 Mathematics
CORE CONCEPT 7: Geometry
MAJOR OBJECTIVE: Classify and name two and three dimensional figures by attributes

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.9.3.E Identify and draw lines of symmetry in geometric figures.	Teacher will guide students to: Identify and draw lines of symmetry Draw congruent line segments	Teacher evaluation of: Symmetrical art project Publisher/teacher created assessment Skill sheets on symmetry Student exploration with various shapes	Geoboards Pattern blocks
PA Standard 2.9.3.F Identify symmetry in nature.	Teacher will guide students to: Identify and create symmetrical shapes/solids in the real world Recognize and describe symmetry in nature	Teacher evaluation of: Student exploration of the school and campus Students during whole group and small group work Oral question and answer	Visual aids Concrete objects
PA Standard 2.9.3.G Fold paper to demonstrate the reflections about a line.	Teacher will guide students to: Draw the matching part (reflection) to make a given shape symmetrical Identify lines of symmetry on basic shapes including circle, square, and rectangle	Teacher evaluation of: Student performance during small group activity Publisher/teacher created assessments	Dot paper Shapes Pattern blocks Color tiles Straws

CONTENT: Grade 2 Mathematics
CORE CONCEPT 7: Geometry
MAJOR OBJECTIVE: Classify and name two and three dimensional figures by attributes

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.9.3.H Show relationships between and among figures using reflections.	Teacher will guide students to: Recognize and apply slides, flips and turns	Teacher evaluation of: Students during small group work Students during whole group instruction Publisher/teacher created assessments	Pattern blocks Tangrams
PA Standard 2.9.3.I Predict how shapes can be changed by combining or dividing them.	Teacher will guide students to: Create and identify shapes by combining 2 or more shapes or dividing a shape into 2 or more shapes Find other shapes that can be made from a given shape	Teacher evaluation of: Student performance Publisher/teacher created assessments	Pattern blocks Tangrams Paper shapes Publisher created materials

CONTENT: Grade 2 Mathematics
CORE CONCEPT 7: Geometry
MAJOR OBJECTIVE: Classify and name two and three dimensional figures by attributes

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.10.3.A Identify right angles in the environment.	Teacher will guide students to: Identify right angles in the school environment	Teacher evaluation of: Student performance on school walk-through Students during small group activity Publisher created assessments	Various manipulatives Publisher created materials
PA Standard 2.10.3.B Model right angles and right triangles using concrete objects.	Teacher will guide students to: Identify right angles in the school environment Indentify right angles and right triangles using real world objects	Teacher evaluation of: Student performance on school walk-through Students during small group activity Publisher created assessments	Various manipulatives Publisher created materials Geoboards

CONTENT: Grade 2 Mathematics
CORE CONCEPT 8: Concepts of Calculus
MAJOR OBJECTIVE: Compare quantities and values

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.11.3.A Identify whole number quantities and measurements from least to most and greatest value.	Teacher will guide students to: Place numbers in order from least to greatest and vice versa to 1,000 Recognize and use inequality signs to compare two numbers	Teacher evaluation of: Students using number cards to represent numbers Publisher/teacher created assessment Skill sheets	Alligator puppet Number cards Hundreds chart Place value blocks
PA Standard 2.11.3.B Identify least and greatest values represented in bar graphs and pictographs.	Teacher will guide students to: Identify values associated with greatest and least on bar graphs and pictographs.	Teacher evaluation of: Student responses in small group and whole group discussion Publisher/teacher created assessment Skill sheets	Sample Bar graphs and pictographs

CONTENT: Grade 2 Mathematics
CORE CONCEPT 8: Concepts of Calculus
MAJOR OBJECTIVE: Compare quantities and values

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.11.3.C Categorize rates of change as faster and slower.	Teacher will guide students to: Place numbers in order from least to greatest and vice versa to 1,000 Recognize and use inequality signs to compare two numbers	Teacher evaluation of: Students using number cards to represent numbers Publisher/teacher created assessment Skill sheets	Number cards Hundreds chart Place value blocks
PA Standard 2.11.3.D Continue a pattern of numbers or objects that could be extended infinitely.	Teacher will guide students to: Continue patterns of numbers Recognize that numbers can be continued indefinitely	Teacher evaluation of: Students using number cards to represent numbers Publisher/teacher created assessment Skill sheets	Number cards Hundreds chart Place value blocks

V. EXPECTED LEVELS OF ACHIEVEMENT

A. Students are expected to reach the second grade level of achievement in mathematics. These skills include those noted in the specific content area of this curriculum.

B. Grading system for all second grade math classes is as follows:

Grading Scale	
A	90-100
B	80-89
C	70-79
D	60-69
F	Below 60

C. Each student's grade will be determined at the conclusion of each marking period.