Number

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
General Outcome Develop number sense.	**General Outcome** Develop number sense.	**General Outcome** Develop number sense.	**General Outcome** Develop number sense.	**General Outcome** Develop number sense.
Specific Outcomes 1. Represent and describe whole numbers to 1 000 000. [C, CN, V, T] [ICT: C6–2.2] 2. Use estimation strategies, including: • front-end rounding • compensation • compatible numbers in problem-solving contexts. [C, CN, ME, PS, R, V] 3. Apply mental mathematics strategies and number properties, such as: • skip counting from a known fact • using doubling or halving • using patterns in the 9s facts • using repeated doubling or halving to determine, with fluency, answers for basic multiplication facts to 81 and related division facts. [C, CN, ME, R, V]	**Specific Outcomes** 1. Demonstrate an understanding of place value, including numbers that are: • greater than one million • less than one thousandth. [C, CN, R, T] 2. Solve problems involving whole numbers and decimal numbers. [ME, PS, T] [ICT: C6–2.4] 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 using multiples and factors. [CN, PS, R, V] 4. Relate improper fractions to mixed numbers and mixed numbers to improper fractions. [CN, ME, R, V]	**Specific Outcomes** 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] 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, the use of technology is expected). [ME, PS, T] [ICT: P2–3.4] 3. Solve problems involving percents from 1% to 100%. [C, CN, PS, R, T] [ICT: P2–3.4] 4. Demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals and positive fractions. [C, CN, R, T] [ICT: P2–3.4]	**Specific Outcomes** 1. Demonstrate an understanding of perfect squares and square roots, concretely, pictorially and symbolically (limited to whole numbers). [C, CN, R, V] 2. Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers). [C, CN, ME, R, T] [ICT: P2–3.4] 3. Demonstrate an understanding of percents greater than or equal to 0%, including greater than 100%. [CN, PS, R, V] 4. Demonstrate an understanding of ratio and rate. [C, CN, V]	**Specific Outcomes** 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 one • solving problems involving powers. [C, CN, PS, R] 2. Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents: • $(a^m)(a^n) = a^{m+n}$ • $a^m \div a^n = a^{m-n}, m > n$ • $(a^m)^n = a^{mn}$ • $(ab)^m = a^m b^m$ • $\left(\dfrac{a}{b}\right)^n = \dfrac{a^n}{b^n}, b \neq 0.$ [C, CN, PS, R, T] [ICT: P2–3.4]

Number (continued)

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

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General Outcome Develop number sense.	**General Outcome** Develop number sense.	**General Outcome** Develop number sense.	**General Outcome** Develop number sense.	**General Outcome** Develop number sense.
Specific Outcomes 4. Apply mental mathematics strategies for multiplication, such as: - annexing then adding zero - halving and doubling - using the distributive property. [C, CN, ME, R, V] 5. Demonstrate, with and without concrete materials, an understanding of multiplication (2-digit by 2-digit) to solve problems. [C, CN, PS, V] 6. Demonstrate, with and without concrete materials, an understanding of division (3-digit by 1-digit), and interpret remainders to solve problems. [C, CN, ME, PS, R, V]	**Specific Outcomes** 5. Demonstrate an understanding of ratio, concretely, pictorially and symbolically. [C, CN, PS, R, V] 6. Demonstrate an understanding of percent (limited to whole numbers), concretely, pictorially and symbolically. [C, CN, PS, R, V] 7. Demonstrate an understanding of integers, concretely, pictorially and symbolically. [C, CN, R, V]	**Specific Outcomes** 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] 6. Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially and symbolically. [C, CN, PS, R, V]	**Specific Outcomes** 5. Solve problems that involve rates, ratios and proportional reasoning. [C, CN, PS, R] 6. Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially and symbolically. [C, CN, ME, PS] 7. Demonstrate an understanding of multiplication and division of integers, concretely, pictorially and symbolically. [C, CN, PS, R, V]	**Specific Outcomes** 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] [ICT: P2–3.4] 4. Explain and apply the order of operations, including exponents, with and without technology. [PS, T] [ICT: P2–3.4] 5. Determine the square root of positive rational numbers that are perfect squares. [C, CN, PS, R, T] [ICT: P2–3.4]

Number (continued)

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

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General Outcome Develop number sense.	**General Outcome** Develop number sense.	**General Outcome** Develop number sense.		**General Outcome** Develop number sense.
Specific Outcomes 7. Demonstrate an understanding of fractions by using concrete, pictorial and symbolic representations to: • create sets of equivalent fractions • compare fractions with like and unlike denominators. [C, CN, PS, R, V] 8. Describe and represent decimals (tenths, hundredths, thousandths), concretely, pictorially and symbolically. [C, CN, R, V] 9. Relate decimals to fractions and fractions to decimals (to thousandths). [CN, R, V] 10. Compare and order decimals (to thousandths) by using: • benchmarks • place value • equivalent decimals. [C, CN, R, V]	**Specific Outcomes** 8. Demonstrate an understanding of multiplication and division of decimals (1-digit whole number multipliers and 1-digit natural number divisors). [C, CN, ME, PS, R, V] 9. Explain and apply the order of operations, excluding exponents, with and without technology (limited to whole numbers). [C, CN, ME, PS, T] [ICT: C6–2.4, C6–2.7]	**Specific Outcomes** 7. Compare and order positive fractions, positive decimals (to thousandths) and whole numbers by using: • benchmarks • place value • equivalent fractions and/or decimals. [CN, R, V]		**Specific Outcomes** 6. Determine an approximate square root of positive rational numbers that are non-perfect squares. [C, CN, PS, R, T] [ICT: P2–3.4]

Number (continued)

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

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General Outcome Develop number sense.				
Specific Outcomes 11. Demonstrate an understanding of addition and subtraction of decimals (limited to thousandths). [C, CN, PS, R, V]				