DOCUMENT RESUME

ED 469 101 SE 066 847

TITLE	Sample Curriculum Model, Grade 4, Based on the 1998 Arkansas State Mathematics Framework.
INSTITUTION	Arkansas State Dept. of Education, Little Rock.
PUB DATE	1998-00-00
NOTE	27p.; For Sample Curriculum Models, Grades K-8, see SE 066 843-851.
AVAILABLE FROM	For full text: http://arkedu.state.ar.us/curriculum/benchmarks.html.
PUB TYPE	Guides - Non-Classroom (055) -- Legal/Legislative/Regulatory Materials (090)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	*Academic Standards; Algebra; Geometry; *Grade 4; Intermediate Grades; Mathematics Curriculum; *Mathematics Instruction; Measurement; Number Concepts; Numeracy; Patterns in Mathematics; Probability; State Curriculum Guides; Statistics
IDENTIFIERS	*Arkansas

ABSTRACT

This document consists of a sample curriculum model for grade 4 mathematics based on the 1998 Arkansas State Mathematics Framework. The document is divided into five sections: (1) Number Sense, Properties, and Operations; (2) Geometry and Spatial Sense; (3) Measurement; (4) Data Analysis, Statistics, and Probability; and (5) Patterns, Algebra, and Function. Within each section the standards are exemplified and articulated by benchmarks, suggested assessments, and possible strategies and activities for teaching the standard. (MM)

SAMPLE CURRICULUM MODEL

GRADE 4

based on the 1998 Arkansas State Mathematics Framework
Arkansas Department of Education, 1998

Grade Level_4_
NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.1 Demonstrate number sense (concepts of counting, grouping, and place value) using manipulatives.	Students will write numerical symbols to represent fractions presented with manipulatives. Students will demonstrate the concept of place value up to hundred millions.	. Teacher observation . Peer and self evaluation . Teacher-made tests . Checklist . State-wide test . Perform-ance	. Read: <u>One Is for the Sun</u> by Blegvad, Lenore; <u>Millions of Cats</u> by Gag, Wanda; <u>Take a Number</u> by O'Neill, Mary; <u>How Much Is a Million?</u> By Schwartz, David M.; <u>A Box Full of Infinity</u> by Williams, Jay. . Students will represent multi-digit numbers using base ten blocks or other manipulatives, such as popsicle sticks or cotton swabs. . Students write the numerical symbol represented by a fraction bar or rod.
SLE NPO.1.2 Develop meaning for the operations (e.g., add, subtract, multiply, and divide) by modeling and discussing a variety of problem situations.	Students will discuss and model (concretely, pictorially, symbolically) problem situations involving 2- and 3- digit multiplication and long division with dividends up to four digits and divisors of one and two digits.	. Teacher observation . Peer and self evaluation . Teacher-made test . Checklist . Appro-priate response to teacher direct questions . Improved vocabulary . Verbal explanation . Demon-stration . Writing	. Students prove their paper-pencil and mental math answers by writing the process of computation. . Students discuss and model problem situations involving 2- and 3-digit multiplication and long division. (Ex.: There are 25 students in a class and there are 12 classes on the hall. How many students are on the hall?; etc.).

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.3 Apply and master counting, grouping, place value, and estimation.	Students will apply and master the concept of place value up to hundred millions. Students will estimate to the nearest tens, hundreds, thousands, and millions using rounding and truncating strategies.	. Teacher observation . Peer and self evaluation . Teacher-made tests . Checklist . State-wide test . Performance	. See NPO.1.1 . Students are placed in partners. Each partner is given a deck of cards that do not contain Jokers, Aces, or face cards. The students take turns drawing three to nine cards. The student that can form the largest number and correctly read it wins that hand. . Students will estimate the number of students in their school building. They take the actual amount and round and truncate to assess the correctness of their estimation.
SLE NPO.1.4 Solve problems using terminology and symbols of operations (e.g., add, subtract, multiply, and divide).	Students will relate mathematical terminology and symbols of operations involving multiplication and division (factor, quotient, divisor, dividend, product, multiple, common multiple, common factor) to problem solving situations.	. Teacher observation . Peer and self evaluation . Teacher-made test . Appropriate response to teacher direct questions . Verbal explanation . Anecdotal records . State-wide test . Writing	. See NPO.1.2 . Students will label mathematical problems with appropriate terms. . Students will represent problem solving situations in numbers and symbols.

