



# **Pine Grove Area**

## SCHOOL DISTRICT

### **Mathematics Curriculum**

### **First Grade**

**January 21, 2010**

#### **I. PHILOSOPHY**

The first grade mathematics course of the Pine Grove Area School District has been structured to systematically introduce the seven core mathematical concepts including numbers and operations, computation and estimation, mathematical problem-solving and reasoning, algebraic functions, geometry, measurement, and statistics and data analysis. Exposure to and practice of these skills will provide a foundation on which to build an understanding of more complex mathematical concepts. 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. **Mathematical Problem Solving and Reasoning** - Create, write, and solve a story problem using pictures, diagrams, and manipulatives
4. **Algebraic Functions** - Identify and continue a simple number or shape pattern
5. **Geometry** - Identify and construct basic 2-dimensional shapes
6. **Measurement** - Estimate, compare, and measure objects, tell time to the nearest hour and half hour, and utilize data from a calendar
7. **Statistics and Data Analysis** - Read, organize, compare, and interpret data on various graphs
8. **Probability and Predictions**-Predict and analyze results of an experiment.
9. **Trigonometry**-Ability to identify right angles.

### **III. COURSE OF STUDY**

A. Course Name: Mathematics

B. Grade Level: First Grade

C. Length of Course: Full Year

1. Frequency: Daily

2. Duration: 90 minutes

D. Academic Level: First Grade

E. Credits: 0

F. Prerequisites: None

G. Course Description:

The first grade mathematics course of the Pine Grove Area School District will lay the foundation for future math skills in the seven core areas of mathematics. Emphasis will be placed on meeting each student's academic needs, learning styles, and readiness. The course will allow for the accommodation of many learning styles, motivational levels, and academic abilities.

**IV. CONTENT: First Grade Mathematics**

**CORE CONCEPT 1: Numbers and operations**

**MAJOR OBJECTIVE: Ability to understand numbers, number systems, and number relationships**

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.1.3.A</b> Count using whole numbers (to 10,000) and by 2's, 3's, 5's 10's and 100's</p>	<p>Teacher will guide student to:</p> <p>Recognize and write numbers to 100</p> <p>Count to 100</p>	<p>Teacher evaluation of:</p> <p>Student counting orally</p> <p>Student written work of counting</p>	<p>Textbook resources</p> <p>Number lines and hundred charts</p> <p>Trade books</p>
<p><b>PA Standard 2.1.3.A</b> Count using whole numbers (to 10,000) and by 2's, 3's, 5's 10's and 100's</p>	<p>Teacher will guide student to:</p> <p>Skip count by 2's, 5's, and 10's orally and in written form</p>	<p>Teacher evaluation of:</p> <p>Independent written activity-textbook, worksheet</p> <p>Skip count orally</p>	<p>Textbook resources</p> <p>Number lines and hundred charts</p> <p>Trade books</p> <p>Songs and poems</p> <p>Concrete objects</p>
<p><b>PA standard 2.1.3.B</b> Use whole numbers and fractions to represent quantities.</p>	<p>Teacher will guide student to:</p> <p>Demonstrate the ability to identify and write fractions represented with manipulatives.</p>	<p>Teacher evaluation of:</p> <p>Independent written activity-textbook, worksheet</p>	<p>Textbook resources</p> <p>Computer resources</p> <p>Concrete objects/manipulatives (attribute blocks, "fraction pizza")</p>

**CONTENT: First Grade Mathematics****CORE CONCEPT 1: Numbers and operations****MAJOR OBJECTIVE: Ability to understand numbers, number systems, and number relationships**

