Virginia Mathematics

Grade 2

Number and Number Sense	**NS.1**	**The student will utilize flexible counting strategies to determine and describe quantities up to 200.** 2.NS.1
	NS.2	**The student will demonstrate an understanding of the ten-to-one relationships of the base 10 number system to represent, compare, and order whole numbers up to 999.** 2.NS.2
	NS.3	**The student will use mathematical reasoning and justification to solve contextual problems that involve partitioning models into equal-sized parts (halves, fourths, eighths, thirds, and sixths).** 2.NS.3
	NS.4	**The student will solve problems that involve counting and representing money amounts up to $2.00.** 2.NS.4
Represent forward counting patterns when counting by groups of 2 up to at least 50, starting at various multiples of 2 and using a variety of tools (e.g., objects, number lines, hundreds charts). 2.NS.1.A	**a**	**Represent forward counting patterns when counting by groups of 2 up to at least 50, starting at various multiples of 2 and using a variety of tools (e.g., objects, number lines, hundreds charts).** 2.NS.1.A
Represent forward counting patterns created when counting by groups of 5s, 10s, and 25s starting at various multiples up to at least 200 using a variety of tools (e.g., objects, number lines, hundreds charts). 2.NS.1.B	**b**	**Represent forward counting patterns created when counting by groups of 5s, 10s, and 25s starting at various multiples up to at least 200 using a variety of tools (e.g., objects, number lines, hundreds charts).** 2.NS.1.B
Describe and use patterns in skip counting by multiples of 2 (to at least 50), and multiples of 5, 10, and 25 (to at least 200) to justify the	**c**	**Describe and use patterns in skip counting by multiples of 2 (to at least 50), and multiples of 5, 10, and 25 (to at least 200) to justify the next number in the counting sequence.** 2.NS.1.C

next number in the counting sequence. 2.NS.1.C	
Represent forward counting patterns when counting by groups of 100 up to at least 1,000 starting at 0 using a variety of tools (e.g., objects, number lines, calculators, one thousand charts). 2.NS.1.D	d Represent forward counting patterns when counting by groups of 100 up to at least 1,000 starting at 0 using a variety of tools (e.g., objects, number lines, calculators, one thousand charts). 2.NS.1.D
Represent backward counting patterns when counting by groups of 10 from 200 or less using a variety of tools including objects, number lines, calculators, and hundreds charts. 2.NS.1.E	e Represent backward counting patterns when counting by groups of 10 from 200 or less using a variety of tools including objects, number lines, calculators, and hundreds charts. 2.NS.1.E
Describe and use patterns in skip counting backwards by 10s (from at least 200) to justify the next number in the counting sequence. 2.NS.1.F	f Describe and use patterns in skip counting backwards by 10s (from at least 200) to justify the next number in the counting sequence. 2.NS.1.F
Choose a reasonable estimate up to 1,000 when given a contextual problem (e.g., What would be the best estimate for the number of students in our school – 5, 50, or 500?). 2.NS.1.G	g Choose a reasonable estimate up to 1,000 when given a contextual problem (e.g., What would be the best estimate for the number of students in our school – 5, 50, or 500?). 2.NS.1.G
Represent even numbers (up to 50) with concrete objects, using two equal groups or two equal addends. 2.NS.1.H	h Represent even numbers (up to 50) with concrete objects, using two equal groups or two equal addends. 2.NS.1.H

Represent odd numbers (up to 50) with concrete objects, using two equal groups with one leftover or two equal addends plus 1. 2.NS.1.I	**i Represent odd numbers (up to 50) with concrete objects, using two equal groups with one leftover or two equal addends plus 1.** 2.NS.1.I
Determine whether a number (up to 50) is even or odd using concrete objects and justify reasoning (e.g., dividing collections of objects into two equal groups, pairing objects). 2.NS.1.J	**j Determine whether a number (up to 50) is even or odd using concrete objects and justify reasoning (e.g., dividing collections of objects into two equal groups, pairing objects).** 2.NS.1.J
Write the three-digit whole number represented by a given model (e.g., concrete objects, pictures of base 10 blocks). 2.NS.2.A	**a Write the three-digit whole number represented by a given model (e.g., concrete objects, pictures of base 10 blocks).** 2.NS.2.A
Read, write, and represent three-digit numbers in standard form, expanded form, and word form, using concrete or pictorial representations. 2.NS.2.B	**b Read, write, and represent three-digit numbers in standard form, expanded form, and word form, using concrete or pictorial representations.** 2.NS.2.B
Apply patterns within the base 10 system to determine and communicate, orally and in written form, the place (ones, tens, hundreds) and value of each digit in a three-digit whole number (e.g., in 352, the 5 represents 5 tens and its value is 50). 2.NS.2.C	**c Apply patterns within the base 10 system to determine and communicate, orally and in written form, the place (ones, tens, hundreds) and value of each digit in a three-digit whole number (e.g., in 352, the 5 represents 5 tens and its value is 50).** 2.NS.2.C
Investigate and explain the ten-to-one relationships among	**d Investigate and explain the ten-to-one relationships among ones, tens, and hundreds, using models.** 2.NS.2.D

