ADOPTED REGULATION OF THE

STATE BOARD OF EDUCATION

LCB File No. R062-97

Effective December 10, 1997

EXPLANATION – Matter in *italics* is new; matter in brackets **[ ]** is material to be omitted.

AUTHORITY: NRS 385.080 and 385.110.

Section 1. NAC 389.292 is hereby amended to read as follows:

389.292 The courses in mathematics offered in public elementary schools must include instruction designed to teach the pupil, by the completion of the fourth grade, to do the following:

1. For the areas of solving problems and logic:

(a) Use the process of solving a problem to investigate and understand the content of mathematics.

(b) Formulate a problem from a situation in everyday life regarding mathematics.

(c) Develop and apply strategies to solve a wide variety of mathematical problems.

(d) Verify and interpret the results of a solution to a problem.

(e) Solve a problem by using a calculator, a computer or other technology and know when it is appropriate to use such technology.

(f) Demonstrate confidence in the practical use of mathematics.

(g) Demonstrate persistence when working independently or with others to solve a problem.

2. For the area of communication:

(a) Use reading, writing and other learning skills to develop an understanding of mathematics.

(b) Relate language used in everyday life to mathematical language and symbols.

(c) Relate physical materials, pictures and diagrams to mathematical ideas.

(d) Describe different methods of thinking to clarify mathematical ideas and mathematical situations.

(e) Discuss options for solving problems.

(f) Use a computer or other technological resources to present results in proper form.

3. For the areas of reasoning and mathematical connections:

(a) Use models, known facts, properties and relationships to explain his thinking.

(b) Use patterns and relationships to interpret mathematical situations.

(c) Construct criteria for sorting and organizing materials or data.

(d) Justify and defend answers to problems and any methods used to reach those answers.

(e) Use different physical materials, visualizations and descriptions to represent the same mathematical concept.

(f) Describe connections between activities that he is physically participating in and mathematical procedures and situations related thereto.

(g) Investigate different situations that are related to the same mathematical concepts.

(h) Recognize that mathematical topics are interrelated.

(i) Use previously learned mathematical ideas to understand new mathematical ideas.

(j) Use mathematics in other areas of curriculum and in his daily life.

4. For the area of the development of the concept of numbers:

(a) As it relates to understanding numbers:

(1) Understand the meanings of numbers from a variety of personal experiences by using physical materials.

(2) Understand the system of numeration by relating counting, grouping and the different concepts of place values.

(3) Develop an understanding of the relationships between numbers.

(4) Interpret the different uses for numbers that are encountered in everyday life.

(b) As it relates to making estimates:

(1) Develop strategies for making estimates.

(2) Recognize when making an estimate is appropriate.

(3) Determine the reasonableness of the results of making estimates.

(4) Apply strategies for estimation when working with quantities, measurement or computation and when solving a problem.

(c) As it relates to concepts and operations of whole numbers:

(1) Understand the meaning of the operations of addition, subtraction, multiplication and division by creating and discussing a wide variety of situations in which problems arise.

(2) Relate informal language, visualizations and concrete models to mathematical language and symbolism.

(3) Recognize that a wide variety of structures of problems can be represented by a single operation of addition, subtraction, multiplication or division.

(4) Describe relationships between the operations of addition, subtraction, multiplication and division.

(5) Develop an understanding of the relationships between numbers and the operations of numbers.

(6) Use models and strategies to **[**develop a reasonable proficiency in the basic facts for addition and subtraction of whole numbers and for addition and subtraction of algorithms.**]** *explain and develop understanding and mastery of basic facts for addition, subtraction, multiplication and division of whole numbers and to exhibit knowledge of algorithms for addition, subtraction and multiplication.*

(7) Use calculators and computers in the appropriate computational situations.

(8) Use and describe a variety of techniques for mental computation and estimation.

(9) Select and use techniques for estimation and computation that are appropriate for a specific problem.

(10) Determine the reasonableness of results.

(d) As it relates to common fractions and decimal fractions:

(1) Create and describe common fractions and decimal fractions, including mixed numbers, by using physical materials.

(2) Develop an understanding of the relationship between numbers for common fractions and decimal fractions.

(3) Investigate relationships between common fractions by using physical materials.

(4) Investigate relationships between decimal fractions by using physical materials.

(5) Investigate relationships between common fractions and decimal fractions, including equivalent fractions, by using physical materials.

(6) Investigate the operations of addition, subtraction, multiplication and division on common fractions and decimal fractions by using physical materials.

(7) Create and solve problems involving the meaning of common fractions and decimal fractions by using physical materials.

5. For the areas of geometry and measurement:

(a) Recognize and describe geometry in everyday life.

(b) Describe, model, draw and sort shapes.

(c) Investigate and predict the results of combining, subdividing and changing shapes.

(d) Develop a sense of his surroundings and the objects contained in those surroundings.

(e) Relate geometric ideas to ideas relating to numbers and measurements.

(f) Describe the relative position and location of objects in space.

(g) Describe different figures and objects in terms of length, capacity, weight, area and volume.

(h) Describe the attributes of an object in terms of length, capacity, weight, area, volume, time, temperature and angle.

(i) Estimate and measure objects by using nonstandard units.

(j) Estimate and measure objects by using half units in customary measurement used in the United States and whole units in metric measurement.

(k) Make and use measurements to solve specific problems and situations in everyday life.

6. For the areas of probability and statistics:

(a) Investigate the concept of chance.

(b) Describe an example of probability in everyday life.

(c) Collect, organize and describe data by using different methods.

(d) Construct, read and interpret displays of data.

(e) Create and solve a problem that requires the collection and interpretation of data.

7. For the areas of patterns and relationships:

(a) Recognize, describe, extend and create a wide variety of patterns.

(b) Represent and describe mathematical relationships.

(c) Investigate the use of open sentences and variables to describe relationships by using physical materials.