

**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.

<u>Objective</u>	<u>Suggested Activities</u>	<u>Suggested Assessment</u>
The student will be able to: 1 - verbally rote count to 150.	1a. 100th day of school activities 1b. 100 number chart, number line 1c. Bring in 150 things. 1d. Practice counting objects.	Oral interview
2 - recognize and write numbers to 100.	2a. Use the hymnal to find page #'s up to 100. 2b. Write selected numbers. 2c. Use number lines and number charts.	Formalized written exams
3 - count and create a set using one-to-one correspondence up to 100.	Students are responsible for counting contents of estimation jar.	Observation
4 - determine if a number is odd or even.	Divide students into teams even/odd for any team activity.	Determine if the students divide into groups correctly.
5 - demonstrate that zero means none.	5a. Zero Day- nothing in the ones cup 5b. Use finger plays and songs that count backwards, i.e., "5 Little Ducks", "5 Little Monkeys".	Observation

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6 - demonstrate an understanding of place value: 1, 10, and 100's.

Use place value mats for adding.

7 - demonstrate knowledge of ordinal numbers by using vocabulary associated with ordinal numbers.

7a. Lining up
7b. Floor levels
7c. Stories with these concepts

Observation and written exam

8 - Explore sums to 10 and doubles.

Because 8 and 2 is 10, then 8 and 5 is 13.
Because 6 and 6 is 12, then 6 and 7 make 13.

Written work

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.

On a number line have students move forward and back to show + and - using manipulatives.

Observation

2 - accurately compute fact families to 20.

Pick a domino out of the pile. Use the number on the right side of the domino as one number in your fact family. Use the left side of the domino as the second number in your fact family. Make a list of the fact families on your paper.

Check written paper with fact families on it.

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3- add three addends (single digit).	Use "ones/tens/hundreds" place-mat and roll dice to add sums using manipulatives as counters.	Written work
4 - use commutative and associative properties.	Explain and demonstrate commutative ($3 + 7$ is the same as $7 + 3$) and associative ($4 + 7$ is the same as $[(4 + 6) + 1]$) properties with manipulatives.	Observation
5- recognize fraction shapes: $1/4$, $1/2$, $1/3$.	Match correct fraction symbol to shape.	Written work and observation

C. Demonstrate fluency in computation and make appropriate estimates.

<u>Objective</u>	<u>Suggested Activities</u>	<u>Suggested Assessment</u>
The student will be able to: 1 - estimate a number of objects including length, and weight.	1a. Estimation can include lengths and weights of objects. 1b. Use an estimation jar.	Written assessment and observation
2 - use mental math (doubles and sums to 10 strategies).	For $5 + 6 = \underline{\quad}$, say 5 and 5 is 10 plus 1 more make 11. For $8 + 4 = \underline{\quad}$, say 8 and 2 makes 10 plus 2 more is 12.	Written assessment and observation
3 - accurately combine and separate sets of objects.	Use manipulatives to join or separate according to story problems.	Written assessemnt and observation

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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 - skip count by 2's, 5's, and 10's up to 100.

Exercise (jumping jacks, knee bends) counting by 2's, 5's, and 10's.

Written test

2 - find patterns in numbers.

Write numbers in patterns, identify the pattern, and fill-in missing numbers.

Written test

3 - recognize patterns as they exist in place value (1's, 10's place).

Make "noodle or bean" sticks with popsicle sticks to show 10's and cup of beans/noodles to show 1's.

Observation

B. Describe numerical relationships using mathematical models.

Objective

Suggested Activities

Suggested Assessment

The student will be able to:

1 - use commutative and associative properties.

Explain and demonstrate commutative ($3 + 7$ is the same as $7 + 3$) and associative ($4 + 7$ is the same as $[(4 + 6) + 1]$) properties with manipulatives.

Observation

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

<u>Objective</u>	<u>Suggested Activities</u>	<u>Suggested Assessment</u>
The student will be able to: 1 - use models, facts, and relationships to explain their thinking.	Have students use cubes to determine $<$, $>$, and $=$.	Observation
2 - solve missing addends problems (+ and -).	Use number stories. Students can use manipulatives to solve problems.	Written tests
3 - use patterns and relationships to analyze mathematical solutions.	Give the students a pattern such as 2, 4, 6, 8. Have them continue the pattern and explain why they chose the numbers they did.	Oral or written test

D. Analyze change in various contexts.

<u>Objective</u>	<u>Suggested Activities</u>	<u>Suggested Assessment</u>
The student will be able to: 1 - describe quantitative change in an object.	Put thermometers around the school and compare the temperatures of each area of the building.	Have students record their findings.
2- name the shortest or longest.	Put two students next to each other and discuss which one is taller and which one is shorter.	Have students record their findings.