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.5 Demonstrate competency of operations (e.g., add, subtract, multiply, and divide) using mental math and technology.	Students will demonstrate competency with multiplication and division using mental math and technology.	. Teacher observation . Peer and self evaluation . Teacher-made tests . State-wide test . Perform-ance . Appro-priate response to teacher direct questions	. Extend NPO.1.2 to have students check their answers using calculators. . Students will use appropriate computer software such as Number Sense by Great Wave; Math Keys:Wh#4 by MECC Houghton Mifflin. . Students will view appropriate videos such as Math Problem Solvers by Curriculum Assoc. . Play games that enhance mental math, such as "Around the World".
SLE NPO.1.6 Use manipulatives to demonstrate and compare rational numbers/fractions (e.g., find simple parts of a whole).	Students will concretely, pictorially, and symbolically demonstrate and compare fractions (n/n = 1; write mixed numbers; change improper fractions to mixed numbers; write fractions in lowest terms; rename fractions with unlike denominators to fractions with common denominators; write decimals as fractions; perform basic operations with decimals).	. Teacher observation . Peer and self evaluation . Teacher-made test . Appro-priate response to teacher direct questions . Verbal explanation . State-wide test . Demon-stration	. Read: Easy Book of Fractions by Whitney. . Students attribute blocks to demonstrate and compare fractions. (For example: Represent the fractions ½ and 3/6 to represent equal fractions; Represent the fraction 4/3 and regroup the manipulatives to represent 1 1/3.)

Grade Level_4_
NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.7 Communicate understanding of number sense, properties, and operations through journal writing, creating problems, constructing mathematical sentences, etc.	Students will communicate understanding of number sense, properties, and multiplication and division through journal writing, creating problems, constructing mathematical sentences, etc.	. Teacher observation . Peer and self evaluation . Teacher-made tests . State-wide test . Appro-priate response to teacher direct questions . Anecdo-tal records . Verbal explanation . Journal . Improved vocabulary . Writing	. See NPO.1.1, NPO.1.2, NPO.1.3, NPO.1.4, NPO.1.5, NPO.1.6 . Students compose a math story using correct number sense, properties, and basic multiplication and division. The story is recorded in their journal.

Standard NPO.2.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.2.1 Represent numbers and operations (addition, subtraction, multiply, and divide) in a variety of forms using manipulatives, symbols, and graphs (pictographs, etc.).	Students will represent numbers, multiplication, and division in a variety of forms using manipulatives, symbols, and graphs.	. Teacher observation . Peer and self evaluation . Teacher-made tests . State-wide test . Appro-priate response to teacher direct questions . Demon-stration	. See NPO.1.1, NPO.1.2, NPO.1.3, NPO.1.5, NPO.1.6
SLE NPO.2.2 Apply elementary number theory (skip counting, patterns, number series, odd and even numbers, multiples, fractions, etc.).	Students will apply elementary number theory (skip counting, patterns, number series, odd and even numbers, multiples, Roman numerals from 1-1000, rounding to the nearest tens, hundreds, thousands, millions, and cents, etc.).	. Appro-priate response to teacher direct questions . Teacher observation . Peer and self evaluation . Teacher-made test . State-wide test . Perform-ance	. Read: Number Families by Srivastava, Jane; The Shopping Basket by Burningham, John. . Students find examples of the use of number theory in the real-world. (Ex. Even numbered houses on one side of the street and odd numbered houses on the other; Roman numerals on movies and clocks/watches; prices raised to the nearest ten or hundred dollars to allow for tax.)