ones, tens, and hundreds, using models. 2.NS.2.D	
Compose and decompose whole numbers up to 200 by making connections between a variety of models (e.g., base 10 blocks, place value cards, presented orally, in expanded or standard form) and counting strategies (e.g., 156 can be 1 hundred, 5 tens, 6 ones; 1 hundred, 4 tens, 16 ones; 15 tens, 6 ones). 2.NS.2.E	e Compose and decompose whole numbers up to 200 by making connections between a variety of models (e.g., base 10 blocks, place value cards, presented orally, in expanded or standard form) and counting strategies (e.g., 156 can be 1 hundred, 5 tens, 6 ones; 1 hundred, 4 tens, 16 ones; 15 tens, 6 ones). 2.NS.2.E
Plot and justify the position of a given number up to 100 on a number line with pre-marked benchmarks of 1s, 2s, 5s, 10s, or 25s. 2.NS.2.F	f Plot and justify the position of a given number up to 100 on a number line with pre-marked benchmarks of 1s, 2s, 5s, 10s, or 25s. 2.NS.2.F
Compare two whole numbers, each 999 or less, represented concretely, pictorially, or symbolically, using words (greater than, less than, or equal to) and symbols (>, <, or =). Justify reasoning orally, in writing, or with a model. 2.NS.2.G	g Compare two whole numbers, each 999 or less, represented concretely, pictorially, or symbolically, using words (greater than, less than, or equal to) and symbols (>, <, or =). Justify reasoning orally, in writing, or with a model. 2.NS.2.G
Order up to three whole numbers, each 999 or less, represented concretely, pictorially, or symbolically from least to greatest and greatest to least. 2.NS.2.H	h Order up to three whole numbers, each 999 or less, represented concretely, pictorially, or symbolically from least to greatest and greatest to least. 2.NS.2.H

Model and describe fractions as representing equal-size parts of a whole. 2.NS.3.A	**a** **Model and describe fractions as representing equal-size parts of a whole.** 2.NS.3.A
Describe the relationship between the number of fractional parts needed to make a whole and the size of the parts (i.e., as the whole is divided into more parts, each part becomes smaller). 2.NS.3.B	**b** **Describe the relationship between the number of fractional parts needed to make a whole and the size of the parts (i.e., as the whole is divided into more parts, each part becomes smaller).** 2.NS.3.B
Compose the whole for a given fractional part and its value (in context) for halves, fourths, eighths, thirds, and sixths (e.g., when given 1 4 , determine how many pieces would be needed to make 4 4). 2.NS.3.C	**c** **Compose the whole for a given fractional part and its value (in context) for halves, fourths, eighths, thirds, and sixths (e.g., when given 1 4 , determine how many pieces would be needed to make 4 4).** 2.NS.3.C
Using same-size fraction pieces, from a region/area model, count by unit fractions up to two wholes (e.g., zero one-fourths, one one-fourth, two one-fourths, three one-fourths, four onefourths, five one-fourths; or zero-fourths, one-fourth, two-fourths, three-fourths, four-fourths, five-fourths). 2.NS.3.D	**d** **Using same-size fraction pieces, from a region/area model, count by unit fractions up to two wholes (e.g., zero one-fourths, one one-fourth, two one-fourths, three one-fourths, four onefourths, five one-fourths; or zero-fourths, one-fourth, two-fourths, three-fourths, four-fourths, five-fourths).** 2.NS.3.D
Given a context, represent, name, and write fractional parts of a whole for halves, fourths, eighths, thirds,	**i** **region/area models (e.g., pie pieces, pattern blocks, geoboards);** 2.NS.3.E.I **ii** **length models (e.g., paper fraction strips, fraction bars, rods, number lines); and** 2.NS.3.E.II **iii** **set models (e.g., chips, counters, cubes).** 2.NS.3.E.III

