

# MATHEMATICS

## GRADE THREE

### 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:*

- (3)1.1 identify, use, and model place value positions of 1's, 10's, 100's, 1,000's, and 10,000's [NS/PS 1.3.1]
- (3)1.2 identify the value of a given digit in the 1's, 10's, 100's, and 1,000's place [NS 1.3.1]
- (3)1.3 read and write decimals (tenths and hundredths place)
- (3)1.4 model, sketch, label, and compare fractions with denominators to 10
- (3)1.5 identify and model the unit fractions  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ ,  $\frac{1}{6}$ , and  $\frac{1}{8}$  as equal part of a whole or sets of objects [NS 1.3.2]
- (3)1.6 read and write unit fractions with numbers and words [NS/PS 1.3.2]
- (3)1.7 read, write, compare, and order numbers from 0 - 9,999 [NS 1.3.3]
- (3)1.8 read and write number words to 100 [NS 1.3.3]
- (3)1.9 use ordinal positions first through hundredth
- (3)1.10 identify odd and even numbers
- (3)1.11 model and explain multiplication and division as skip counting patterns [NS 1.3.4]
- (3)1.12 model and explain multiplication and division as repeated addition or subtraction [NS/PS 1.3.4]
- (3)1.13 immediately recall and use addition and subtraction facts [NS/PS 1.3.5]
- (3)1.14 immediately recall multiplication facts, products to 81 [NS/PS 1.3.5]
- (3)1.15 recall division facts through the 10's
- (3)1.16 round numbers to nearest tens and hundreds to determine reasonableness of answers
- (3)1.17 use a variety of appropriate strategies, including mental computation, to estimate, compute, and solve mathematical and practical problems.
- (3)1.18 estimate the number of objects in a set using various techniques [NS 1.3.6]
- (3)1.19 add and subtract multi-digit numbers, with and without regrouping [NS/PS 1.3.7]
- (3)1.20 multiply a two-or three-digit number by a multiple of ten
- (3)1.21 divide a two-digit number by a one-digit number, without a remainder
- (3)1.22 add and subtract decimals using money as a model [NS/PS 1.3.7]
- (3)1.23 add and subtract decimals, tenths and hundredths
- (3)1.24 model addition, subtraction, multiplication, and division in a variety of ways [NS/PS 1.3.8]
- (3)1.25 generate and solve two-step addition and subtraction and one-step multiplication problems based on practical situations [NS/PS 1.3.8]
- (3)1.26 use mathematical vocabulary and symbols to describe multiplication and division [NS 1.3.8]

### PATTERNS, FUNCTIONS, AND ALGEBRA

*It is expected that students will:*

- (3)2.1 recognize, describe, and create repeating and increasing patterns using numbers

## MATHEMATICS GRADE THREE (continued)

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- (3)2.2 recognize, describe, and create patterns using objects and numbers found in tables, number charts, and charts [NS 2.3.1]
- (3)2.3 record results of patterns created using manipulatives, pictures, and numeric representations and describe how they are extended [NS 2.3.1]
- (3)2.4 describe and label with letters, words, and numbers the patterns observed in models of repeating and increasing patterns
- (3)2.5 model, explain, and solve open number sentences involving addition, subtraction, and multiplication facts [NS 2.3.2]
- (3)2.6 use variables and open sentences to express relationships [NS 2.3.2]
- (3)2.7 complete number sentences with the appropriate words and symbols (+, −, <, >, =) [NS/PS 2.3.3]

### MEASUREMENT

*It is expected that students will:*

- (3)3.1 estimate and use measuring devices with standard (customary and metric) and non-standard units to measure area, volume/capacity, and weight
- (3)3.2 read thermometers and compare results
- (3)3.3 compare, order, and describe objects by various measurable attributes for area and volume/capacity [NS 3.3.1]
- (3)3.4 communicate the relationships of more, less, and equivalent when solving measurement problems
- (3)3.5 measure and record to a required degree of accuracy to the nearest  $\frac{1}{2}$  unit. [NS 3.3.2]
- (3)3.6 select and use appropriate units of measure [NS 3.3.2]
- (3)3.7 identify perimeter and area of regular and irregular figures by counting units
- (3)3.8 identify dimensions and volume of rectangular prisms by counting cubes
- (3)3.9 determine possible combinations of coins and bills to equal given monetary amounts [NS/PS 3.3.4]
- (3)3.10 read, write, and use money notation [NS/PS 3.3.4]
- (3)3.11 recognize equivalent relationships between and among bills and coins [NS/PS 3.3.4]
- (3)3.12 tell time to the nearest minute, using analog and digital clocks [NS/PS 3.3.6]
- (3)3.13 use elapsed time in half-hour increments, beginning on the hour or half-hour, to determine start, end, and elapsed time [NS/PS 3.3.6]
- (3)3.14 recognize that there are 60 minutes in 1 hour [NS/PS 3.3.6]

### SPATIAL RELATIONSHIPS, GEOMETRY, AND LOGIC

*It is expected that students will:*

- (3)4.1 describe, sketch, compare, and contrast plane geometric figures [NS/PS 4.3.1]
- (3)4.2 demonstrate and describe the transformational motion of geometric figures (translation/slide, reflection/flip, and rotation/turn) [NS/PS 4.3.2]
- (3)4.3 identify a figure after transformation (flips, turns, slides)
- (3)4.4 identify lines of symmetry
- (3)4.5 create two-dimensional designs that contain a line of symmetry [NS 4.3.3.]