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.1.3.H</b> Demonstrate an understanding of one-to-one correspondence</p>	<p>Teacher will guide student to:</p> <p>Count a given number of objects and write the correct numeral to represent that amount.</p>	<p>Teacher evaluation of:</p> <p>Correct counting and writing of numerals.</p>	<p>Textbook resources</p> <p>Computer resources</p> <p>Manipulatives/concrete objects.</p>
<p><b>PA Standard 2.1.3.I</b> Apply place-value concepts and numeration to counting, ordering and grouping.</p>	<p>Teacher will guide student to:</p> <p>Demonstrate an understanding of place value by identifying ones, tens, and hundreds place in numbers</p>	<p>Teacher evaluation of:</p> <p>Independent written activity - textbook, worksheet</p> <p>Student performance using place value blocks</p>	<p>Textbook resources</p> <p>Concrete objects such as place value blocks and unifix cubes</p> <p>Coins</p> <p>Hundred chart</p>
<p><b>PA Standard 2.1.3.F</b> Apply number patterns (even and odd) and compare values of numbers on the hundred board.</p>	<p>Teacher will guide student to:</p> <p>Compare and order whole numbers to 100</p> <p>Compare the value of two whole numbers using the terms greater than, less than, equal to</p> <p>Order three or more whole numbers from least to greatest or greatest to least</p>	<p>Teacher evaluation of:</p> <p>Independent written activity- textbook, worksheet</p> <p>Student performance using number cards</p>	<p>Textbook resources</p> <p>Number cards</p> <p>Number line and hundred chart</p> <p>Concrete objects</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 1:** Numbers and operations

**MAJOR OBJECTIVE:** Ability to understand numbers, number systems, and number relationships

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<b>PA Standard 2.1.3.E</b> Count, compare and make change using a collection of coins and one-dollar bills	Teacher will guide the student to:  Identify the name and value of a penny, nickel, dime and quarter and count a given amount of money  Match the name and value of penny, nickel, dime, and quarter  Count a given amount of money up to a dollar using dimes, nickels, and pennies	Teacher evaluation of:  Independent written activity- textbook, worksheet  Individual oral assessment counting a given amount of money  Student performance using coins given a specific amount	Textbook resources  Concrete objects - coins  Trade books  Hundred chart
<b>PA Standard 2.1.3.E</b> Count, compare and make change using a collection of coins and one-dollar bills	Teacher will guide student to:  Solve money problems using everyday experiences  Add and subtract using coins in an everyday activity	Teacher evaluation of:  Independent written activity- worksheet, textbook  Student performance using coins	Textbook resources  Concrete objects - coins  Trade books  Hundred chart

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 1:** Numbers and operations

**MAJOR OBJECTIVE:** Ability to understand numbers, number systems, and number relationships

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<b>PA Standard 2.1.3.G</b> Use concrete objects to count, order and group	Teacher will guide student to:  Identify ordinal number of an object  Count objects in a line according to ordinal position  Locate and identify specific ordinal positions	Teacher evaluation of:  Independent written or student performed activity identifying specific ordinal positions by marking or naming	Textbook resources  Concrete objects such as blocks or a line of students  Number lines
<b>PA Standard 2.1.3.F</b> Apply number patterns (even and odd) and compare values of numbers on the hundred board.	Teacher will guide student to:  Identify and explain a given pattern on a hundred chart  Complete a given number pattern	Teacher evaluation of:  Independent written or student performed activity given a specific number pattern	Textbook resources  Hundred chart
<b>PA Standard 2.1.3.D</b> Use drawings, diagrams or models to show the concept of fraction as part of a whole	Teacher will guide student to:  Recognize $\frac{1}{2}$ of a set, object, or shape  Demonstrate dividing a set, object, or shape in half	Teacher evaluation of:  Independent written or student performed activity dividing a set, object, or shape in half	Textbook resources  Concrete objects such as fruit, vegetables, paper shapes, buttons  Flannel board fractional set  Chalkboard

**CONTENT:** First Grade 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
<b>PA Standard 2.1.3.K</b> Describe the inverse relationship between addition and subtraction	Teacher will guide student to:  Write a four-part number family which includes two addition and two subtraction number sentences  Create and demonstrate four-part number families	Teacher evaluation of:  Independent written or student performed activity creating and demonstrating four-part number families	Textbook resources  Concrete objects such as unifix blocks
<b>PA Standard 2.1.3.C</b> Represent equivalent forms of the same number through the use of concrete objects, drawings, word names and symbols	Teacher will guide student to:  Create a story problem involving addition or subtraction given a number sentence  Develop a story problem involving an everyday experience	Teacher evaluation of:  Independent written or student performed activity demonstrating the creation of a story problem utilizing the correct number operation	Textbook resources  Concrete objects  Journal activity

