General and Specific Learning Outcomes by Strand

[C] Communication	[PS] Problem Solving
[CN] Connections	[R] Reasoning
[ME] Mental Mathematics and Estimation	[T] Technology
	[V] Visualization

Number

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
General Learning Outcome Develop number sense.	**General Learning Outcome** Develop number sense.	**General Learning Outcome** Develop number sense.	**General Learning Outcome** Develop number sense.	**General Learning Outcome** Develop number sense.
Specific Learning Outcomes	**Specific Learning Outcomes**	**Specific Learning Outcomes**	**Specific Learning Outcomes**	**Specific Learning Outcomes**
K.N.1. Say the number sequence by 1s, starting anywhere from 1 to 30 and from 10 to 1. [C, CN, V] K.N.2. Subitize and name familiar arrangements of 1 to 6 dots (or objects). [C, CN, ME, V] K.N.3. Relate a numeral, 1 to 10, to its respective quantity. [CN, R, V] K.N.4. Represent and describe numbers 2 to 10 in two parts, concretely and pictorially. [C, CN, ME, R, V] K.N.5. Demonstrate an understanding of counting to 10 by ■ indicating that the last number said identifies "how many" ■ showing that any set has only one count [C, CN, ME, R, V]	1.N.1. Say the number sequence by ■ 1s forward and backward between any two given numbers (0 to 100) ■ 2s to 30, forward starting at 0 ■ 5s and 10s to 100, forward starting at 0 [C, CN, ME, V] 1.N.2. Subitize and name familiar arrangements of 1 to 10 dots (or objects). [C, CN, ME, V] 1.N.3. Demonstrate an understanding of counting by ■ using the counting-on strategy ■ using parts or equal groups to count sets [C, CN, ME, R, V]	2.N.1. Say the number sequence from 0 to 100 by ■ 2s, 5s, and 10s, forward and backward, using starting points that are multiples of 2, 5, and 10 respectively ■ 10s using starting points from 1 to 9 ■ 2s starting from 1 [C, CN, ME, R] 2.N.2. Demonstrate if a number (up to 100) is even or odd. [C, CN, PS, R] 2.N.3. Describe order or relative position using ordinal numbers. [C, CN, R] 2.N.4. Represent and describe numbers to 100, concretely, pictorially, and symbolically. [C, CN, V]	3.N.1. Say the number sequence between any two given numbers forward and backward ■ from 0 to 1000 by ▪ 10s or 100s, using any starting point ▪ 5s, using starting points that are multiples of 5 ▪ 25s, using starting points that are multiples of 25 ■ from 0 to 100 by ▪ 3s, using starting points that are multiples of 3 ▪ 4s, using starting points that are multiples of 4 [C, CN, ME] 3.N.2. Represent and describe numbers to 1000, concretely, pictorially, and symbolically. [C, CN, V] 3.N.3. Compare and order numbers to 1000. [CN, R, V] 3.N.4. Estimate quantities less than 1000 using referents. [ME, PS, R, V]	4.N.1. Represent and describe whole numbers to 10 000, pictorially and symbolically. [C, CN, V] 4.N.2. Compare and order numbers to 10 000. [C, CN] 4.N.3. Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals), concretely, pictorially, and symbolically, by ■ using personal strategies ■ using the standard algorithms ■ estimating sums and differences ■ solving problems [C, CN, ME, PS, R]

Number (continued)

	[C] Communication	[PS] Problem Solving
	[CN] Connections	[R] Reasoning
	[ME] Mental Mathematics and Estimation	[T] Technology
		[V] Visualization