Standard NPO.2.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.2.3 Apply computation (add, subtract, multiply, and divide) and estimation to real-world problems.	Students will apply multiplication (variety of meanings), division (variety of meanings), and estimation to real-world problems.	. Teacher observation . Peer and self evaluation . Teacher-made tests . State-wide test . Anecdotal records . Writing	. See NPO.1.2 . Students estimate and determine the cost of multiple units when a single unit is sold for a certain price. (Ex.: How much does 15 basketballs cost if one cost $5.50?)
SLE NPO.2.4 Use mental math, manipulatives, and technology to solve problems.	Students will use mental math, manipulatives, and technology to solve multiplication (variety of meanings) and division (variety of meanings) problems.	. Teacher observation . Peer and self evaluation . Teacher-made test . State-wide test . Project	. See NPO.1.2, NPO.1.5, NPO.2.1 . Students are asked to solve a number of multiplication and division problems either mentally or with manipulatives. They check their answers using a calculator.

Grade Level_4_
NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.2.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.2.5 Describe and compare quantities by using concrete and real-world models of fractions.	Students will describe and compare quantities by using concrete and real-world models of fractions.	. Teacher observation . Peer and self evaluation . Teacher-made tests . State-wide test . Anecdotal records . Verbal explanation . Journal . Appropriate response to teacher directed questions . Improved vocabulary . Demonstration . Exhibition	. See NPO.1.6

Grade Level_4_
GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.1 Sort, classify, and construct geometric shapes/figures and objects using a variety of manipulatives.	Students will construct three-dimensional shapes using a variety of manipulatives. Students will demonstrate the concept of faces, edges, and vertices of geometric solids and will identify the radius and diameter of a circle.	. Teacher observation . Peer and self evaluation . Teacher-made tests . State-wide test . Demon-stration . Project	. Students will construct three-dimensional shapes using paper patterns (nets). . Students will identify the shapes of food packaging (cans are cylinders; boxes are rectangular prisms; etc.). They will identify the faces, edges and vertices of the packages. They will find the radius and diameter of the base of a cylinder (can). . Read: Round and Round and Round by Hoban, Tana.
SLE GS.1.2 Describe, model, draw, construct, compare and classify shapes on one, two, and three dimensions.	Students will describe, classify, construct, model, and compare shapes in one (points, segments, rays, lines, angles), two (polygons and circles), and three (cones, cylinders, etc.) dimensions.	. Teacher observation . Peer and self evaluation . Portfolio . State-wide test . Demon-stration . Teacher-made test	. See GS.1.1 . Students will draw a picture and will trace examples of one-, two- and three-dimensional shapes with a black marker.

Grade Level_4_
GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.3 Determine the relationship between shapes/figures using congruence and similarity, and using transformations (flips, slides, and rotations).	Students will create similar and congruent shapes. Students will recognize the slides, flips, and turns they have made.	. Teacher observation . Peer and self evaluation . Teacher-made tests . State-wide test . Portfolio	. Students will design wallpaper patterns by creating similar and congruent shapes and will identify the slides, flips and turns they used.
SLE GS.1.4 Predict and determine the results of combining, dividing, and subdividing shapes/figures.	Students will predict and determine the results of combining, dividing, and subdividing shapes/figures to form a new shape.	. Teacher observation . Peer and self evaluation . Portfolio . State-wide test . Project	. Read: Angles Are Easy as Pie by Froman, Robert. . Students will take a geometric shape and cut it once to form another geometric shape. They cut the new shape once to form a different or the original geometric shape.