**CONTENT:** First Grade 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
<b>PA Standard 2.2.3.A</b> Apply addition and subtraction in everyday situations using concrete objects	Teacher will guide student to:  Determine the sum of 2 or 3 addends to 18  Demonstrate joining 2 or 3 addends in order to obtain the correct sum	Teacher evaluation of:  Independent written or student performed activity calculating 2 or 3 addends	Textbook resources  Concrete objects-counters, cubes  Drawings  Computer activities  Trade books  Number lines
<b>PA Standard 2.2.3.A</b> Apply addition and subtraction in everyday situations using concrete objects	Teacher will guide student to:  Demonstrate mental proficiency in addition and subtraction facts to 18  Practice and retain addition and subtraction facts to 18	Teacher evaluation of:  Independent written or student performed activity such as math fact assessment or flash card drill	Textbook resources  Flashcards
<b>Pa. Standard 2.2.3.A</b> Apply addition and subtraction in everyday situations using concrete objects	Teacher will guide student to:  Given any 2-digit number to 89, mentally calculate the sum by adding 10  Demonstrate the ability to add 10 to any two digit number up to 89	Teacher evaluation of:  Independent written or student performed activity adding 10 to a two digit number up to 89	Textbook resources  Hundred chart  Concrete objects – dimes, cuisenaire rods

**CONTENT:** First Grade 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
<b>Pa. Standard 2.2.3.D</b> Demonstrate the concept of division as repeated subtraction and as sharing	Teacher will guide students to:  Separate objects into equal groups	Teacher evaluation of:  Student separating objects into groups	Textbook resources  Counters  Concrete objects

**CONTENT: First Grade 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
<b>Pa. Standard 2.2.3.A</b> Apply addition and subtraction in everyday situations using concrete objects	Teacher will guide student to:  Solve a simple addition or subtraction equation using a calculator  Demonstrate the ability to use a calculator to solve simple addition and subtraction equations	Teacher evaluation of:  Student performance in using a calculator  Independent written activity – textbook , worksheets	Textbook resources  Calculators
<b>Pa. Standard 2.2.3.A</b> Apply addition and subtraction in everyday situations using concrete objects	Teacher will guide student to:  Demonstrate an understanding of the value of zero by adding or subtracting zero from a whole number  Perform addition and subtraction problems using zero	Teacher evaluation of:  Independent student written or oral activity – textbook , worksheets, flash cards	Textbook resources  Flash cards  Number line  Computer activities  Concrete objects

**CONTENT:** First Grade 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
<p><b>Pa. Standard 2.2.3.E</b> Use estimation skills to arrive at conclusions</p>	<p>Teacher will guide student to:</p> <ul style="list-style-type: none"><li>Estimate the total number of objects</li><li>Make reasonable estimate of a number of objects in a group</li><li>Orally state the reason for the estimate</li><li>Count the objects to the check the estimate</li></ul>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"><li>Accuracy of student estimates</li><li>Accuracy of reasoning behind estimates</li></ul>	<ul style="list-style-type: none"><li>Textbook resources</li><li>Unifix cubes or other counters</li><li>Concrete objects</li><li>Trade books</li><li>Learning center activities</li></ul>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 2:** Computation and Estimation

**MAJOR OBJECTIVE:** Application of estimates, addition, and subtraction

**CONTENT:** First Grade Mathematics

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>Pa. Standard 2.2.3A</b> Use manipulatives to explain and justify a solution</p>	<p>Teacher will guide student to:</p> <p>Demonstrate the use of manipulatives to solve a problem and justify the answer</p> <p>Demonstrate the ability to act out a problem</p>	<p>Teacher evaluation of:</p> <p>Student's ability to use concrete objects to solve a problem</p> <p>Teacher observation</p>	<p>Concrete objects – counters, unifix cubes,</p> <p>Textbook resources</p> <p>Trade books</p> <p>Songs and poems</p>
<p><b>Pa. Standard 2.2.3E</b> Estimate an answer by using given information</p>	<p>Teacher will guide student to:</p> <p>Observe and use given information to estimate the answer</p>	<p>Teacher evaluation of:</p> <p>Independent student written or oral activity</p> <p>Class discussion on information used</p>	<p>Textbook resources</p> <p>Manipulatives</p>