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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 - recognize and create shapes: circle, square, triangle, oval, rectangle, parallelogram, octagon, pentagon, hexagon, trapezoid, and rhombus.

1a. Use yarn or string to create large shapes.
1b. Have students use stencils to trace shapes for math/art activity.

Written assessment

2 - identify how many sides and angles a shape has.

Use Geoboards to make the shapes and count the sides and angles.

Student interview

3 - recognize and sort by two attributes.

Recognize two attributes by using size, shape, color, angles, and sides.

Teacher observation

4 - identify three dimensional shapes: spheres, cylinders, rectangular prisms, pyramids, cubes, and cones.

4a. Use 3-D shapes.
4b. Find 3-D shapes in the environment.

Student interview

5 - draw lines that are straight, curved, horizontal, and vertical.

Make a picture using these lines.

Written assessment

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

<u>Objective</u>	<u>Suggested Activities</u>	<u>Suggested Assessment</u>
<p>The student will be able to: 1 - use vocabulary: before, after, next, first, last, front, back, middle, left, right, on, off, more, and less.</p>	<p>1a. Do the hokey pokey. 1b. Use vocabulary throughout your daily activities.</p>	<p>Teacher observation</p>

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

<u>Objective</u>	<u>Suggested Activities</u>	<u>Suggested Assessment</u>
<p>The student will be able to: 1 - recognize congruent shapes.</p>	<p>Have students work with a partner to create identical shapes on geoboards.</p>	<p>Teacher observation</p>
<p>2 - recognize similar shapes.</p>	<p>Find shapes in your environment. Trace and sort shapes. Make a picture with shapes.</p>	<p>Written assessment</p>
<p>3 - identify one line of symmetry.</p>	<p>Paint one side of a picture. Fold, press and open to discover symmetry. Cut out shapes and check for symmetry.</p>	<p>Teacher observation</p>
<p>4 - identify transformations.</p>	<p>Visit the website http://nlvm.usu.edu/en/nav/grade_g_1.html to play games using reflection (flip), rotation (turn), and translation (slide).</p>	<p>Written assessment</p>

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

Objective

The student will be able to:

1 - recognize geometric shapes and structures in the environment and specify their location.

Suggested Activities

Walk around the school and find geometric shapes. Draw and write down the correct name of each shape.

Suggested Assessment

Teacher observation

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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 with hands, feet, or pencils. Discuss discrepancies. Then measure with something that is the same size, i.e. unifix cubes, paper clips, pennies.

Observation

2 - compare and order objects according to length, volume, weight, and time.

Measure objects using these attributes and compare them with each other.

Written test

3 - understand how to measure using nonstandard and standard units.

Use your hands or feet to measure other objects in the classroom.

Observation

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

<u>Objective</u>	<u>Suggested Activities</u>	<u>Suggested Assessment</u>
The student will be able to: 1 - select an appropriate unit and tool for the attribute being measured.	Have students decide what tool they need to use to measure objects.	Written test or observation
2 - measure length using inches and centimeters, weight, and volume.	2a. Measure objects in the classroom with a ruler or other unit of measure. 2b. Measure weight with simple objects that the students are familiar with.	Written test or group work
3 - measure temperature.	Use a thermometer to measure the temperature for 5 days in a row.	Written test
4 - tell time to the hour and half hour.	4a. Use Judy clocks to have the students set the clocks. 4b. Make a class book for morning, noon, and night.	Observation
5 - count money and write the amount using the proper symbols.	5a. Set up a mock grocery store. 5b. Count chapel offerings for the month.	Observation
6 - measure time using days of the week, months of the year, and seasons.	Calendar time	Observation

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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 - pose questions and gather data about themselves and their surroundings.

Make a favorite food graph. Have the students ask each of their classmates what their favorite food is. Mark it on the graph.

Ask questions about the completed graph and write down the answers.

2 - sort and classify objects according to their attributes and organize data about the objects.

Sort students into groups according to attributes that they possess. (eye color, tie shoes, Velcro shoes, girl, boy, etc.)

