

## NCTM Standards

### **Standard 1: Mathematics and Problem Solving**

In kindergarten through grade four, the study of mathematics should emphasize problem solving so that students can:

- a. use problem-solving approaches to investigate and understand mathematical content.
- b. formulate problems from everyday and mathematical solutions.
- c. develop and apply strategies to solve a wide variety of problems.
- d. acquire confidence in using mathematics meaningfully.

### **Standard 2: Mathematics as Communication**

In kindergarten through grade four, the study of mathematics should include numerous opportunities for communication so that students can:

- a. relate physical materials, pictures, and diagrams to mathematical ideas.
- b. reflect on and clarify their thinking about mathematical ideas and situations.
- c. relate their everyday language to mathematical language and symbols.
- d. realize that representing, reading, writing, discussing, and listening to mathematics are a vital part of learning mathematics.

### **Standard 3: Mathematics as Reasoning**

In kindergarten through grade four, the study of mathematics should emphasize reasoning so that students can:

- a. draw logical conclusions about mathematics.
- b. use models, known facts, properties, and relationships to justify their thinking.
- c. justify their answers and solutions' processes.
- d. believe that mathematics makes sense.

### **Standard 4: Mathematical Connections**

In kindergarten through grade four, the study of mathematics should include opportunities to make connections so that students can:

- a. link conceptual and procedural knowledge.
- b. relate various representations of concepts or procedures to one another.
- c. recognize relationships between different topics in mathematics.
- d. use mathematics in other curricular areas.
- e. use mathematics in their daily lives.

### **Standard 5: Estimation**

In kindergarten through grade four, the study of mathematics should:

- a. explore estimation strategies.

- b. recognize when an estimation is appropriate.
- c. determine the reasonableness of results.
- d. apply estimation when working with quantities, measurement, computation, and problem solving.

### **Standard 6: Number Sense and Numeration**

In kindergarten through grade four, the mathematics curriculum should include whole number concepts and skills so that students can:

- a. construct number meanings through real-world experiences and the use of physical materials. .
- b. understand the numeration system by relating counting, grouping, and place value concepts.
- c. develop number sense.
- d. interpret multiple use of numbers found in the real world.

### **Standard 7: Concepts of Whole Number Operations**

In kindergarten through grade four, the mathematics curriculum should include: concepts of addition, subtraction, multiplication, and division of whole numbers so that students can:

- a. develop meaning for the operation by modeling and discussing a rich variety of problem situations.
- b. relate the mathematical language and symbolism of operations to problems and informal language.
- c. recognize that a wide variety of problem structures can be represented by a single operation.
- d. develop operation sense.

### **Standard 8: Whole Number Computation**

In kindergarten through grade four, the mathematics curriculum should develop whole number computation so that students can:

- a. model, explain, and develop reasonable proficient.
- b. use a variety of mental computation and estimation techniques.
- c. use calculators in appropriate computational situations.
- d. select and use computation techniques appropriate to specific problems and determine whether the results are reasonable.

### **Standard 9: Geometry and Spatial Sense**

In kindergarten through grade four, the mathematics curriculum should include two dimensional and three-dimensional geometry so that students can:

- a. describe, model, draw, and classify shapes.
- b. develop spatial sense.
- c. relate geometric ideas to numbers measurement ideas.

d. recognize and appreciate geometry in their world.

### **Standard 10: Measurement**

In kindergarten through grade four, the mathematics curriculum should include measurement so that students can:

- a. understand the attributes of length, capacity, weight, area, volume, time, temperature, and angle.
- b. develop the process of measuring and concepts related to units of measurement.
- c. make and use estimates of measurement.
- d. make and use measurements in problems and everyday situations.

### **Standard 11: Statistics and Probability**

In kindergarten through grade four, the mathematics curriculum should include experiences with data analysis and probability so students can:

- a. collect, organize, and describe data.
- b. construct, read, and interpret displays of data.
- c. formulate and solve problems that involve collecting and analyzing data.
- d. explore concepts of chance.

### **Standard 12: Fractions and Decimals**

In kindergarten through grade four, the mathematics curriculum should include fractions and decimals so that students can:

- a. develop concepts of fractions, mixed numbers and decimals.
- b. develop number sense for fractions and decimals.
- c. use models to relate fractions to decimals and to find equivalent fractions.
- d. use models to explore operations on fractions and decimals.
- e. apply fractions and decimals to problem situations.

### **Standard 13: Patterns and Relationships**

In kindergarten through grade four, the mathematics curriculum should include the study of patterns and relationships so that the student can:

- a. recognize, describe, extend, and create a wide variety of patterns.
- b. represent and describe mathematical relationships.
- c. explore the use of variables and open sentences to express relationships.