**CORE CONCEPT 3: Mathematical Problem Solving and Reasoning****MAJOR OBJECTIVE:** Create, write and solve a story problem using pictures, diagrams, and manipulatives**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 2.4.3.A Make and check predictions about the quantity, size or shape of objects	Teacher will guide the student to:  Estimate and predict the amount of objects in a given group.  Estimate and predict which container will hold a given amount of a substance.	Teacher evaluation of:  Independent student written or oral activity  Class discussion on information used	Textbook resources  Manipulatives  Computer resources
PA Standard 2.4.3.B Use measurement in everyday situations	Teacher will guide the student to:  Measure objects in the classroom.  Choose the correct measurement instrument for a given task.	Teacher evaluation of:  Independent student written or oral activity  Students during whole class discussion	Textbook resources  Measurement tools  Concrete objects
PA Standard 2.5.3.A Use appropriate problem-solving strategies (ie, guess and check, working backwards)	Teacher will guide the student to:  Use the problem solving strategy of guess and check and working backwards.  Make a guess at the correct solution to a problem and then solve.  Utilize addition to check subtraction.	Teacher evaluation of:  Independent student written or oral activity  Students during whole class discussion	Textbook resources  Number line  Manipulatives  Computer resources

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 3:** Mathematical Problem Solving and Reasoning

**MAJOR OBJECTIVE:** Create, write, and solve a story problem using pictures, diagrams and manipulatives

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.5.3.B</b> Determine when sufficient information is present to solve a problem and explain how to solve a problem</p>	<p><b>Teacher will guide the student to:</b></p> <p>Decide if a given problem has enough information to solve it and explain how to solve it.</p> <p>Explain how to solve a given problem or tell what information is needed in order to solve that problem.</p>	<p>Teacher evaluation of:</p> <p>Independent student written or oral activity</p> <p>Class discussion on information used</p>	<p>Textbook resources</p> <p>Computer resources</p> <p>Math journals</p>
<p><b>PA Standard 2.5.3.C</b> Select and use an appropriate method, materials, and strategy to solve problems, including mental math, paper and pencil and concrete objects</p>	<p><b>Teacher will guide the student to:</b></p> <p>Select the correct method, operation or materials to solve a problem.</p> <p>Explain how to solve a given problem</p> <p>Identify key words associated with given operations.</p>	<p>Teacher evaluation of:</p> <p>Independent student written or oral activity</p> <p>Class discussion on information used</p>	<p>Textbook resources</p> <p>Computer resources</p> <p>Math journals</p>

**CONTENT: First Grade Mathematics**

**CORE CONCEPT 4: Algebraic Functions**

**MAJOR OBJECTIVE: Identify and continue a simple number or shape pattern**

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>Pa. Standard 2.8.3A</b></p> <p>Recognize, describe, extend, create and replicate a variety of patterns including attribute, activity, number and geometric patterns</p>	<p>Teacher will guide student to:</p> <p>Identify, continue, and orally describe a simple number or shape pattern</p> <p>Demonstrate how to recognize and extend patterns</p> <p>Orally identify and explain a pattern unit</p>	<p>Teacher evaluation of:</p> <p>Student ability to recognize and extend patterns</p> <p>Written or oral student description of a pattern unit</p>	<p>Textbook resources</p> <p>Manipulatives</p> <p>Worksheets</p>
<p><b>Pa. Standard 2.8.3B</b></p> <p>Use concrete objects and trial and error to solve number sentences and check if solutions are sensible and accurate</p>	<p>Teacher will guide student to:</p> <p>Demonstrate, create, and solve simple equations and story problems using manipulatives, drawings, and number sentences</p> <p>Show simple equations by using drawings, manipulatives, and number sentences</p> <p>Use and demonstrate the correct mathematical symbol including +, -, and =</p>	<p>Teacher evaluation of:</p> <p>Student ability to use mathematical symbols correctly</p> <p>Student use of manipulatives to create addition and subtraction number sentences</p>	<p>Textbook resources</p> <p>Manipulatives</p> <p>Drawing materials</p> <p>Worksheets</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 4:** Algebraic Functions