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.
Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes
5.N.1. Represent and describe whole numbers to 1 000 000. [C, CN, T, V] 5.N.2. Apply estimation strategies, including ■ front-end rounding ■ compensation ■ compatible numbers in problem-solving contexts. [C, CN, ME, PS, R, V] 5.N.3. Apply mental math strategies to determine multiplication and related division facts to 81 (9 x 9). [C, CN, ME, R, V]	6.N.1. Demonstrate an understanding of place value for numbers ■ greater than one million ■ less than one-thousandth [C, CN, R, T] 6.N.2. Solve problems involving large numbers, using technology. [ME, PS, T] 6.N.3. Demonstrate an understanding of factors and multiples by ■ determining multiples and factors of numbers less than 100 ■ identifying prime and composite numbers ■ solving problems involving factors or multiples [PS, R, V] 6.N.4. Relate improper fractions to mixed numbers. [CN, ME, R, V]	7.N.1. Determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10, and why a number cannot be divided by 0. [C, R] 7.N.2. Demonstrate an understanding of the addition, subtraction, multiplication, and division of decimals to solve problems (for more than 1-digit divisors or 2-digit multipliers, technology could be used). [ME, PS, T] 7.N.3. Solve problems involving percents from 1% to 100%. [C, CN, PS, ME, R, T] 7.N.4. Demonstrate an understanding of the relationship between repeating decimals and fractions, and terminating decimals and fractions. [C, CN, R, T]	8.N.1. Demonstrate an understanding of perfect squares and square roots, concretely, pictorially, and symbolically (limited to whole numbers). [C, CN, R, V] 8.N.2. Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers). [C, CN, ME, R, T] 8.N.3. Demonstrate an understanding of percents greater than or equal to 0%. [CN, PS, R, V] 8.N.4. Demonstrate an understanding of ratio and rate. [C, CN, V] 8.N.5. Solve problems that involve rates, ratios, and proportional reasoning. [C, CN, PS, R]	9.N.1. Demonstrate an understanding of powers with integral bases (excluding base 0) and whole-number exponents by ■ representing repeated multiplication using powers ■ using patterns to show that a power with an exponent of zero is equal to 1 ■ solving problems involving powers [C, CN, PS, R] 9.N.2. Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole-number exponents. [C, CN, PS, R, T] 9.N.3. Demonstrate an understanding of rational numbers by ■ comparing and ordering rational numbers ■ solving problems that involve arithmetic operations on rational numbers [C, CN, PS, R, T, V]

Recall of multiplication facts to 81 and related division facts is expected by the end of Grade 5.

Number *(continued)*

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.
Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes
K.N.6. Compare quantities, 1 to 10, ■ using one-to-one correspondence ■ by ordering numbers representing different quantities [C, CN, V]	1.N.4. Represent and describe numbers to 20, concretely, pictorially, and symbolically. [C, CN, V] 1.N.5. Compare and order sets containing up to 20 elements to solve problems by using ■ referents ■ one-to-one correspondence [C, CN, ME, PS, R, V] 1.N.6. Estimate quantities to 20 by using referents. [C, ME, PS, R, V] 1.N.7. Demonstrate, concretely and pictorially, how a number, up to 30, can be represented by a variety of equal groups with and without singles. [C, R, V] 1.N.8. Identify the number, up to 20, that is one more, two more, one less, and two less than a given number. [C, CN, ME, R, V]	2.N.5. Compare and order numbers up to 100. [C, CN, R, V] 2.N.6. Estimate quantities to 100 using referents. [C, ME, PS, R] 2.N.7. Illustrate, concretely and pictorially, the meaning of place value for numbers to 100. [C, CN, R, V] 2.N.8. Demonstrate and explain the effect of adding zero to or subtracting zero from any number. [C, R]	3.N.5. Illustrate, concretely and pictorially, the meaning of place value for numerals to 1000. [C, CN, R, V] 3.N.6. Describe and apply mental mathematics strategies for adding two 2-digit numerals, such as ■ adding from left to right ■ taking one addend to the nearest multiple of ten and then compensating ■ using doubles [C, ME, PS, R, V] 3.N.7. Describe and apply mental mathematics strategies for subtracting two 2-digit numerals, such as ■ taking the subtrahend to the nearest multiple of ten and then compensating ■ thinking of addition ■ using doubles [C, ME, PS, R, V]	4.N.4. Explain the properties of 0 and 1 for multiplication, and the property of 1 for division. [C, CN, R] 4.N.5. Describe and apply mental mathematics strategies, such as ■ skip-counting from a known fact ■ using doubling, halving ■ using doubling and adding one more group ■ using patterns in the 9s facts ■ using repeated doubling to develop an understanding of basic multiplication facts to 9 x 9 and related division facts. [C, CN, ME, PS, R] Recall of the multiplication and related division facts up to 5 x 5 is expected by the end of Grade 4.