and sixths using: 2.NS.3.E	
Compare unit fractions for halves, fourths, eighths, thirds, and sixths using words (greater than, less than or equal to) and symbols (>, <, =), with region/area and length models. 2.NS.3.F	f Compare unit fractions for halves, fourths, eighths, thirds, and sixths using words (greater than, less than or equal to) and symbols (>, <, =), with region/area and length models. 2.NS.3.F
Identify a quarter and its value and determine multiple ways to represent the value of a quarter using pennies, nickels, and/or dimes. 2.NS.4.A	a Identify a quarter and its value and determine multiple ways to represent the value of a quarter using pennies, nickels, and/or dimes. 2.NS.4.A
Count by ones, fives, tens, and twenty-fives to determine the value of a collection of mixed coins and one-dollar bills whose total value is $2.00 or less. 2.NS.4.B	b Count by ones, fives, tens, and twenty-fives to determine the value of a collection of mixed coins and one-dollar bills whose total value is $2.00 or less. 2.NS.4.B
Construct a set of coins and/or bills to total a given amount of money whose value is $2.00 or less. 2.NS.4.C	c Construct a set of coins and/or bills to total a given amount of money whose value is $2.00 or less. 2.NS.4.C
Represent the value of a collection of coins and one-dollar bills (limited to $2.00 or less) using the cent (¢) and dollar ($) symbols and decimal point (.). 2.NS.4.D	d Represent the value of a collection of coins and one-dollar bills (limited to $2.00 or less) using the cent (¢) and dollar ($) symbols and decimal point (.). 2.NS.4.D
Computation and Estimation	CE.1 The student will recall with automaticity addition and subtraction facts within 20 and estimate, represent, solve, and justify solutions to single-step and multistep problems, including those in context, using addition and subtraction with whole numbers where addends or minuends do not exceed 100. 2.CE.1

Apply strategies (e.g., rounding to the nearest 10, compatible numbers, other number relationships) to estimate a solution for single-step addition or subtraction problems, including those in context, where addends and minuends do not exceed 100. 2.CE.1.A	a Apply strategies (e.g., rounding to the nearest 10, compatible numbers, other number relationships) to estimate a solution for single-step addition or subtraction problems, including those in context, where addends and minuends do not exceed 100. 2.CE.1.A
Apply strategies (e.g., the use of concrete and pictorial models, place value, properties of addition, the relationship between addition and subtraction) to determine the sum or difference of two whole numbers where addends or minuends do not exceed 100. 2.CE.1.B	b Apply strategies (e.g., the use of concrete and pictorial models, place value, properties of addition, the relationship between addition and subtraction) to determine the sum or difference of two whole numbers where addends or minuends do not exceed 100. 2.CE.1.B
Represent, solve, and justify solutions to single-step and multistep contextual problems (e.g., join, separate, part-part-whole, comparison) involving addition or subtraction of whole numbers where addends or minuends do not exceed 100. 2.CE.1.C	c Represent, solve, and justify solutions to single-step and multistep contextual problems (e.g., join, separate, part-part-whole, comparison) involving addition or subtraction of whole numbers where addends or minuends do not exceed 100. 2.CE.1.C
Demonstrate fluency with addition and subtraction within 20 by applying reasoning strategies (e.g., doubles, near doubles, make-a-ten, compensations,	d Demonstrate fluency with addition and subtraction within 20 by applying reasoning strategies (e.g., doubles, near doubles, make-a-ten, compensations, inverse relationships). 2.CE.1.D

inverse relationships). 2.CE.1.D	
Recall with automaticity addition and subtraction facts within 20. 2.CE.1.E	e Recall with automaticity addition and subtraction facts within 20. 2.CE.1.E
Use patterns, models, and strategies to make generalizations about the algebraic properties for fluency (e.g., 4 + 3 is equal to 3 + 4; 0 + 8 = 8). 2.CE.1.F	f Use patterns, models, and strategies to make generalizations about the algebraic properties for fluency (e.g., 4 + 3 is equal to 3 + 4; 0 + 8 = 8). 2.CE.1.F
Determine the missing number in an equation (number sentence) through modeling and justification with addition and subtraction within 20 (e.g., 3 + = 5 or + 2 = 5; 5 – = 3 or 5 – 2 =). 2.CE.1.G	g Determine the missing number in an equation (number sentence) through modeling and justification with addition and subtraction within 20 (e.g., 3 + = 5 or + 2 = 5; 5 – = 3 or 5 – 2 =). 2.CE.1.G
Use inverse relationships to write all related facts connected to a given addition or subtraction fact model within 20 (e.g., given a model for 3 + 4 = 7, write 4 + 3 = 7, 7 – 4 = 3, and 7 – 3 = 4). 2.CE.1.H	h Use inverse relationships to write all related facts connected to a given addition or subtraction fact model within 20 (e.g., given a model for 3 + 4 = 7, write 4 + 3 = 7, 7 – 4 = 3, and 7 – 3 = 4). 2.CE.1.H
Describe the not equal symbol (≠) as representing a relationship where expressions on either side of the not equal symbol represent different values and justify reasoning. 2.CE.1.I	i Describe the not equal symbol (≠) as representing a relationship where expressions on either side of the not equal symbol represent different values and justify reasoning. 2.CE.1.I

