

Mathematics 3

Outcomes

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Mathematics Grade 3

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Mathematics Grade 3 Outcomes

N01: Students will be expected to say the number sequence forward and backward by:

- 1s through transitions to 1000
- 2s, 5s, 10s, or 100s, using any starting point to 1000
- 3s, using starting points that are multiples of 3 up to 100
- 4s, using starting points that are multiples of 4 up to 100
- 25s, using starting points that are multiples of 25 up to 200.

Performance Indicators:

- N01.01 Extend the number sequence by 1s, particularly through transition from decade to decade and century to century.
- N01.02 Extend a given skip counting sequence by 2s, 5s, 10s, or 100s, forward and backward, using a given starting point.
- N01.03 Extend a given skip counting sequence by 3s, forward and backward, starting at a given multiple of 3 up to 100.
- N01.04 Extend a given skip counting sequence by 4s, forward and backward, starting at a given multiple of 4 up to 100.
- N01.05 Extend a given skip counting sequence by 25s, forward and backward, starting at a given multiple of 25 up to 200.
- N01.06 Identify and correct errors and omissions in a given skip counting sequence.
- N01.07 Determine the value of a given set of coins (nickels, dimes, quarters, and loonies) by using skip counting.
- N01.08 Identify and explain the skip counting pattern for a given number sequence.

N02: Students will be expected to represent and partition numbers to 1000.

Performance Indicators:

- N02.01 Read a given three-digit numeral without using the word **and**.
- N02.02 Read a given number word (0 to 1000).
- N02.03 Represent a given number as an expression.
- N02.04 Represent a given number concretely and pictorially in a variety of ways.
- N02.05 Write number words for given multiples of ten to 90.
- N02.06 Write number words for given multiples of a hundred to 900.
- N02.07 Record numerals for numbers expressed orally, concretely, or pictorially.

N03: Students will be expected to compare and order numbers up to 1000.

Performance Indicators:

- N03.01 Place a given set of numbers in ascending or descending order and verify the result using a number chart or other models.
- N03.02 Create as many different 3-digit numerals as possible, given three different digits. Place the numbers in ascending or descending order.
- N03.04 Identify missing numbers in parts of a given number chart and on a number line.
- N03.05 Identify errors in a given number chart and on a number line.

N03.06 Place numbers on a number line containing benchmark numbers for the purpose of comparison.

N03.07 Compare numbers based on a variety of methods, and record the comparison using words and symbols ($=$, $>$ and $<$).

N04: Students will be expected to estimate quantities less than 1000 using referents.

Performance Indicators:

N04.01 Estimate the number of groups of ten in a given quantity using 10 as a referent (known quantity).

N04.02 Estimate the number of groups of a hundred in a given quantity using 100 as a referent.

N04.03 Estimate a given quantity by comparing it to a referent.

N04.04 Select an estimate for a given quantity by choosing among three possible choices.

N04.05 Select and justify a referent for determining an estimate for a given quantity.

N05: Students will be expected to illustrate, concretely and pictorially, the meaning of place value for numerals to 1000.

Performance Indicators:

N05.01 Record, in more than one way, the number represented by given proportional and non-proportional concrete materials in traditional and non-conventional formats.

N05.02 Represent a given number in different ways using proportional and non-proportional concrete materials and explain how they are equivalent; e.g., 351 can be represented as three 100s, five 10s, and one 1s; or two 100s, fifteen 10s and one 1s; or three 100s, four 10s, and eleven 1s.

N05.03 Record a given number in additive expanded form.

N05.04 Record a number represented by base-ten blocks arranged in a non-conventional format.

N06: Students will be expected to describe and apply mental mathematics strategies for adding two 2-digit numerals.

Performance Indicators:

N06.01 Explain mental mathematics strategies that could be used to determine a sum.

- Ten and some more
- Tens and some more
- Quick addition
- Addition facts to 10 applied to multiples of 10
- Addition on the hundred chart
- Adding on
- Make ten
- Compensation
- Compatible numbers

N06.02 Use and describe a personal strategy for determining a sum.

N06.03 Determine a sum of two 2-digit numerals efficiently, using mental mathematics strategies.

N07: Students will be expected to describe and apply mental mathematics strategies for subtracting two 2-digit numerals.

Performance Indicators:

N07.01 Explain mental mathematics strategies that could be used to determine a difference.