Number *(continued)*

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.
Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes
5.N.4. Apply mental mathematics strategies for multiplication, such as ■ annexing then adding zeros ■ halving and doubling ■ using the distributive property [C, ME, R] 5.N.5. Demonstrate an understanding of multiplication (1- and 2-digit multipliers and up to 4-digit multiplicands), concretely, pictorially, and symbolically, by ■ using personal strategies ■ using the standard algorithm ■ estimating products to solve problems. [C, CN, ME, PS, V] 5.N.6. Demonstrate an understanding of division (1- and 2-digit divisors and up to 4-digit dividends), concretely, pictorially, and symbolically, and interpret remainders by ■ using personal strategies ■ using the standard algorithm ■ estimating quotients to solve problems. [C, CN, ME, PS]	6.N.5. Demonstrate an understanding of ratio, concretely, pictorially, and symbolically. [C, CN, PS, R, V] 6.N.6. Demonstrate an understanding of percent (limited to whole numbers), concretely, pictorially, and symbolically. [C, CN, PS, R, V] 6.N.7. Demonstrate an understanding of integers, concretely, pictorially, and symbolically. [C, CN, R, V]	7.N.5. Demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially, and symbolically (limited to positive sums and differences). [C, CN, ME, PS, R, V] 7.N.6. Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially, and symbolically. [C, CN, PS, R, V] 7.N.7. Compare and order fractions, decimals (to thousandths), and integers by using ■ benchmarks ■ place value ■ equivalent fractions and/or decimals [CN, R, V]	8.N.6. Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically. [C, CN, ME, PS] 8.N.7. Demonstrate an understanding of multiplication and division of integers, concretely, pictorially, and symbolically. [C, CN, PS, R, V] 8.N.8. Solve problems involving positive rational numbers. [C, CN, ME, PS, R, T, V]	9.N.4. Explain and apply the order of operations, including exponents, with and without technology. [PS, T] 9.N.5. Determine the square root of positive rational numbers that are perfect squares. [C, CN, PS, R, T] 9.N.6. Determine an approximate square root of positive rational numbers that are non-perfect squares. [C, CN, PS, R, T]

Number *(continued)*

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.
Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes
	1.N.9. Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially, and symbolically, by ■ using familiar and mathematical language to describe additive and subtractive actions from their experience ■ creating and solving problems in context that involve addition and subtraction ■ modelling addition and subtraction using a variety of concrete and visual representations, and recording the process symbolically [C, CN, ME, PS, R, V]	2.N.9. Demonstrate an understanding of addition (limited to 1- and 2-digit numerals) with answers to 100 and the corresponding subtraction by ■ using personal strategies for adding and subtracting with and without the support of manipulatives ■ creating and solving problems that involve addition and subtraction ■ explaining that the order in which numbers are added does not affect the sum ■ explaining that the order in which numbers are subtracted may affect the difference [C, CN, ME, PS, R, V]	3.N.8. Apply estimation strategies to predict sums and differences of two 2-digit numerals in a problem-solving context. [C, ME, PS, R] 3.N.9. Demonstrate an understanding of addition and subtraction of numbers with answers to 1000 (limited to 1-, 2-, and 3-digit numerals) by ■ using personal strategies for adding and subtracting with and without the support of manipulatives ■ creating and solving problems in contexts that involve addition and subtraction of numbers, concretely, pictorially, and symbolically. [C, CN, ME, PS, R]	4.N.6. Demonstrate an understanding of multiplication (2- or 3-digit numerals by 1-digit numerals) to solve problems by ■ using personal strategies for multiplication with and without concrete materials ■ using arrays to represent multiplication ■ connecting concrete representations to symbolic representations ■ estimating products [C, CN, ME, PS, R, V] 4.N.7. Demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) to solve problems by ■ using personal strategies for dividing with and without concrete materials ■ estimating quotients ■ relating division to multiplication [C, CN, ME, PS, R, V]

Number *(continued)*

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9

General Learning Outcome
    Develop number sense.
	General Learning Outcome
	    Develop number sense.			