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.5 Demonstrate spatial awareness (positional relationship, size, direction, area, volume, etc.)	Students will demonstrate spatial awareness (positional relationship, size, direction, area, volume, diameter, etc.).	. Teacher observation . Peer and self evaluation . State-wide test . Appro-priate response to teacher direct questions . Demon-stration	. Read: Mr. Archimedes' Bath by Allen, Pamela; Topsy-Turvies: More Pictures to Stretch the Imagination by Anno, Mitsumasa; Spaces, Shapes, and Sizes by Srivastava, Jane. . Students are to write the directions to their house. They are to include landmarks and the relation of the landmark to their house.
SLE GS.1.6 Use manipulatives and technology to demonstrate geometric concepts (positional relationship, size, direction, area, volume, etc.).	Students will use manipulatives and technology to demonstrate geometric concepts (positional relationship, size, direction, area, volume, distance, etc.).	. Teacher observation . Peer and self evaluation . State-wide test . Teacher-made test . Demon-stration	. Students use appropriate computer software such as Shape Up by Sunburst. . Students watch appropriate videos such as All About Circles by Assistant Professor-Allied Video. . See GS.1.1, GS.1.2, GS.1.3, GS.1.4, and GS.1.5

Grade Level_4_
GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.7 Demonstrate geometric and spatial sense through written and oral communication (e.g., draw and describe a color cube model using isometric dot paper).	Students will demonstrate geometric and spatial sense through pictorial, oral, and written communication.	. Teacher observation . Peer and self evaluation . State-wide test . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . Portfolio . Teacher-made test . Writing	. Extend GS.1.1 through GS.1.6 by having students verbalize or write responses to teacher's questions. . Students draw and describe a color cube model using isometric dot paper.

Grade Level_4_
GEOMETRY AND SPATIAL SENSE

Standard GS.2.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.2.1 Estimate and measure the size of geometric figures/shapes in the real world (length, width, perimeter, area, volume, etc.).	Students will estimate and measure the size of geometric figures/shapes in real world using standard units (length, width, perimeter, area, volume, etc.).	. Teacher observation . Peer and self evaluation . State-wide test . Teacher-made test . Anecdotal record . Performance . Log or journal	. Identify various objects in the classroom that represent geometric shapes, estimate and determine their size (length and width) using standard units of measure. (Ex. A door represents a rectangle. The students measure the length, height, and width of the door and calculate the perimeter, area, and volume of the door.)
SLE GS.2.2 Construct and explain geometric patterns using concrete and pictorial models with one or more attributes (color, shape, size, etc.).	Students will replicate, construct, and explain geometric patterns using concrete and pictorial models, with three or more attributes.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Demonstration . Project	. Students will identify different geometric patterns in real life surroundings such as wall paper, flooring, quilts, etc. . Students will discuss tessellation (covering an area without any overlapping or vacant spaces). Students tessellate a piece of poster board with geometric paper shapes.

Standard GS.2.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.2.3 Use manipulatives and technology to solve problems involving perimeter, area, volume, etc.	Students will use manipulatives and technology to solve problems (perimeter, area, volume).	. Teacher observation . Peer and self evaluation . State-wide test . Teacher-made test . Anecdotal record . Performance	. See GS.1.6 and extend GS.2.2 to allow students to use calculators to help compute the perimeter and area of the door. . Use appropriate computer software.
SLE GS.2.4 Illustrate geometric concepts through written and oral communication. (For example, "I am a rectangular house. My windows are squares. My door is a rectangle. My roof is a triangle.")	Students will demonstrate geometric and spatial sense by drawing a two-dimensional representation of a three-dimensional object as represented in real life.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Teacher-made test . Writing	. See GS.2.1, GS.2.2, and GS.2.3 Students will verbalize or write their answers to the teacher's questions. The written answers will placed in their portfolios. . Students write shape stories. . Read: The Village of Round and Square Houses by Grifalconi, Ann.