Observation

3 - represent data using concrete objects, pictures, and graphs.

Give students stickers to represent the attributes on the graph, to formulate a graph.

Fill in the graph.

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", or "equal to" questions about data on a graph.

Orally ask "more than, less than, same as, greater, and fewer" questions.

Write down the answers to the questions.

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

Objective

Suggested Activities

Suggested Assessment

The student will be able to:

(Most first grade students 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 - discuss possibilities and eliminate impossible outcomes in a prediction activity.

Based upon our weather how likely is it that it will snow or rain.

Discussion

2 - Predict and discuss outcomes based on prior knowledge or experience as likely or unlikely.

Create their own experiment by pulling various things out of a bag: socks, patterns blocks, cubes, etc.

Write down what is likely and unlikely to be pulled out.

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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 as a set of objects and actually count objects.

Use your lunch count graph to put objects in a set and then count the objects in that set.

Oral test

2 - predict whether the set contains more or fewer of one subset than the other.

Put a pile of blue and red cubes in two different bags according to their color. Have the students decide which has more and which has fewer.

Observation and demonstration

3 - explain how subsets of objects are the same or different.

Using the above activity, discuss how the subsets of cubes are the same and different.

Class discussion

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B. Apply discrete mathematical modeling using graphs and trees.

Objective

The student will be able to:

1 - determine a path through a maze, whether a street network could be traveled going over each street one time, and the shortest distance traveling on a network of roads or streets.

Suggested Activities

Magnet Maze, Pencil Maze, "Candyland", and "Chutes and Ladders"

Suggested Assessment

Student's completed work
Teacher observation

C. Use iterative (repetitive) patterns and processes.

Objective

The student will be able to:

1 - determine and continue a pattern using inductive reasoning.

Suggested Activities

Set up a pattern and have the students finish the pattern.

Suggested Assessment

Student's completed work

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D. Organize and process information.

Objective

The student will be able to:

1 - identify and discuss overlapping subsets of objects (Venn diagrams).

Suggested Activities

Make a class Venn Diagram using cats and dogs as the headings. Ask each child in the class which they like: cats, dogs, or both.

Suggested Assessment

Discuss Venn diagram and have students make their own.

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

Objective

The student will be able to:

1 - create algorithms based on constructing meaning from explorations.

Suggested Activities

Give students story problems to solve.

Suggested Assessment

Check written work.

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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 - solve problems through list making.

- 1a. Make a class "List of things to do".
- 1b. Daily schedule
- 1c. Write a list of items you need for a sleep over at a friend's house.
- 1d. Cooking - make a list of ingredients and necessary utensils.

Performance assessment

2 - use counting to compute answer.

Give students a set of counters and simple addition problems to solve.

Performance assessment

3 - obtain relevant data from pictures, graphs, etc.

Have the students make a graph for their favorite flavor of ice cream and record the results.

Performance assessment

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

Objective

The student will be able to:

1 - choose the appropriate operation to solve one-step problems.

Suggested Activities

Give students a set of simple word problems and have them solve it using the appropriate operation.

Suggested Assessment

Testing

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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 - play games that involve two players on the computer.

Play "Math Baseball" at <http://www.funbrain.com/math/index.html>.

The computer tells the student whether they are correct or incorrect.

2 - solve problems in groups.

The students can play "The Math Game". The students work in groups to solve math problems that are given by the teacher.

The team with the most points wins.

3 - complete a task individually.

Homework sheet

Performance based

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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 of reading, writing, listening, representing, discussing, and using technology in mathematics.

Using a teacher prepared set of addition problems with two 2-digit numbers with single regrouping. Have one student explain to another student how to solve a problem.

Observe students' explanations to the other students.

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.

Have students determine the price of their favorite toy and discuss how much money they need to buy the toy.

Interview and observation

2 - justify their answer.

Have students write in their journal to tell you how they came up with their answers.

Read journals.

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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 - use calculators and computers to solve problems.

During computer time, have the students use a website that has math games that are at their grade level. (ex. funbrain.com)

Observation - The computer automatically checks for correct and incorrect answers.

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 - use mathematics in other subjects such as science and social studies.

Plant bean seeds and mark their growth. Measure every couple of days how much they have grown. Record in a graph and compare measurements from each day .

Check written graph.

2 - understand that mathematics is all around them.

2a. Have a store in your classroom.
2b. Have the students tell you what time it is.
2c. Have the students find many different shapes in their environment.

Observation