Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

1. Number Sense and Operations

(NCTM 2000 #1; MO #5 & 9; IL #6)

A. Demonstrate knowledge and use of numbers: representations, systems, and relationships.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - distinguish numbers from letters.	Show students cards with numbers and letters on them. Have them differentiate between the two.	Observation
2 - verbally rote count to 100.	Calendar, lunch count, attendance, number line	Oral "interview"
3 - recognize and write numbers to 20.	Number tracing using various manipulatives and media	Written portfolio
4 - count and create a set using one-to-one correspondence up to 20.	Match objects with one-to-one correspondence.	Observation/demonstration
5 - rote count backwards from 10.	5a. Number line 5b. Blast off	Oral "interview"
6 - zero means none.	6a. Do finger plays and songs. 6b. Compare empty to full.	Observation

7 - determine if a number is even or odd.	7a. Test out numbers by taking turns sharing a specific number of items. If you end up with one left over it is an odd number. If you each get the same amount it is even. 7b. Word play rhymes that recite even and odd numbers. For example, 0,2,4,6,8 even numbers celebrate. 1,3,5,7,9, odd numbers get in line.	Oral demonstration
8 - demonstrate knowledge of ordinal numbers by using vocabulary associated with ordinal numbers.	8a. Order events in well known stories. 8b. Order events in Creation on the first day etc.	Observation/demonstration
9 - explore sums to 10.	Use 10 linking cubes, counting bears, etc. Set up a counting mat divided by a line. On the left side place 4 bears. How many bears do I put on the right side to make 10?	Observation

B. Demonstrate knowledge of operations, properties, and their relationships.

Objective	**Suggested Activities**	**Suggested Assessment**
The student will be able to: 1 - recognize and use +, -, and = symbols.	Use flannel board or create math sentences on dry erase boards.	Picture story showing operation
2 - solve simple math problems mentally or by using objects.	2a. Use flashcards. 2b. Play math bingo.	Oral demonstration

3 - demonstrate an understanding of fractions: 1/2, 1/4, 1/3.	Use pictures of food: pizza, sandwich, etc. to identify the parts.	Teacher observation
4 - compare increasing and decreasing quantities.	Use counters to show quantity; add more and take some away to increase and decrease quantity.	Child can count to verify results.

C. Demonstrate fluency in computation and make appropriate estimates.

Objective	**Suggested Activities**	**Suggested Assessment**
The student will be able to: 1 - estimate the number of objects in a set.	Estimating jar	Reasonable answer
2 - accurately combine and separate sets of objects.	Teacher orally gives a story and children act it out using objects.	Observation/demonstration
3 - use counting to compute answer.	Use dice to play counting games.	Observation/demonstration

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

2. Patterns, Relationships, and Algebraic Methods

(NCTM 2000 #2; MO #8; IL #8)

A. Describe numerical relationships using patterns and functions.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - recognize, create, and maintain a pattern using 2 and 3 attributes.	http://nlvm.usu.edu/en/nav/grade_g_1.html use games to practice patterns	Create their own pattern using manipulatives. Continue a pattern by drawing missing symbols.
2 - find number patterns.	Calculator, number charts, calendar	Oral "interview"
3 - correctly skip count by 5's and 10's up to 100.	3a. Number line 3b. Use a combination padlock to count by 5's.	Oral "interview"

B. Describe numerical relationships using mathematical models.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - use models, facts, and relationships to explain their thinking.	Given a set of linking cubes, have the students build 2-block, 3-block, etc. towers. Explain which tower is tallest, shortest, etc.	Oral "interview"

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

C. Analyze, interpret, and solve problems using algebraic concepts and expressions.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - solve "result unknown" problems with addition and subtraction. (If students have a good understanding of part-whole relationships of the operations, include "missing addend" problems.)	Teacher verbally reads a story problem and have students solve problems using food or other manipulatives. Result unknown: 6+4=__. Missing addend: 6+__=10.	Oral "interview"

D. Analyze change in various contexts.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - describe qualitative change in objects.	Compare differences in heights of objects or children.	Arrange objects from shortest to tallest.
2 - describe quantitative change in objects.	Measure growth of child from beginning of year to end of year.	Oral "interview"

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

3. Geometry

(NCTM 2000 #3; MO #6; IL #9)

A. Analyze characteristics and properties of geometric shapes and develop mathematical arguments about geometric relationships.

