

# MATHEMATICS

## KINDERGARTEN

### STANDARDS

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#### ***Nevada Grades K-12 Content Standards***

- 1.0 Students will accurately calculate and use estimation techniques, number relationships, operation rules, and algorithms; they will determine the reasonableness of answers and the accuracy of solutions to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.
- 2.0 Students will use various algebraic methods to analyze, illustrate, extend, and create numerous representations (words, numbers, tables, and graphs) of patterns, functions, and algebraic relations as modeled in practical situations to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.
- 3.0 Students will use appropriate tools and techniques of measurement to determine, estimate, record, and verify direct and indirect measurements to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.
- 4.0 Students will identify, represent, verify, and apply spatial relationships and geometric properties to solve problems, communicate, and make connections within and beyond the field of mathematics.
- 5.0 Students will collect, organize, display, interpret, and analyze data to determine statistical relationships and probability projections to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.

#### ***Nevada Grades K-12 Process Standards***

- A Students will develop their ability to **solve problems** by engaging in developmentally appropriate opportunities where there is a need to use various approaches to investigate and understand mathematical concepts.
- B Students will develop their ability to **communicate mathematically** by solving problems where there is a need to obtain information from the real world through reading, listening, and observing.
- C Students will develop their ability to **reason mathematically** by solving problems where there is a need to investigate mathematical ideas and construct their own learning in all content areas.
- D Students will develop the ability to make **mathematical connections** by solving problems where there is a need to view mathematics as an integrated whole.

## ESSENTIAL CONCEPTS, SKILLS, AND EXPERIENCES

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### NUMBERS, NUMBER SENSE, AND COMPUTATION

*It is expected that students will:*

- (K)1.1 recognize, read, and write numbers, 0 - 10 [NS/PS 1.K.3]
- (K)1.2 identify ordinal positions first to third [NS/PS 1.K.3]
- (K)1.3 match the number of objects in a set to the correct numeral, 0 - 10 [NS/PS 1.K.3]
- (K)1.4 recognize relationships of more than, less than, and equal to [NS 1.K.3]
- (K)1.5 recognize number words, 0 - 10
- (K)1.6 count to 20 by demonstrating one-to-one correspondence using objects [NS/PS 1.K.4]
- (K)1.7 use concrete objects to model simple addition and subtraction [NS/PS 1.K.5]
- (K)1.8 compare two sets to determine the difference (subtraction)
- (K)1.9 estimate the number of objects in a set of 10 and verify by counting
- (K)1.10 use number sense, computation, and estimation to solve mathematical and real-world problems

### PATTERNS, FUNCTIONS, AND ALGEBRA

*It is expected that students will:*

- (K)2.1 identify attributes used to sort objects [NS/PS 2.K.1]
- (K)2.2 create and describe patterns using objects, words, and numbers
- (K)2.3 recognize, replicate, and extend repeating patterns
- (K)2.4 identify and create sets of objects with unequal amounts, describing them as greater than or less than [NS/PS 2.K.3]

### MEASUREMENT

*It is expected that students will:*

- (K)3.1 compare, order, and describe objects by size [NS/PS 3.K.1]
- (K)3.2 identify and sort pennies, nickels, and dimes [NS/PS 3.K.4]
- (K)3.3 identify day, month, and year using a calendar
- (K)3.4 recite in order the days of the week [NS/PS 3.K.6]

### SPATIAL RELATIONSHIPS, GEOMETRY, AND LOGIC

*It is expected that students will:*

- (K)4.1 identify two-dimensional shapes (circles, triangles, rectangles including squares) regardless of orientation [NS/PS 4.K.1]
- (K)4.2 demonstrate an understanding of relative position words, including before/after, far/near, and over/under, to place objects [NS/PS 4.K.2]
- (K)4.3 identify two-dimensional figures (windows are shaped like rectangles) as they appear in the environment [NS/PS 4.K.3]

## MATHEMATICS KINDERGARTEN (continued)

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- (K)4.4 identify three-dimensional figures in the environment (sphere, cylinder, rectangular prism, cube, cone) [NS 4.K.4]
- (K)4.5 sort and classify objects by shape and color [NS 4.K.9]
- (K)4.6 put events in a logical sequence [4.K.9]

### DATA ANALYSIS

*It is expected that students will:*

- (K)5.1 collect, organize, and record data using objects and pictures [NS/PS 5.K.1]
- (K)5.2 represent data in a variety of ways in response to questions posed by teachers [NS 5.K.1]
- (K)5.3 describe and compare information (data) on graphs made with objects, pictures, or numbers

### PROBLEM SOLVING

*It is expected that students will:*

- (K)A.1 select, modify, develop, and apply strategies to solve a variety of mathematical and practical problems and to investigate and understand mathematical concepts [NS/PS A.K-2]
- (K)A.2 apply previous experience and knowledge to new problem solving situations [NS/PS A.K-2]
- (K)A.3 formulate their own problems; use various approaches to investigate and solve problems [NS/PS A.K-2]
- (K)A.4 explain and verify results with respect to the original problem [NS A.K-2]
- (K)A.5 try more than one strategy when the first strategy proves to be unproductive [NS A.K-2]
- (K)A.6 use technology, including calculators, to develop mathematical concepts (e.g., skip counting and pattern exploration) [NS A.K-2]

### MATHEMATICAL COMMUNICATION

*It is expected that students will:*

- (K)B.1 discuss and exchange ideas about mathematics as a part of learning [NS B.K-2]
- (K)B.2 use inquiry techniques (e.g., discussion, questioning, research, data gathering) to solve mathematical problems [NS B.K-2]
- (K)B.3 use physical materials, models, pictures, or writing to represent and communicate mathematical ideas [NS B.K-2]
- (K)B.4 explain and justify thinking about mathematical ideas and solutions
- (K)B.5 use everyday language, both orally and in writing, to explain thinking about strategies and solutions to mathematical problems [NS/PS B.K-2]
- (K)B.6 express mathematical ideas and use them to define, compare, and solve problems orally and in writing
- (K)B.7 use mathematical notation to communicate and explain mathematical situations (e.g., words, phrases, symbols) [NS B.K-2]

## MATHEMATICS KINDERGARTEN (continued)

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(K)B.8 read a variety of fiction and non-fiction texts to learn about mathematics [NS B.K-2]

### **MATHEMATICAL REASONING**

*It is expected that students will:*

- (K)C.1 justify and explain the solutions to problems using physical models [NS/PS C.K-2]
- (K)C.2 use patterns and relationships to analyze mathematical situations; draw logical conclusions about mathematical problems [NS/PS C.K-2]
- (K)C.3 ask questions to reflect on, clarify, and extend their thinking [NS C.K-2]
- (K)C.4 determine relevant, irrelevant, and/or sufficient information to solve mathematical problems [NS C.K-2]
- (K)C.5 discuss the steps used to solve a mathematical problem [NS C.K-2]

### **MATHEMATICAL CONNECTIONS**

*It is expected that students will:*

- (K)D.1 link new concepts to prior knowledge [NS/PS D.K-2]
- (K)D.2 integrate mathematics with other disciplines [NS D.K-2]
- (K)D.3 apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as rhythm in music and motion in science [NS D.K-2]
- (K)D.4 identify, explain, and use mathematics in everyday life [NS/PS D.K-2]