Specific Learning Outcomes	Specific Learning Outcomes			

5.N.7. Demonstrate an understanding of fractions by using concrete and pictorial representations to
  ▪ create sets of equivalent fractions
  ▪ compare fractions with like and unlike denominators
  [C, CN, PS, R, V]
5.N.8. Describe and represent decimals (tenths, hundredths, thousandths), concretely, pictorially, and symbolically.
  [C, CN, R, V]
5.N.9. Relate decimals to fractions (tenths, hundredths, thousandths).
  [CN, R, V]
5.N.10. Compare and order decimals (tenths, hundredths, thousandths) by using
  ▪ benchmarks
  ▪ place value
  ▪ equivalent decimals
  [CN, R, V]
	6.N.8. Demonstrate an understanding of multiplication and division of decimals (involving 1-digit whole-number multipliers, 1-digit natural number divisors, and multipliers and divisors that are multiples of 10), concretely, pictorially, and symbolically, by
	  ▪ using personal strategies
	  ▪ using the standard algorithms
	  ▪ using estimation
	  ▪ solving problems
	  [C, CN, ME, PS, R, V]
	6.N.9. Explain and apply the order of operations, excluding exponents (limited to whole numbers).
	  [CN, ME, PS, T]			

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Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.
Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes	Specific Learning Outcomes
	1.N.10. Describe and use mental mathematics strategies, including ■ counting on, counting back ■ using one more, one less ■ making 10 ■ starting from known doubles ■ using addition to subtract to determine the basic addition and related subtraction facts to 18. [C, CN, ME, PS, R, V] Recall of one more and one less, complementary (compatible) numbers that add up to 5 and 10, doubles (up to 5 + 5), and related subtraction facts is expected by the end of Grade 1.	2.N.10. Apply mental mathematics strategies, including ■ using doubles ■ making 10 ■ using one more, one less ■ using two more, two less ■ building on a known double ■ using addition for subtraction to develop recall of basic addition facts to 18 and related subtraction facts. [C, CN, ME, R, V] Recall of facts to 10, doubles to 9 + 9, and related subtraction facts is expected by the end of Grade 2.	3.N.10. Apply mental math strategies to determine addition facts and related subtraction facts to 18 (9 + 9). [C, CN, ME, R, V] Recall of addition and related subtraction facts to 18 is expected by the end of Grade 3. 3.N.11. Demonstrate an understanding of multiplication to 5 × 5 by ■ representing and explaining multiplication using equal grouping and arrays ■ creating and solving problems in context that involve multiplication ■ modelling multiplication using concrete and visual representations, and recording the process symbolically ■ relating multiplication to repeated addition ■ relating multiplication to division [C, CN, PS, R]	4.N.8. Demonstrate an understanding of fractions less than or equal to one by using concrete and pictorial representations to ■ name and record fractions for the parts of a whole or a set ■ compare and order fractions ■ model and explain that for different wholes, two identical fractions may not represent the same quantity ■ provide examples of where fractions are used [C, CN, PS, R, V] 4.N.9. Describe and represent decimals (tenths and hundredths) concretely, pictorially, and symbolically. [C, CN, R, V]

Number (continued)

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
General Learning Outcome Develop number sense.				
Specific Learning Outcomes				
5.N.11. Demonstrate an understanding of addition and subtraction of decimals (to thousandths), concretely, pictorially, and symbolically, by ■ using personal strategies ■ using the standard algorithms ■ using estimation ■ solving problems [C, CN, ME, PS, R, V]				

Number *(continued)*

	[C] Communication	[PS] Problem Solving
	[CN] Connections	[R] Reasoning
	[ME] Mental Mathematics and Estimation	[T] Technology
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Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
			General Learning Outcome Develop number sense.	General Learning Outcome Develop number sense.
			Specific Learning Outcomes	Specific Learning Outcomes
			3.N.12. Demonstrate an understanding of division by ■ representing and explaining division using equal sharing and equal grouping ■ creating and solving problems in context that involve equal sharing and equal grouping ■ modelling equal sharing and equal grouping using concrete and visual representations, and recording the process symbolically ■ relating division to repeated subtraction ■ relating division to multiplication (limited to division related to multiplication facts up to 5×5). [C, CN, PS, R]	4.N.10. Relate decimals to fractions (to hundredths). [CN, R, V] 4.N.11. Demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by ■ using compatible numbers ■ estimating sums and differences ■ using mental math strategies to solve problems. [C, ME, PS, R, V]

Number *(continued)*

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9

Number *(continued)*

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
			General Learning Outcome Develop number sense.	
			Specific Learning Outcomes	
			3.N.13. Demonstrate an understanding of fractions by ■ explaining that a fraction represents a portion of a whole divided into equal parts ■ describing situations in which fractions are used ■ comparing fractions of the same whole with like denominators [C, CN, ME, R, V]	

Number *(continued)*

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9