

GRADE 7

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

NUMBER

General Outcome

Develop number sense.

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]

Note:

Through this outcome, students have the opportunity to maintain and refine previously learned operations with whole numbers:

Grade 4, Number SO 3 – Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals) by:

- *using personal strategies for adding and subtracting*
- *estimating sums and differences*
- *solving problems involving addition and subtraction.*

[C, CN, ME, PS, R]

Grade 5, Number SO 5 – Demonstrate, with and without concrete materials, an understanding of multiplication (2-digit by 2-digit) to solve problems.

[C, CN, PS, V]

Grade 5, Number SO 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]

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]
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]

NUMBER (continued)

6. Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially and symbolically.
[C, CN, PS, R, V]

Note:

Through this outcome, students have the opportunity to maintain and refine previously learned operations of addition and subtraction with whole numbers:

Grade 4, Number SO 3 – Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals) by:

- using personal strategies for adding and subtracting
- estimating sums and differences
- solving problems involving addition and subtraction.

[C, CN, ME, PS, R]

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]

PATTERNS AND RELATIONS (Patterns)

General Outcome

Use patterns to describe the world and to solve problems.

Specific Outcomes

1. Demonstrate an understanding of oral and written patterns and their equivalent linear relations.
[C, CN, R]
2. Create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.
[C, CN, PS, R, V]
[ICT: C7–3.1]

PATTERNS AND RELATIONS (Variables and Equations)

General Outcome

Represent algebraic expressions in multiple ways.

Specific Outcomes

3. Demonstrate an understanding of preservation of equality by:
- modelling preservation of equality, concretely, pictorially and symbolically
 - applying preservation of equality to solve equations.
- [C, CN, PS, R, V]
4. Explain the difference between an expression and an equation.
[C, CN]

PATTERNS AND RELATIONS (Variables and Equations) (continued)

5. Evaluate an expression, given the value of the variable(s).
[CN, R]

Note:

Through this outcome, students have the opportunity to maintain and refine previously learned operations with whole numbers:

Grade 4, Number SO 3 – Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals) by:

- *using personal strategies for adding and subtracting*
- *estimating sums and differences*
- *solving problems involving addition and subtraction.*

[C, CN, ME, PS, R]

Grade 5, Number SO 5 – Demonstrate, with and without concrete materials, an understanding of multiplication (2-digit by 2-digit) to solve problems.

[C, CN, PS, V]

Grade 5, Number SO 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]

6. Model and solve, concretely, pictorially and symbolically, problems that can be represented by one-step linear equations of the form $x + a = b$, where a and b are integers.
[CN, PS, R, V]

Note:

Through this outcome, students have the opportunity to maintain and refine previously learned operations of addition and subtraction with whole numbers:

Grade 4, Number SO 3 – Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals) by:

- *using personal strategies for adding and subtracting*
- *estimating sums and differences*
- *solving problems involving addition and subtraction.*

[C, CN, ME, PS, R]

PATTERNS AND RELATIONS (Variables and Equations) (continued)

7. Model and solve, concretely, pictorially and symbolically, problems that can be represented by linear equations of the form:

- $ax + b = c$
- $ax = b$
- $\frac{x}{a} = b, a \neq 0$

where a, b and c are whole numbers.

[CN, PS, R, V]

Note:

Through this outcome, students have the opportunity to maintain and refine previously learned operations with whole numbers:

Grade 4, Number SO 3 – Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals) by:

- using personal strategies for adding and subtracting
- estimating sums and differences
- solving problems involving addition and subtraction.

[C, CN, ME, PS, R]

Grade 5, Number SO 5 – Demonstrate, with and without concrete materials, an understanding of multiplication (2-digit by 2-digit) to solve problems.

[C, CN, PS, V]

Grade 5, Number SO 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]

SHAPE AND SPACE (Measurement)

General Outcome

Use direct and indirect measurement to solve problems.

Specific Outcomes

1. Demonstrate an understanding of circles by:

- describing the relationships among radius, diameter and circumference
- relating circumference to pi
- determining the sum of the central angles
- constructing circles with a given radius or diameter
- solving problems involving the radii, diameters and circumferences of circles.

[C, CN, PS, R, V]

2. Develop and apply a formula for determining the area of:

- triangles
- parallelograms
- circles.

[CN, PS, R, V]

SHAPE AND SPACE (3-D Objects and 2-D Shapes)

General Outcome

Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.

Specific Outcomes

3. Perform geometric constructions, including:

- perpendicular line segments
- parallel line segments
- perpendicular bisectors
- angle bisectors.

[CN, R, V]

SHAPE AND SPACE (Transformations)

General Outcome

Describe and analyze position and motion of objects and shapes.

Specific Outcomes

4. Identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs.

[C, CN, V]

5. Perform and describe transformations (translations, rotations or reflections) of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices).

[C, CN, PS, T, V]

[ICT: C6–3.4]

STATISTICS AND PROBABILITY (Data Analysis)

General Outcome

Collect, display and analyze data to solve problems.

Specific Outcomes

1. Demonstrate an understanding of central tendency and range by:

- determining the measures of central tendency (mean, median, mode) and range
- determining the most appropriate measures of central tendency to report findings.

[C, PS, R, T]

[ICT: P2–3.4]

2. Determine the effect on the mean, median and mode when an outlier is included in a data set.

[C, CN, PS, R]

3. Construct, label and interpret circle graphs to solve problems.

[C, CN, PS, R, T, V]

[ICT: P2–3.3]

STATISTICS AND PROBABILITY (Chance and Uncertainty)

General Outcome

Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.

Specific Outcomes

4. Express probabilities as ratios, fractions and percents.

[C, CN, R, T, V]

[ICT: P2–3.4]

STATISTICS AND PROBABILITY (Chance and Uncertainty) (continued)

5. Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events.
[C, ME, PS]
6. Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table or other graphic organizer) and experimental probability of two independent events.
[C, PS, R, T]
[ICT: C7–3.2, P2–3.4]