- Facts with minuends of 10 or less applied to multiples of 10
- Quick subtraction
- Subtraction on the hundred chart
- Compensation
- Back through ten

N07.02 Use and describe a personal strategy for determining a difference.

N07.03 Determine a difference of two 2-digit numerals efficiently, using mental mathematics strategies

N08: Students will be expected to apply estimation strategies to predict sums and differences of 1-, 2-, and 3-digit numerals in a problem-solving context.

Performance Indicators:

N08.01 Explain estimation strategies that could be used to determine an approximate sum or difference.

N08.02 Use and describe a strategy for determining an estimate.

N08.03 Estimate the solution for a given story problem involving the sum or difference of up to two 3-digit numerals.

N09: Students will be expected to demonstrate an understanding of addition and subtraction of numbers (limited to 1-, 2-, and 3-digit numerals) with answers to 1000 by:

- using personal strategies for adding and subtracting with and without the support of manipulatives
- creating and solving problems in context that involve addition and subtraction of numbers concretely, pictorially, and symbolically

Performance Indicators:

N09.01 Model the addition of two or more given numbers using concrete or visual representations and record the process symbolically.

N09.02 Model the subtraction of two given numbers using concrete or visual representations and record the process symbolically.

N09.03 Create an addition or subtraction story problem for a given solution.

N09.04 Determine the sum of two given numbers using a personal strategy, e.g., for $326 + 48$, record $300 + 60 + 14$.

N09.05 Determine the difference of two given numbers using a personal strategy, e.g., for $127 - 38$, record $2 + 80 +$ or $127 - 20 - 10 - 8$.

N09.06 Solve a given problem involving the sum or difference of two given numbers.

N10: Students will be expected to apply mental mathematics strategies and number properties to develop quick recall of basic addition facts to 18 and related basic subtraction facts.

Performance Indicators:

- N10.01 Describe a mental mathematics strategy that could be used to determine a given basic addition fact up to $9 + 9$.
- N10.02 Explain how the commutative (order-doesn't-matter) property and the identity (no-change-with-zero) property can assist in addition fact learning.
- N10.03 Describe a mental mathematics strategy that could be used to determine a given basic subtraction fact with minuends up to 18 and subtrahends up to 9.
- N10.04 Recognize which facts could be determined by a given strategy.
- N10.05 Quickly recall basic addition facts to 18 and related subtraction facts in a variety of contexts.

N11: Students will be expected to 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 involves multiplication
- modelling multiplication using concrete and visual representations and recording the process symbolically
- relating multiplication to repeated addition
- relating multiplication to division

Performance Indicators:

- N11.01 Identify events from experience that can be described as multiplication.
- N11.02 Represent a given story problem (orally, shared reading, written) using manipulatives or diagrams and record in a number sentence.
- N11.03 Represent a given multiplication expression as repeated addition.
- N11.04 Represent a given repeated addition as multiplication.
- N11.05 Create and illustrate a story problem for a given number sentence and/or expression.
- N11.06 Represent, concretely or pictorially, equal groups for a given number sentence.
- N11.07 Represent a given multiplication expression using an array.
- N11.08 Create an array to model the commutative property of multiplication.
- N11.09 Relate multiplication to division by using arrays and writing related number sentences.
- N11.10 Solve a given problem in context involving multiplication

N12: Students will be expected to 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 .)

Performance Indicators:

- N12.01 Identify events from experience that can be described as equal sharing.
- N12.02 Identify events from experience that can be described as equal grouping.
- N12.03 Illustrate, with counters or a diagram, a given story problem involving equal sharing, presented orally or through shared reading, and solve the problem.
- N12.04 Illustrate, with counters or a diagram, a given story problem involving equal grouping, presented orally or through shared reading, and solve the problem.
- N12.05 Listen to a story problem, represent the numbers using manipulatives or a diagram and record the problem with a number sentence and/or expression.
- N12.06 Create and illustrate with counters, a story problem for a given number sentence and/or expression.
- N12.07 Represent a given division sentence and/or expression as repeated subtraction.
- N12.08 Represent a given repeated subtraction as a division sentence.
- N12.09 Relate division to multiplication by using arrays and writing related number sentences.
- N12.10 Solve a given problem involving division.