**MAJOR OBJECTIVE:** Identify and continue a simple number or shape pattern

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>Pa. Standard 2.8.3C</b> Substitute missing addends in a number sentence</p>	<p>Teacher will guide student to:</p> <p>Use manipulatives to determine a missing addend in a number sentence in which the sum is 18 or less</p> <p>Show simple equations by using drawings, manipulatives, and number sentences to determine the missing addend</p> <p>Find the missing addend by using fact families and knowledge of relationships of operations</p>	<p>Teacher evaluation of:</p> <p>Student ability to use mathematical symbols correctly</p> <p>Student use of manipulatives to create addition and subtraction number sentences</p> <p>Teacher observation of student's ability to use fact families</p>	<p>Textbook resources</p> <p>Manipulatives</p> <p>Drawing materials</p> <p>Worksheets</p> <p>Number line</p>

**CONTENT:** First Grade Mathematics**CORE CONCEPT 4:** Algebraic Functions**MAJOR OBJECTIVE:** Identify and continue a simple number or shape pattern

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.8.3E</b> Use concrete objects and symbols to model the concepts of variables, equations and inequalities.</p>	<p><b>Teacher will guide the student to:</b></p> <p>Apply the appropriate math symbols (+, -, =, &lt;, &gt;) when creating an equation or inequality to match a given picture or group of objects.</p>	<p>Teacher evaluation of:</p> <p>Student ability to use math symbols correctly.</p>	<p>Text resources</p> <p>Computer resources</p> <p>Math journals</p> <p>Worksheets</p> <p>Pictures and concrete objects</p>
<p><b>PA Standard 2.8.3F</b> Explain the meaning of symbols and solutions.</p>	<p><b>Teacher will guide the student to:</b></p> <p>Explain the meaning of math symbols in problems and solutions to those problems.</p>	<p>Teacher evaluation of:</p> <p>Student ability to use math symbols correctly</p>	<p>Text resources</p> <p>Computer resources</p> <p>Math journals</p> <p>Worksheets</p> <p>Pictures and concrete objects</p>
<p><b>PA Standard 2.8.3G</b> Use tables and charts to display information.</p>	<p><b>Teacher will guide the student to:</b></p> <p>Create a table or chart to show possible combinations to equal a given number.</p>	<p>Teacher evaluation of:</p> <p>Student ability to create a chart.</p>	<p>Text resources</p> <p>Computer resources</p> <p>Math journals</p> <p>Worksheets</p> <p>Two part counters</p> <p>Ten frame and two frame counting mats</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 4:** Algebraic Functions

**MAJOR OBJECTIVE:** Identify and continue a simple number or shape pattern

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<b>PA Standard 2.8.3.H</b> Describe and interpret data displayed in tables and charts.	<b>Teacher will guide the student to:</b>  Explain the meaning of the given data on a chart or table.	Teacher evaluation of:  Oral or written explanation of the data on a chart or table.	Text resources  Worksheets  Computer resources  Graphs, charts and tables  Math journal

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 5:** Geometry

**MAJOR OBJECTIVE:** Identify and construct basic 2 dimensional shapes

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>Pa. Standard 2.9.3.F</b> Identify symmetry in nature</p>	<p>The teacher will guide student to:</p> <p>Demonstrate a knowledge of the concept of left and right</p> <p>Determine and demonstrate the difference between the left and the right side of the body</p> <p>Determine and demonstrate the difference between the left and the right side of concrete objects</p>	<p>Teacher evaluations of:</p> <p>Student's ability to demonstrate left or right side of their own body</p> <p>Student's ability to locate the right or the left of concrete objects such as textbooks, worksheets, or room</p>	<p>Textbook resources</p> <p>Worksheets</p> <p>Concrete objects</p> <p>Songs</p> <p>Poems</p> <p>Games</p>
<p><b>Pa. Standard 2.9.3.A</b> Name and label geometric shapes in two and three dimensions (eg circle/sphere, square/cube, triangle/pyramid, triangle/prism)</p>	<p>Teacher will guide student to:</p> <p>Identify and name the four basic 2 dimensional shapes circle, square, rectangle, and triangle</p> <p>Identify and name two dimensional shapes including circle, square, rectangle, and triangle</p>	<p>Teacher evaluation of:</p> <p>Student's ability to name the four basic shapes</p> <p>Student's ability to find the four basic shapes in the environment</p>	<p>Textbook resources</p> <p>Models and drawings of shapes</p> <p>Worksheets</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 5:** Geometry