## MATHEMATICS GRADE THREE (continued)

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- (3)4.6 compare, contrast, sketch, model, and build two- and three-dimensional geometric figures and objects [NS/PS 4.3.4]
- (3)4.7 identify, draw, and describe horizontal, vertical and oblique lines [NS 4.3.6]
- (3)4.8 use quantifiers all, some, and none to describe characteristics of a set [NS 4.3.9]

### DATA ANALYSIS

*It is expected that students will:*

- (3)5.1 pose questions that can be used to guide data collection, organization, and representation [NS 5.3.1]
- (3)5.2 use graphical representations, including number lines, frequency tables, and pictographs to represent data [NS 5.3.1]
- (3)5.3 draw conclusions from charts, tables, and graphs to solve problems
- (3)5.4 use informal concepts of probability such as impossible, unlikely, likely, and certain to make predictions about future events [NS/PS 5.3.5]
- (3)5.5 conduct simple probability experiments using spinners, number cubes, and random drawings

### PROBLEM SOLVING

*It is expected that students will:*

- (3)A.1 select, modify, develop, apply, and justify strategies to solve a variety of mathematical and practical problems and to investigate and understand mathematical concepts [NS/PS A.3-5]
- (3)A.2 apply previous experience and knowledge to new problem solving situations [NS/PS A.3-5]
- (3)A.3 determine an efficient strategy, verify, interpret, and evaluate results with respect to the original problem [NS/PS A.3-5]
- (3)A.4 try more than one strategy when the first strategy proves to be unproductive [NS A.3-5]
- (3)A.5 apply multi-step, integrated, mathematical problem-solving strategies, persisting until a solution is found or until it is clear that no solution exists [NS/PS A.3-5]
- (3)A.6 generalize solutions and strategies to new problem situations [A.3-5]
- (3)A.7 interpret and solve a variety of mathematical problems by paraphrasing, identifying necessary and extraneous information, and ensuring the answer is reasonable [NS/PS A.3-5]
- (3)A.8 use technology, including calculators, to investigate and describe relationships such as patterns and functions, to develop mathematical concepts and solve problems [NS A.3-5]

### MATHEMATICAL COMMUNICATION

*It is expected that students will:*

- (3)B.1 discuss and exchange ideas about mathematics as a part of learning [NS B.3-5]
- (3)B.2 use inquiry techniques (discussion, questioning, research, and data gathering) to solve mathematical problems [NS B.3-5]

## MATHEMATICS GRADE THREE (continued)

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- (3)B.3 identify and translate key words and phrases that imply mathematical operations [NS/PS B.3-5]
- (3)B.4 use a variety of methods (physical materials, diagrams, and tables) to represent and communicate mathematical ideas through oral, verbal, and written formats [NS/PS B.3-5]
- (3)B.5 use everyday language to make conjectures, explain, and justify thinking about strategies and solutions to mathematical problems [NS B.3-5]
- (3)B.6 express mathematical ideas and use them to define, compare, and solve problems orally and in writing [NS B.3-5]
- (3)B.7 use mathematical words, phrases, and symbols to communicate and explain mathematical situations [NS B.3-5]
- (3)B.8 read a variety of fiction and nonfiction texts to learn about mathematics [NS B.3-5]

### **MATHEMATICAL REASONING**

*It is expected that students will:*

- (3)C.1 justify and explain the solutions to problems using manipulatives and physical models [NS C.3-5]
- (3)C.2 use patterns and relationships to analyze mathematical situations and draw logical conclusions about mathematical problems [NS/PS C.3-5]
- (3)C.3 follow a logical argument and judge its validity [NS C.3-5]
- (3)C.4 ask questions to reflect on, clarify, and extend thinking [NS C.3-5]
- (3)C.5 review and refine the assumptions and steps used to derive conclusions in mathematical arguments [NS C.3-5]
- (3)C.6 determine relevant, irrelevant, and/or sufficient information to solve mathematical problems [NS/PS C.3-5]

### **MATHEMATICAL CONNECTIONS**

*It is expected that students will:*

- (3)D.1 link new concepts to prior knowledge [NS D.3-5]
- (3)D.2 use mathematical ideas from one area of mathematics to explain an idea from another area of mathematics [NS D.3-5]
- (3)D.3 use physical models to explain the relationship of concepts to procedures [NS/PS D.3-5]
- (3)D.4 apply mathematical thinking and modeling to solve problems that arise in other disciplines such as rhythm in music and motion in science [NS D.3 5]
- (3)D.5 approach problems with flexibility in a variety of ways within and beyond the field of mathematics [NS D.3-5]
- (3)D.6 identify, explain, and use mathematics in everyday life [NS D.3-5]