N13: Students will be expected to demonstrate an understanding of fractions by:

- explaining that a fraction represents a part of a whole
- describing situations in which fractions are used
- comparing fractions of the same whole with like denominators

Performance Indicators:

- N13.01 Describe everyday situations where fractions are used.
- N13.02 Represent a given fraction concretely or pictorially.
- N13.03 Identify, model, and explain the meaning of numerator and denominator.
- N13.04 Sort a given set of diagrams of regions into those that represent equal parts and those that do not, and explain the sorting.
- N13.05 Name and record the fraction represented by the shaded and non-shaded parts of a given region.
- N13.06 Compare given fractions with the same denominator using models.

PR01: Students will be expected to demonstrate an understanding of increasing patterns by describing, extending, comparing, and creating numerical (numbers to 1000) patterns and non-numerical patterns using manipulatives, diagrams, sounds, and actions.

Performance Indicators:

- PR01.01 Identify and describe increasing patterns.
- PR01.02 Describe a given increasing pattern by stating a pattern rule that includes the starting point and a description of how the pattern continues.
- PR01.03 Extend a pattern, using the pattern rule, for the next three terms.
- PR01.04 Compare numeric patterns.
- PR01.05 Identify and explain errors in a given increasing pattern.
- PR01.06 Create a concrete, pictorial, or symbolic representation of an increasing pattern for a given pattern rule.
- PR01.07 Create a concrete, pictorial, or symbolic increasing pattern and describe the pattern rule.
- PR01.08 Solve a given problem using increasing patterns.
- PR01.09 Identify and describe the strategy used to determine a missing term in a given increasing pattern.
- PR01.10 Use ordinal numbers (to 100th) to refer to or to predict terms within an increasing pattern.

PR02: Students will be expected to demonstrate an understanding of decreasing patterns by describing, extending, comparing, and creating numerical (numbers to 1000) patterns and non-numerical patterns using manipulatives, diagrams, sounds, and actions.

Performance Indicators:

- PR02.01 Identify and describe decreasing patterns.
- PR02.02 Describe a given decreasing pattern by stating a pattern rule that includes the starting point and a description of how the pattern continues.
- PR02.03 Extend a pattern using the pattern rule for the next three terms.
- PR02.04 Compare numeric patterns.
- PR02.05 Identify and explain errors in a given decreasing pattern.
- PR02.06 Create a concrete, pictorial, or symbolic representation of a decreasing pattern for a given pattern rule.
- PR02.07 Create a concrete, pictorial, or symbolic decreasing pattern and describe the pattern rule.
- PR02.08 Solve a given problem using decreasing patterns.
- PR02.09 Identify and describe the strategy used to determine a missing term in a given decreasing pattern.
- PR02.10 Use ordinal numbers (to 100th) to refer to or to predict terms within a decreasing pattern.

PR03: Students will be expected to solve one-step addition and subtraction equations involving symbols representing an unknown number.

Performance Indicators:

PR03.01 Explain the purpose of the symbol in a given addition and in a given subtraction equation with one unknown.

PR03.02 Create an addition or subtraction equation with one unknown to represent a given combination or separate action.

PR03.03 Provide an alternative symbol for the unknown in a given addition or subtraction equation.

PR03.04 Solve a given addition or subtraction equation that represents combining or separating actions with one unknown using manipulatives.

PR03.05 Solve a given addition or subtraction equation with one unknown using a variety of strategies including guess and check.

PR03.06 Explain why the unknown in a given addition or subtraction equation has only one value.

M01: Students will be expected to relate the passage of time to common activities using standard units (minutes, hours, days, weeks, months, years).

Performance Indicators:

M01.02 Identify activities that can or cannot be accomplished in minutes, hours, days, weeks, months, and years.

M01.03 Provide personal referents for minutes and hours.

M01.04 Select and use a standard unit of measure, such as minutes, hours, days, weeks, and months to measure the passage of time and explain the choice.

M02: Students will be expected to relate the number of seconds to a minute, the numbers of minutes to an hour, the numbers of hours to a day, and the number of days to a month in a problem-solving context.

Performance Indicators:

M02.02 Solve a given problem involving the number of seconds in a minute, the number of minutes in an hour, the number of hours in a day, or the number of days in a given month.

M02.03 Create a calendar that includes days of the week, dates, and personal events.