**MAJOR OBJECTIVE:** Identify and construct basic 2 dimensional shapes

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>Pa. Standard 2.9.3.C</b> Draw two and three dimensional geometric shapes and construct rectangles, squares and triangles on the geoboard and on graph paper satisfying specific criteria</p> <p><b>Pa. Standard 2.9.3.B</b> Build geometric shapes using concrete objects (ie manipulatives)</p>	<p>Teacher will guide student to:</p> <p>Construct the four basic two dimensional shapes</p> <p>Create two dimensional geometric shapes using concrete objects and geo boards</p> <p>Draw shapes on dot paper</p> <p>Draw the four basic two dimensional shapes on a sheet of plain paper</p> <p>Cover a design using pattern blocks and count and graph the number of blocks used</p> <p>Cover a given design with pattern blocks</p> <p>Count and graph the number of pattern blocks used to cover a given shape</p>	<p>Teacher evaluation of:</p> <p>Student representation of two dimensional shapes</p> <p>Teacher observation of individuals during small group activity</p>	<p>Textbook resources</p> <p>Worksheets</p> <p>Geo boards</p> <p>Dot paper</p> <p>Drawing materials</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 5:** Geometry

**MAJOR OBJECTIVE:** Identify and construct basic 2 dimensional shapes

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>Pa. Standard 2.9.3.C</b> Draw two and three dimensional geometric shapes and construct rectangles, squares and triangles on the geoboard and on graph paper satisfying specific criteria</p>	<p>Teacher will guide student to:</p> <p>Identify the number of sides and corners in a square, triangle, and rectangle</p> <p>Count the number of sides and corners in a given shape (polygon)</p>	<p>Teacher evaluation of:</p> <p>Student's identification of the correct number of sides and/or corners of a given shape</p>	<p>Textbook resources</p> <p>Worksheets</p> <p>Drawing materials</p> <p>Geo boards</p> <p>Dot paper</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 5:** Geometry

**MAJOR OBJECTIVE:** Identify and construct basic 2 dimensional shapes

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<b>PA Standard 2.9.3.D</b> Find and describe geometric figures in real life.	<b>Teacher will guide the student to:</b>  Locate and name objects of a given shape.	Teacher evaluation of:  Independent student written or oral activity  Class discussion on information used	Concrete objects  Text resources  Pictures  Worksheets
<b>PA Standard 2.9.3.E</b> Identify and draw lines of symmetry in geometric figures	<b>Teacher will guide the student to:</b>  Find and draw lines of symmetry.  Select shapes and objects that are symmetrical by drawing a line of symmetry.	Teacher evaluation of:  Independent student written or oral activity  Class discussion on information used	Text resources  Pictures  Worksheets
<b>PA Standard 2.9.3.F</b> Identify symmetry in nature	<b>Teacher will guide the student to:</b>  Find symmetry in nature.  Find and list objects in the environment that are symmetrical.	Teacher evaluation of:  Independent student written or oral activity  Class discussion on information used	Concrete objects  Text resources  Pictures  Computer resources

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 5:** Geometry

**MAJOR OBJECTIVE:** Identify and construct basic 2 dimensional shapes

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<b>PA Standard 2.9.3.G</b> Fold paper to demonstrate the reflection about a line.	<b>Teacher will guide the student to:</b>  Fold a paper to show the reflection of a line (butterflies, snowflakes, hearts)	Teacher evaluation of:  Independent student written or oral activity  Class discussion on information used.	Drawing/art supplies

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 6:** Measurement

**MAJOR OBJECTIVE:** Estimate, compare, and measure objects, tell time to the nearest hour and half hour, and utilize data from a calendar