Represent and justify the relationship between values and expressions as equal or not equal using appropriate models and/or symbols (e.g., 9 + 24 = 10 + 23; 45 - 9 = 46 - 10; 15 +16 ≠ 31 +15). 2.CE.1.J	**j** **Represent and justify the relationship between values and expressions as equal or not equal using appropriate models and/or symbols (e.g., 9 + 24 = 10 + 23; 45 - 9 = 46 - 10; 15 +16 ≠ 31 +15).** 2.CE.1.J
Measurement and Geometry	**MG.1** **The student will reason mathematically using standard units (U.S. Customary) with appropriate tools to estimate, measure, and compare objects by length, weight, and liquid volume to the nearest whole unit.** 2.MG.1
	MG.2 **The student will demonstrate an understanding of the concept of time to the nearest five minutes, using analog and digital clocks.** 2.MG.2
	MG.3 **The student will identify, describe, and create plane figures (including circles, triangles, squares, and rectangles) that have at least one line of symmetry and explain its relationship with congruency.** 2.MG.3
	MG.4 **The student will describe, name, compare, and contrast plane and solid figures (circles/spheres, squares/cubes, and rectangles/rectangular prisms).** 2.MG.4
Explain the purpose of various measurement tools and how to use them appropriately by: 2.MG.1.A	**i** **identifying a ruler as an instrument to measure length;** 2.MG.1.A.I
	ii **identifying different types of scales as instruments to measure weight; and** 2.MG.1.A.II
	iii **identifying different types of measuring cups as instruments to measure liquid volume.** 2.MG.1.A.III
Use U.S. Customary units to estimate, measure, and compare the two for reasonableness: 2.MG.1.B	**i** **the length of an object to the nearest inch, using a ruler;** 2.MG.1.B.I
	ii **the weight of an object to the nearest pound, using a scale; and** 2.MG.1.B.II
	iii **the liquid volume of a container to the nearest cup, using a measuring cup.** 2.MG.1.B.III
Identify the number of minutes in an hour (60 minutes) and the number of hours in a day (24 hours). 2.MG.2.A	**a** **Identify the number of minutes in an hour (60 minutes) and the number of hours in a day (24 hours).** 2.MG.2.A

Determine the unit of time (minutes, hours, days, or weeks) that is most appropriate when measuring a given activity or context and explain reasoning (e.g., Would you measure the time it takes to brush your teeth in minutes or hours?). 2.MG.2.B	**b** Determine the unit of time (minutes, hours, days, or weeks) that is most appropriate when measuring a given activity or context and explain reasoning (e.g., Would you measure the time it takes to brush your teeth in minutes or hours?). 2.MG.2.B
Show, tell, and write time to the nearest five minutes, using analog and digital clocks. 2.MG.2.C	**c** Show, tell, and write time to the nearest five minutes, using analog and digital clocks. 2.MG.2.C
Match a written time (e.g., 1:35, 6:20, 9:05) to the time shown on an analog clock to the nearest five minutes. 2.MG.2.D	**d** Match a written time (e.g., 1:35, 6:20, 9:05) to the time shown on an analog clock to the nearest five minutes. 2.MG.2.D
Explore a figure using a variety of tools (e.g., paper folding, geoboards, drawings) to show and justify a line of symmetry, if one exists. 2.MG.3.A	**a** Explore a figure using a variety of tools (e.g., paper folding, geoboards, drawings) to show and justify a line of symmetry, if one exists. 2.MG.3.A
Create figures with at least one line of symmetry using various concrete and pictorial representations. 2.MG.3.B	**b** Create figures with at least one line of symmetry using various concrete and pictorial representations. 2.MG.3.B
Describe the two resulting figures formed by a line of symmetry as being congruent (having the same shape and size). 2.MG.3.C	**c** Describe the two resulting figures formed by a line of symmetry as being congruent (having the same shape and size). 2.MG.3.C
Trace faces of solid figures (cubes and rectangular prisms) to	**a** Trace faces of solid figures (cubes and rectangular prisms) to create the set of plane figures related to the solid figure. 2.MG.4.A