M03: Students will be expected to demonstrate an understanding of measuring length (cm, m) by

- selecting and justifying referents for the units centimetre or metre (cm, m)
- modelling and describing the relationship between the units centimetre or metre (cm, m)
- estimating length using referents
- measuring and recording length, width, and height

Performance Indicators:

- M03.01 Provide a personal referent for one centimetre and explain the choice.
M03.02 Provide a personal referent for one metre and explain the choice.
M03.03 Match a given standard unit to a given referent.
M03.04 Show that 100 centimetres is equivalent to 1 metre by using concrete materials.
M03.05 Estimate the length of an object using personal referents.
M03.06 Determine and record the length and width of a given 2-D shape.
M03.07 Determine and record the length, width or height of a given 3-D object.
M03.08 Draw a line segment of a given length using a ruler.
M03.09 Sketch a line segment of a given length without using a ruler.

M04: Students will be expected to demonstrate an understanding of measuring mass (g, kg) by

- selecting and justifying referents for the units gram and kilogram (g, kg)
- modelling and describing the relationship between the units gram and kilogram (g, kg)
- estimating mass using referents
- measuring and recording mass

Performance Indicators:

- M04.01 Provide a personal referent for one gram and explain the choice.
M04.02 Provide a personal referent for one kilogram and explain the choice.
M04.03 Match a given standard unit to a given referent.
M04.04 Explain the relationship between 1000 grams and 1 kilogram using a model.
M04.05 Estimate the mass of a given object using personal referents.
M04.06 Measure, using a balance scale, and record the mass of given everyday objects using the units gram (g) and kilogram (kg).
M04.07 Provide examples of 3-D objects that have a mass of approximately 1 g, 100 g, and 1 kg.
M04.08 Determine the mass of two given similar objects with different masses and explain the results.
M04.09 Determine the mass of an object, change its shape, re-measure its mass and explain the results.

M05: Students will be expected to demonstrate an understanding of perimeter of regular, irregular, and composite shapes by

- estimating perimeter using referents for centimetre or metre (cm, m)
- measuring and recording perimeter (cm, m)
- create different shapes for a given perimeter (cm, m) to demonstrate that many shapes are possible for a perimeter

Performance Indicators:

- M05.01 Measure and record the perimeter of a given regular shape and explain the strategy used.
- M05.02 Measure and record the perimeter of a given irregular or composite shape and explain the strategy used.
- M05.03 Construct a shape for a given perimeter (cm, m).
- M05.04 Construct or draw more than one shape for the same given perimeter.
- M05.05 Estimate the perimeter of a given shape (cm, m) using personal referents.

G01: Students will be expected to describe 3-D objects according to the shape of the faces.

Performance Indicators:

- G01.01 Identify the faces, edges, and vertices of given 3-D objects, including spheres, cones, cylinders, pyramids, cubes and other prisms.
- G01.02 Identify the shape of the faces of a given 3-D object.
- G01.04 Sort a given set of 3-D objects.

G02: Students will be expected to name, describe, compare, create, and sort regular and irregular polygons, including triangles, quadrilaterals, pentagons, hexagons, and octagons according to the number of sides.

Performance Indicators:

- G02.01 Classify a given set of regular and irregular polygons according to the number of sides.
- G02.02 Identify given regular and irregular polygons having different dimensions.
- G02.03 Identify given regular and irregular polygons having different positions.

SP01: Students will be expected to collect first-hand data and organize it using tally marks, line plots, charts, and lists to answer questions.

Performance Indicators:

- SP01.01 Record the number of objects in a given set using tally marks.
- SP01.02 Determine the common attributes of line plots by comparing line plots in a given set.
- SP01.03 Organize a given set of data using tally marks, line plots, charts, or lists.
- SP01.04 Collect and organize data using tally marks, line plots, charts, and lists.
- SP01.05 Answer questions arising from a given line plot, chart, or list.
- SP01.06 Answer questions using collected data.

SP02: Students will be expected to construct, label, and interpret bar graphs to solve problems.

Performance Indicators:

SP02.01 Determine the common attributes, title, and axes of bar graphs by comparing bar graphs in a given set.

SP02.02 Create bar graphs from a given set of data including labelling the title and axes.

SP02.03 Draw conclusions from a given bar graph to solve problems.

SP02.04 Solve problems by constructing and interpreting a bar graph.