Grade Level_4_
MEASUREMENT

Standard M.1.0	Benchmarks	Assessments	Strategies/Activities
SLE M.1.1 Demonstrate and apply the concept of comparison (large, small, long, short, etc.) according to given attributes (length, capacity, weight, mass, etc.).	Students will demonstrate and apply the concept of comparison (thicker, at a greater angle, longer period of time, cheaper) according to given attributes.	. Teacher observation . Peer and self evaluation . Appropriate response to teacher direct question . Verbal explanation . Improved vocabulary . State-wide test . Teacher-made test . Anecdotal records	. Read: Who Sank the Boat? by Allen, Pamela; How Many Days to America? A Thanksgiving Story. By Bunting, Eve; The Toothpaste Millionaire by Merrill, Jean; If You Made a Million by Schwartz, David M. . Students are find the same article advertised in two or three different stores. They calculate and compare the prices to determine the cheapest location to purchase the item.
SLE M.1.2 Select, demonstrate, and defend the use of appropriate units of measure.	Students will select, demonstrate, and defend the use of appropriate units of measure for length (1/2 mile, inches, feet, meters, centimeters, millimeters), capacity (cup, fluid ounces, pint, quart, gallon, liter, etc.), time (seconds), and weight (pounds, tons, ounces, grams, etc.).	. Teacher observation . Peer and self evaluation . Verbal explanation . Appropriate response to teacher direct questions . Improved vocabulary . Anecdotal records . Checklist . State-wide test . Teacher-made test . Writing	. Extend GS.2.1 Students identify the unit of measure used. . The teacher presents a situation to measure length, capacity, time and/or weight. The students determine what unit of measure would be appropriate for the proposed situation and why that unit of measure was chosen. . Read: Tall and Small: A Book About Height by Phifer, Kate.

Grade Level_4_
MEASUREMENT

Standard M.1.0	Benchmarks	Assessments	Strategies/Activities
SLE M.1.3 Convert from one measurement to another within the same system (feet to yards, centimeters to meters, etc.).	**Students will convert from one unit of measurement to another using the attached equivalences.**	. Teacher observation . Peer and self evaluation . Appro-priate response to teacher direct question . Verbal explanation . Improved vocabulary . State-wide test . Demon-stration . Teacher-made test	. See M.1.2 . Any measurements made are converted to the largest possible measurement that would result in a mixed number or decimal larger than or equal to one. (Ex.: A student weighs himself/herself as being 1120 ounces. They convert it to pounds and see they weigh 70 pounds.)

Grade Level_4_
MEASUREMENT

Standard M.2.0	Benchmarks	Assessments	Strategies/Activities
SLE M.2.1 Select and use appropriate standard (inches, feet), non-standard (paper clip, thumbnail), and metric (centimeter, meter) measuring instruments (e.g., rulers, scales, measuring tape, yard stick, meter stick, thermometer, etc.).	**Students will select and use appropriate standard and metric measuring instruments (meter stick for length; balance/scale for mass; protractor for angles; etc.).**	**. Teacher observation . Peer and self evaluation . State-wide test . Demon-stration . Teacher-made test . Checklist . Anecdo-tal records**	**. See M.1.1, M.1.2, and M.1.3**

Standard M.3.0	Benchmarks	Assessments	Strategies/Activities
SLE M.3.1 Estimate and measure quantities such as weight, length, area, volume, money, time, and temperature.	**Students will estimate and measure quantities in standard units (Fahrenheit, Celsius, degrees, grams, pounds, etc.).**	. Teacher observation . Peer and self evaluation . State-wide test . Demon-stration . Teacher-made test . Checklist . Anecdo-tal records . Appro-priate response to teacher direct questions . Log or journal	. See M.2.1 . Read: Size: The Measure of Things by Laithwaite, Eric.
SLE M.3.2 Solve problems using measuring instruments and technology.	**Students will solve problems using standard measuring instruments and technology (meter stick, balance/scale, protractor, computer, calculator, etc.).**	. Appro-priate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Teacher-made test . Writing	. See M.2.1