create the set of plane figures related to the solid figure. 2.MG.4.A	
Compare and contrast models and nets (cutouts) of cubes and rectangular prisms (e.g., number and shapes of faces, edges, vertices). 2.MG.4.B	**b** Compare and contrast models and nets (cutouts) of cubes and rectangular prisms (e.g., number and shapes of faces, edges, vertices). 2.MG.4.B
Given a concrete or pictorial model, name and describe the solid figure (sphere, cube, and rectangular prism) by its characteristics (e.g., number of edges, number of vertices, shapes of faces). 2.MG.4.C	**c** Given a concrete or pictorial model, name and describe the solid figure (sphere, cube, and rectangular prism) by its characteristics (e.g., number of edges, number of vertices, shapes of faces). 2.MG.4.C
Compare and contrast plane and solid figures (circles/spheres, squares/cubes, and rectangles/rectangular prisms) according to their characteristics (e.g., number and shapes of their faces, edges, vertices). 2.MG.4.D	**d** Compare and contrast plane and solid figures (circles/spheres, squares/cubes, and rectangles/rectangular prisms) according to their characteristics (e.g., number and shapes of their faces, edges, vertices). 2.MG.4.D
Probability and Statistics	**PS.1** The student will apply the data cycle (pose questions; collect or acquire data; organize and represent data; and analyze data and communicate results) with a focus on pictographs and bar graphs. 2.PS.1
Pose questions, given a predetermined context, that require the collection of data (limited to 25 or fewer data points for no more than six categories). 2.PS.1.A	**a** Pose questions, given a predetermined context, that require the collection of data (limited to 25 or fewer data points for no more than six categories). 2.PS.1.A

Determine the data needed to answer a posed question and collect the data using various methods (e.g., voting; creating lists, tables, or charts; tallying). 2.PS.1.B	**b** Determine the data needed to answer a posed question and collect the data using various methods (e.g., voting; creating lists, tables, or charts; tallying). 2.PS.1.B
Organize and represent a data set using a pictograph where each symbol represents up to 2 data points. Determine and use a key to assist in the analysis of the data. 2.PS.1.C	**c** Organize and represent a data set using a pictograph where each symbol represents up to 2 data points. Determine and use a key to assist in the analysis of the data. 2.PS.1.C
Organize and represent a data set using a bar graph with a title and labeled axes (limited to 25 or fewer data points for up to six categories, and limit increments of scale to multiples of 1 or 2). 2.PS.1.D	**d** Organize and represent a data set using a bar graph with a title and labeled axes (limited to 25 or fewer data points for up to six categories, and limit increments of scale to multiples of 1 or 2). 2.PS.1.D
Analyze data represented in pictographs and bar graphs and communicate results: 2.PS.1.E	**i** ask and answer questions about the data represented in pictographs and bar graphs (e.g., total number of data points represented, how many in each category, how many more or less are in one category than another). Pictograph keys will be limited to symbols representing 1, 2, 5, or 10 pieces of data and bar graphs will be limited to scales with increments in multiples of 1, 2, 5, or 10; and 2.PS.1.E.I
	ii draw conclusions about the data and make predictions based on the data. 2.PS.1.E.II
Patterns, Functions, and Algebra	**PFA.1** The student will describe, extend, create, and transfer repeating and increasing patterns (limited to addition of whole numbers) using various representations. 2.PFA.1
Identify and describe repeating and increasing patterns. 2.PFA.1.A	**a** Identify and describe repeating and increasing patterns. 2.PFA.1.A
Analyze a repeating or increasing pattern and generalize the change to	**b** Analyze a repeating or increasing pattern and generalize the change to extend the pattern using objects, pictures, and numbers. 2.PFA.1.B

extend the pattern using objects, pictures, and numbers. 2.PFA.1.B	
Create a repeating or increasing pattern using various representations (e.g., objects, pictures, numbers). 2.PFA.1.C	**c** **Create a repeating or increasing pattern using various representations (e.g., objects, pictures, numbers).** 2.PFA.1.C
Transfer a given repeating or increasing pattern from one form to another (e.g., objects, pictures, numbers) and explain the connection between the two patterns. 2.PFA.1.D	**d** **Transfer a given repeating or increasing pattern from one form to another (e.g., objects, pictures, numbers) and explain the connection between the two patterns.** 2.PFA.1.D