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>Pa. Standard 2.3.3.B</b> Determine the measurement of objects with non-standard and standard unites (eg, US customary and metric)</p> <p><b>Pa. Standard 2.3.3.G</b> Estimate and verify measurements</p>	<p>Teacher will guide student to:</p> <p>Estimate and measure objects using nonstandard units</p> <p>Determine length and height of objects using other objects</p> <p>Use different nonstandard units, such as paper clips or unifix cubes, to measure a variety of objects</p>	<p>Teacher evaluation of:</p> <p>Teacher observation of small group activity</p> <p>Student written activity</p>	<p>Textbook resources</p> <p>Worksheets</p> <p>Concrete objects</p> <p>Paper clips, unifix cubes</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 6:** Measurement

**MAJOR OBJECTIVE:** Estimate, compare, and measure objects, tell time to the nearest hour and half hour, and utilize data from a calendar

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>Pa. Standard 2.3.3.A</b> Compare measurable characteristics of different objects on the same dimensions (eg, time, temperature, area, length, weight, capacity, perimeter)</p>	<p>Teacher will guide student to:</p> <p>Compare, measure, draw, and record the length of familiar objects to the nearest inch or centimeter</p> <p>Use a ruler properly distinguishing between the inch and the centimeter side of the ruler</p> <p>Use a ruler to measure a variety of objects</p> <p>Use a ruler to draw a line of a given length both in inches and centimeters</p>	<p>Teacher evaluation of:</p> <p>Teacher observation of small group activity</p> <p>Student written activity</p>	<p>Textbook resources</p> <p>Worksheets</p> <p>Concrete objects</p> <p>Rulers</p> <p>Drawing materials</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 6:** Measurement

**MAJOR OBJECTIVE:** Estimate, compare, and measure objects, tell time to the nearest hour and half hour, and utilize data from a calendar.

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<b>PA Standard 2.3.3.C</b> Determine and compare elapsed time.	<b>Teacher will guide the student to:</b>  Tell how much time has elapsed given a beginning time and ending time in a story problem.	Teacher evaluation of:  Independent student written or oral activity  Class discussion on information used.	Text resources  Computer resources  Worksheets  Math journals  Student clocks
<b>PA Standard 2.3.3E</b> Determine the appropriate unit of measure	<b>Teacher will guide the student to:</b> Choose the correct unit of measure.  Choose the correct unit of measure and instrument for a given measurement problem.	Teacher evaluation of:  Teacher observation of small group activity  Individual student activity.	Text resources  Worksheets  Concrete objects  Measurement tools
<b>PA Standard 2.3.3.F</b> Use concrete objects to determine the area and perimeter	<b>Teacher will guide the student to:</b>  Select the correct tool and figure out the perimeter and or area of a given object or area.	Teacher evaluation of:  Teacher observation of small group activity  Individual student activity.	Text resources  Unifix blocks  Attribute blocks  Rulers  Concrete objects  Worksheets

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 6:** Measurement

**MAJOR OBJECTIVE:** Estimate, compare, and measure objects, tell time to the nearest hour and half hour, and utilize data from a calendar

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<b>Pa. Standard 2.3.3.D</b> Tell time (analog and digital) to the minute	Teacher will guide student to:  Tell time to the nearest hour and half-hour using analog and digital clocks  Demonstrate understanding of hour hand and minute hand in order to tell time to the hour and half hour	Teacher evaluation of:  Written assessment  Teacher observation of student ability to correctly position the hands on a clock according to a given time	Textbook resources  Student clocks  Large analog clock  Worksheets
<b>Pa. Standard 2.3.3.H</b> Demonstrate that a single object has different attributes that can be measured in different ways (eg, length, mass, weight, time, area, temperature, capacity)	Teacher will guide student to:  Name and order the days of the week and the months of the year  Name the days of the week and the months of the year in sequential order  Recognize the names and order of the days of the week and the months of the year	Teacher evaluation of:  Student reciting of days of the weeks and months of the year in order  Student's ability to order month and day word cards	Worksheets  Calendar  Songs  Poems  Trade books  Word cards  Textbook resources