Grade Level_4_
MEASUREMENT

Standard M.3.0	Benchmarks	Assessments	Strategies/Activities
SLE M.3.3 Pose problems using customary (inches, feet, etc.), non-standard (paper clip, thumbnail, etc.), and metric measurements (centimeters, meters, etc.) in real-world situations.	Students will in written form pose problems using standard and metric measurements in real-world situations.	. Teacher observation . Peer and self evaluation . State-wide test . Teacher-made test . Appro-priate response to teacher direct questions . Portfolio . Verbal explanation . Improved vocabulary . Project . Writing	. Extend M.3.1 by having the students dictate then write a problem in a real-world situation that could be solved using standard and metric units of measure. (Ex. Sara and her older sister are wanting to purchase some window blinds for their rooms. They need to know the length and the width of the windows. How will they find them?)

Grade Level_4_
DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.1.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.1.1 Utilize the scientific method for data analysis. A. Identify the purpose (problem statement) for data collection. B. Make a prediction about the final results of data collected. C. Collect and organize data (tables, graphs, etc.). D. Analyze and interpret data (prediction, inference, conclusion, etc.). E. Display data using appropriate bar graphs, line graphs, tables, pie graphs, etc., with and without technology.	Students will identify the purpose (problem statement) for data collection (find a pattern, etc.). Students will analyze, interpret, pose new questions, and test the final results of data collection (the pattern will be/was, what will happen next/what happened next was, etc.). Students will collect, organize and display (bar graphs, circle graphs, stem and leaf plots, etc.) data in a variety of interdisciplinary sources.	. Teacher observation . Peer and self evaluation . State-wide test . Appro-priate response to teacher direct questions . Perform-ance . Verbal explanation . Improved vocabulary . Project . Writing	. Read: Winning with Numbers: A Kid's Guide to Statistics by Riedel, Manfred G. . Students identify the purpose for data collection (e.g., Is there a pattern of growth or decline in the school population in the last five years; etc.). They predict the final results of the data collection (e.g., the population of the school has ...; etc.). They collect data (e.g., research, interviews, etc.) and organize it (e.g., tally marks, checklist, etc.). They display the data in a variety of formats (e.g., broken line graphs; etc.)
SLE DSP.1.2 Explain the results of data collection using oral and written communication.	Students will orally, pictorially, and in written format explain the results of data collection.	. Teacher observation . State-wide test . Perform-ance . Peer and self evaluation . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . Writing . Project	. Extend DSP.1.1 to have students orally and in writing explain the results of the data collected.

Grade Level_4_
DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.2.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.2.1 Predict the results of data collection and demonstrate the concept of chance through the use of manipulatives. (For example: What is the probability of drawing one red marble from a bag of multicolored marbles?)	Students will apply the concept of chance using manipulatives.	. Teacher observation . Peer and self evaluation . State-wide test . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . Demon-stration . Log or journal	. Students will participate in grab bag activities and determine the probability of getting the bag they want. . Students play games of chance, such as Yahtzee.
SLE DSP.2.2 Record the results of data collection with a variety of formats that could include charts, graphs, tables, and technology, using oral and/or written communication.	Students will record the results of data collection with a variety of symbolic formats including graphs and/or tables using oral and/or written communication.	. Teacher observation . State-wide test . Peer and self evaluation . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . Project . Log or journal	. Extend DSP.1.2 and DSP.2.1 to include oral and/or written communication.

Standard DSP.3.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.3.1 Predict results, analyze data, and find out why some results are more likely, less likely, or equally likely.	Students will predict, analyze, and determine the likeliness of an outcome.	. Teacher observation . Peer and self evaluation . Statewide test . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Perform-ance . Log or journal	. See DSP.1.1 and DSP.2.1
SLE DSP.3.2 Make a true statement based on a simple concept of average (median, mean, mode, and range) for a small sample size.	Students will, in written form, make a true statement based on the concepts of mode, median, range, and mean.	. Teacher observation . State-wide test . Peer and self evaluation . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . Exhibi-tion . Teacher-made test	. Students are presented with a series of numbers and are told to determine the mode, the median, the range, and the mean. They write the answers using complete sentences. . Students take the data from various graphs and find the mode, median, range, and mean. They record their answers in complete sentences and determine which answer most accurately depicts the graph.