Objective	Suggested Activities	Suggested Assessment
The student will be able to: 1 - identify basic shapes including circle, triangle, square, rectangle, oval, rhombus, trapezoid, hexagon, and octagon.	Go on a shape walk.	Oral "interview" - Match name with shape
2 - recognize and sort shapes by one attribute.	Recognize size, shape, color.	Observation/behavior
3 - identify and recognize 3-D shapes: ball, can, cone, and box.	Use 3-D shapes. Find similarities and differences in shapes found in the environment.	Create a situation to match up geometric shapes with similar or same shapes found in environment. For example, a dice with a cube.
4 - relate ideas in geometry to ideas in number and measurement.	Measure the sides of a rectangle and square. Note the similarities and differences in the sides	Oral assessment-use riddles I am a shape with four sides two are short and two are long who am I?
5 - identify lines: straight, curved, horizontal, and vertical.	5a. Use the cross as an example of horizontal and vertical lines 5b. Find straight vs. curved lines in shapes and paths you can walk.	Correctly point to type of line when orally asked which line is straight etc. Draw an example of each type of line.

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

B. Specify locations and describe spatial relationships using representational systems.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - understand vocabulary such as before, after, front, back, middle, left, right, on, off, more, less, inside, and outside.	Do the Hokey Pokey. Act out words using the children playing the roles of behind, after, front, back, and middle.	Create a form with basic shapes square, circle, etc. Give oral directions for children to follow such as draw a yellow dot inside the square, draw a green A under the circle, etc.

C. Apply transformations and use symmetry to analyze mathematical situations.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - recognize "similar" shapes.	1a. Match shapes and pattern blocks 1b. Shape walk	Oral interview - Matching exercise
2 - recognize and identify congruent shapes.	Match shapes on a geoboard.	Use a geoboard for performance based assessment. Child matches your shape on his/her geoboard.
3 - recognize and create shapes that have symmetry.	Fold a piece of paper in half and draw a shape on the fold. Cut out the shape and open to see symmetry. Use tempera paints and paint one side of a butterfly wing. Fold paper and pat both sides together. Unfold to see symmetry.	Student puts together two piece puzzles to match up symmetry.

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

D. Use visualization, spatial reasoning, and geometric modeling to solve problems.

Objective	Suggested Activities	Suggested Assessment
The student will be able to: 1 - recognize geometric shapes and structures in environment.	Go on a shape walk.	Pencil and paper assessment, matching shapes with objects found in environment ex. ice cream cone-cone shape, globe-ball.

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

4. Measurement

(NCTM 2000 #4; IL #7)

A. Determine measurable attributes of objects and the units, systems, and processes of measurement.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - understand the need for a uniform unit of measurement.	Measure objects with hands, feet, paper clips, unifix cubes, rulers, etc.	Record measurements of items around the room.
2 - recognize and compare attributes of length, weight, and area.	1a. Measure items and place in order from shortest to longest. 1b. Compare weights of objects with a balance.	Observation
3 - identify name and value of coins including penny, dime, nickel, and quarter.	3a. Classroom store 3b. Money games	Demonstration/observation

B. Apply appropriate techniques, tools, and formulas to determine measurements.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - use a ruler to measure an object to the nearest inch.	Measure items in the room.	Record measurements of items around the room.
2 - understand how to measure using nonstandard and standard measurements.	Use paper clips, linking cubes, etc. as measuring tools.	Record measurements on paper. Use drawing to represent items measured and record how many.

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

3 - measure temperature using a thermometer.	Use thermometer to compare temperatures outside.	Observation
4 - tell time to the hour.	Various activities with a Judy Clock	Observation
5 - measure time using a calendar: days of the week, months of the year, and seasons.	5a. Daily calendar helper 5b. Create class books. 5c. Sing calendar songs.	Observation

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

5. Data Analysis and Probability

(NCTM 2000 #5; MO #7; IL #10)

A. Formulate and answer questions by collecting and organizing data and communicate findings.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - record data on a graph.	Make a class pictograph showing favorites of different items.	Check graph for accuracy.
2 - record data on a table.	Graph birthdays, missing teeth, etc.	Check graph for accuracy.
3 - determine how to classify and sort according to an attribute.	Sort a variety of items by size, color, shape, and function. Sort children by attributes - hair color, eye color, etc.	Observation

B. Use appropriate statistical methods to analyze data properly.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - answer "more than, less than, same as, greatest, and fewest".	Orally ask questions after graphing activity.	Observation

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

C. Develop and evaluate inferences and predictions that are based on data.

Objective	Suggested Activities	Suggested Assessment
The student will be able to: (Kindergarten children are not developmentally ready for this goal.)		

D. Understand and apply basic concepts of probability.

Objective	Suggested Activities	Suggested Assessment
The student will be able to: 1 - eliminate impossible outcomes in a prediction activity.	Based on what we know about our weather, how likely is it that it will snow in May?	Class discussion
2 - predict outcomes based on students knowledge or experience as likely or unlikely.	2a. Sink or float experiment 2b. Magnetic or non-magnetic	Observation/class discussion

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

6. Discrete Math

(MO #10)

A. Apply systematic listing, counting, and reasoning.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - determine what should be counted is a set of objects and actually count objects.	Make a lunch count graph. Put each choice as a set and count results.	Class discussion
2 - predict whether the set contains more or fewer of one subset than the other.	Put the same number of items in two separate bags. What happens when we take one out or put one into one of the bags?	Observation/demonstration
3 - explain how subsets of objects are the same or different.	Discuss examples (subsets) of shapes, triangles vs. squares, etc.	Class discussion

B. Apply discrete mathematical modeling using graphs and trees.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - determine a path through a maze.	Play board games such as Chutes and Ladders. Make an obstacle course in the classroom, playground, or gym.	Check to see that students were able to complete the game.