**CONTENT: First Grade Mathematics****CORE CONCEPT 7: Statistics and Data Analysis****MAJOR OBJECTIVE: Read, organize, compare, and interpret data on various graphs****CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>Pa. Standard 2.6.3.B</b> Formulate and answer questions based on data shown on graphs</p>	<p>Teacher will guide student to:</p> <p>Read, compare, and interpret real life data on a bar graph and/or pictograph</p> <p>Compare data on a graph using the words most, least, same, highest, lowest, more than, fewer than</p>	<p>Teacher evaluation of:</p> <p>Teacher observation of student written and oral graphing activities</p>	<p>Textbook resources</p> <p>Worksheets</p> <p>Graphs</p>
<p><b>Pa. Standard 2.6.3.A</b> Gather, organize and display data using pictures, tallies, charts, bar graphs, pictographs</p>	<p>Teacher will guide student to:</p> <p>Organize and create a bar and/or pictograph using real life data</p> <p>Create a bar graph and a pictograph using a class survey of a given question</p> <p>Read a bar graph and a pictograph and answer questions</p>	<p>Teacher evaluation of:</p> <p>Student accuracy in creating the graph based on real life data</p> <p>Student accuracy regarding questions related to the graphs</p>	<p>Textbook resources</p> <p>Drawing material</p> <p>Graph paper</p> <p>Manipulatives</p>
<p><b>Pa. Standard 2.6.3.A</b> Gather, organize and display data using pictures, tallies, charts, bar graphs, pictographs</p>	<p>Teacher will guide student to:</p> <p>Collect data and record using tally marks</p> <p>Utilize and record tally marks correctly</p> <p>Count tally marks by fives and ones</p>	<p>Teacher evaluation of:</p> <p>Student written and oral performance in counting tally marks</p> <p>Student's ability to create tally marks based on data collected</p>	<p>Textbook resources</p> <p>Manipulatives</p> <p>Drawing materials</p> <p>Worksheets</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 8:** Probability and Prediction

**MAJOR OBJECTIVE:** Predict and analyze the results of an experiment

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.7.3.A</b> Predict and measure the likelihood of events and recognize that the results of an experiment may not match predicted outcomes</p>	<p><b>Teacher will guide the student to:</b></p> <p><b>Predict the outcome of an experiment then test the guess.</b></p> <p>Make a guess as to how an experiment will come out and then complete the experiment to check. (picking objects or spinning a spinner with different proportions of colors.)</p>	<p>Teacher evaluation of:</p> <p>Independent student written or oral activity</p> <p>Class discussion on information used.</p>	<p>Text resources</p> <p>Computer resources</p> <p>Spinners</p> <p>Colored counters/bag</p>
<p><b>PA Standard 2.7.3.C</b> List or graph the possible results of an experiment.</p>	<p><b>Teacher will guide the student to:</b></p> <p>Make a chart based on ten tries of the above experiment. The students will guess first and then test.</p>	<p>Teacher evaluation of:</p> <p>Teacher observation of student written and oral graphing activities</p>	<p>Text resources</p> <p>Computer resources</p> <p>Spinners</p> <p>Colored counters/bag</p> <p>Paper/pencil/crayons</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 8:** Probability and Prediction

**MAJOR OBJECTIVE:** Predict and analyze the results of an experiment

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.7.3.D</b> Analyze data using concepts of biggest, smallest, most often, least often and middle.</p>	<p><b>Teacher will guide the student to:</b></p> <p>Discuss the information presented in graph form using words like biggest, smallest, most often, least often....</p>	<p>Teacher evaluation of:</p> <p>Independent student written or oral activity</p> <p>Class discussion on information used.</p> <p>Correct usage of terms.</p>	<p>Text resources</p> <p>Computer resources</p> <p>Graphs/charts/tables</p> <p>Math journals</p>

**CONTENT:** First Grade Mathematics

**CORE CONCEPT 9:** Trigonometry

**MAJOR OBJECTIVE:** Ability to identify right angles.

<b>CURRICULUM STANDARD:</b>			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<b>PA Standard 2.10.3.A</b> Identify right angles in the environment.	<b>Teacher will guide the student to:</b>  Explain what a right angle is.  Find right angles in the classroom environment or pictures.	Teacher evaluation of:  Independent student written or oral activity  Class discussion on information used.	Text resources  Computer resources  Concrete objects  Pictures  Measurement tools

**V. EXPECTED LEVELS OF ACHIEVEMENT**

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

B. Grading system for first grade math is as follows:

<b>Grading Scale</b>	
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.