Grade Level_4_
DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.3.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.3.3 Use the tools of technology to assist in gathering, organizing, and presenting information.	Students will use the tools of technology to assist in gathering, organizing, and presenting information.	. Teacher observation . Peer and self evaluation . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Exhibi-tion . Project . Writing	. Students will use appropriate computer software, such as Data Wonder by Addison Wesley and Math Keys: Probability 4 by Houghton Mifflin, to gather, organize, and present information. . See DSP.3.2 allow students to use a calculator to determine the mean.

Grade Level_4_
PATTERNS, ALGEBRA AND FUNCTION

Standard PAF.1.0	Benchmarks	Assessments	Strategies/Activities
SLE PAF.1.1 Sort and classify a wide variety of materials.	Students will sort and classify a wide variety of materials.	. Teacher observation . Peer and self evaluation . Anecdotal records . Statewide test . Exhibition . Demon-stration . Checklist	. See GS.1.1 . Students sort and classify their homework and classwork by keeping a notebook which contains multiple subjects. . Students sort and classify the numbers 1 through 100 (e.g., numbers with one digit are separated from numbers with two digits, etc.)
SLE PAF.1.2 Describe, extend, and create a wide variety of patterns using concrete models.	Students will describe, extend, and create a wide variety of patterns using a wide variety of materials (transfer from concrete to symbols).	. Appro-priate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Perform-ance . Checklist	. See GS.2.2 . Students will predict, determine, and extend the number pattern on calendars. . Students will identify patterns of rhymes in limericks, haikus, cinquain poems. . Students will find musical patterns in a song's chorus. . Students will create and use a secret code. . Read: Number Patterns Make Sense (A Wise Owl Book)

Standard PAF.1.0	Benchmarks	Assessments	Strategies/Activities
SLE PAF.1.3 Demonstrate equality (=) and inequality (<, >) using manipulatives and symbols.	Students will demonstrate equality and inequality using symbols <, >, =.	. Teacher observation . Peer and self evaluation . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . State-wide test . Demon-stration . Teacher-made test	. Students are given a sheet of numerical comparisons presented symbolically to complete with or without manipulatives. . Students generate equations and inequalities while comparing shoe sizes.
SLE PAF.1.4 Demonstrate the beginning concept of a variable. (Use boxes, letters, or other symbols to stand for any number or object in simple situations, with or without concrete material, such as 6 + ___ = 8 or 3 + B = 4, etc.).	Students will represent variables concretely and symbolically. (e.g., B x 9 = 63; 81 ÷ ___ = 9; (72 ÷ 9) x (144 ÷ 12) = ___)	. Appro-priate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Teacher-made test . Demon-stration	. Extend PAF.1.3 to include mathematical sentences presented with variables.

Grade Level_4_
PATTERNS, ALGEBRA AND FUNCTION

Standard PAF.1.0	Benchmarks	Assessments	Strategies/Activities
SLE PAF.1.5 Express mathematical relationships in one- and two-dimensions. (Length x Width = Area, L x W = A, etc.)	Students will express mathematical relationships in one- and two-dimensions (e.g., length x width = area, L x W = A; etc.).	. Teacher observation . Peer and self evaluation . State-wide test . Teacher-made test . Journal . Perform-ance	. Students will be assigned mathematical terms and their abbreviations as an extension to weekly spelling tests. . Extend M.1.2 to have students write the units of measure both one- and two-dimensionally.
SLE PAF.1.6 Use oral and/or written communication to interpret created patterns.	Students will pictorially, orally, and in written format communicate to interpret a wide variety of created patterns.	. Appro-priate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Teacher-made test . Perform-ance . Writing	. See PAF.1.2

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