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

C. Use iterative (repetitive) patterns and processes.

Objective	Suggested Activities	Suggested Assessment
The student will be able to: 1 - determine and continue a pattern using inductive reasoning.	Use a series of pattern blocks to have children identify and add on to the pattern. Find a missing number in a number pattern.	Observation

D. Organize and process information.

Objective	Suggested Activities	Suggested Assessment
The student will be able to: 1 - identify and discuss overlapping subsets of objects (Venn diagrams).	Use literature - different versions of same story example The Gingerbread Man and The Gingerbread Boy. Create a Venn diagram using the stories.	Class discussion

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

E. Find the best solution to the problems using algorithms.

Objective	Suggested Activities	Suggested Assessment
The student will be able to: 1 - create algorithms based on constructing meaning from explorations.	Develop an understanding of math terms by "acting out" word puzzles with some, some more, some, some went away (+,-). Use manipulatives to model simple word problems with a joining action (+) or a taking away action (-).	Observations/ using correct analogy. Adding increases value, taking away decreases value.

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

7. Problem Solving and Reasoning

(NCTM 2000 #6 & 7a; MO #1 & 3; IL #1)

A. Apply and adapt appropriate strategies to solve problems.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - use counting to compute answer.	Give students a number of cubes. Have them "join to" or "take away from" the set of cubes, then count to get the result.	Observation
2 - act out problem.	Use students as actors and role play an addition (joining) or subtraction (taking away) problem.	Observation
3 - use manipulatives to problem solve answer.	Use math counters to solve an action story problem recited by teacher.	Observation

B. Use reasoning to build new mathematical knowledge through problem solving.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - choose the appropriate operation to solve a one step problem.	Using counting bears, tell a story using some more came (join) or some went away (take away) etc. and observe behaviors	Observation

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

8. Communication

(NCTM 2000 #7b, 8, & 10; MO #2; IL #2, 3, & 4)

A. Work both cooperatively and individually.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - work with a partner to complete a task.	Create math boxes that have two player games that the children can choose from during math center time.	Behavior observation
2 - work in a small group setting.	Use math as one of your center choices. Include math games and activities that require a small group to complete.	Behavior observation
3 - work individually to complete a task.	Give individual seat work to complete a task or worksheet.	Check for accuracy/ behavior observation

B. Represent mathematical data and concepts using a variety of media, including technology.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - demonstrate the ability to select and apply strategies such as drawing, listening, discussing, and using technology in mathematics.	Draw a picture of a sequence of events in a story use a computer program such as "Tux Paint" to create picture story problems for another child to solve.	Observations

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

C. Analyze, evaluate, and communicate mathematical thinking using the language of mathematics coherently and clearly.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - relate their everyday language to mathematical language and symbols.	"Act out" word stories including positional words and operational words. Find ways to connect math to everyday situations.	Observations
2 - justify their answers.	Have students orally explain how they get an answer to a simple one step math problem.	Oral "interview" - checking for correct use of math language

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

9. Connections

(NCTM 2000 #9; MO #4; IL #5)

A. Use technology to access and process information.

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - organize information into useful forms.	Create a class graph about the pets the students have. Represent pets with stickers and draw picture representations of findings.	Picture representations of findings
2 - follow directions to complete a game.	Play math games on the computer.	Use scores from Math Blaster or another program to track results/ teacher observation.

B. Understand how mathematical ideas connect internally, among other disciplines, and in daily life to build on one another and produce a coherent whole .

Objective	Suggested Activities	Suggested Assessment
The student will be able to:		
1 - relate physical objects and pictures to mathematical ideas and diagrams.	Give students a set of unifix cubes and cards with numerals 1 through 10. Have them match the cards with the cubes.	Performance-based assessment
2 - use math in their everyday lives.	2a. Fill in a class calendar. 2b. Tell time outside of the classroom.	Observation

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

3 - use math in other curricular areas.	3a. Read Ten Black Dots and create a class or individual version of story. 3b. Reenact the story Anno's Counting Bears with teddy bear counters. 3c. Integrate graphs in a science experiment. 3d. Use measurement to make a healthy special treat to eat (nutrition).	Teacher prepared questions and observations

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007

Grade level: Kindergarten

LESA
Mathematics Curriculum
2007