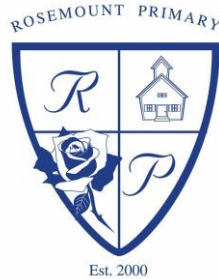


# Rosemount Primary School



## National Benchmarks for Numeracy and Maths Second Level



## **About the National Benchmarks**

The National Benchmarks have been introduced to ensure consistency of standards and expectations across teachers and schools, and to support reporting on progression in learning.

The Benchmarks support teacher professional judgement of achievement of a level. They set out very clear statements about what children need to know and be able to do to achieve each level of the curriculum.

Assessment is an on-going process to support learning. The Benchmarks are used to help monitor progress towards achievement of a level and to support overall professional judgement of when a learner has achieved a curriculum level. Evidence of progress and achievement will come from:

- observing day-to-day learning within, and outwith, the classroom;
- coursework, including tests;
- learning conversations;
- planned periodic holistic assessments;
- and information from standardised assessments.

Benchmarks are used to review this body of evidence to determine if the standard has been achieved and the learner has:

- Achieved a breadth of learning across the knowledge, understanding and skills as set out in the experiences and outcomes for the level.
- Responded consistently well to the level of challenge set out in the experiences and outcomes for the level and has moved forward to learning at the next level in some aspects.
- Demonstrated application of what they have learned in new and unfamiliar situations.

Benchmarks are not checklists for teachers to work their way through from top to bottom. Teachers will plan learning and teaching appropriate to your child's age, stage, ability and prior learning.

Routes towards the National Benchmarks will be different from child to child, as they progress through their individual learning journeys and work towards achieving the National Benchmarks BY THE END OF A LEVEL (P1 / P4 / P7).

**BY THE END OF P7, most learners can:**

<b>Number, Money and Measure</b>	Estimation and rounding	<ul style="list-style-type: none"> <li>• Rounds whole numbers to the nearest 1000, 10 000 and 100 000.</li> <li>• Rounds decimal fractions to the nearest whole number, to one decimal place and two decimal places.</li> <li>• Applies knowledge of rounding to give an estimate to a calculation appropriate to the context.</li> </ul>
	Number and number processes	<ul style="list-style-type: none"> <li>• Reads, writes and orders whole numbers to 1 000 000, starting from any number in the sequence.</li> <li>• Explains the link between a digit, its place and its value for whole numbers to 1 000 000.</li> <li>• Reads, writes and orders sets of decimal fractions to three decimal places.</li> <li>• Explains the link between a digit, its place and its value for numbers to three decimal places.</li> <li>• Partitions a wide range of whole numbers and decimal fractions to three decimal places, for example, <math>3.6 = 3 \text{ ones and } 6 \text{ tenths} = 36 \text{ tenths}</math>.</li> <li>• Adds and subtracts multiples of 10, 100 and 1000 to and from whole numbers and decimal fractions to two decimal places.</li> <li>• Adds and subtracts whole numbers and decimal fractions to two decimal places, within the number range 0 to 1 000 000.</li> <li>• Uses multiplication and division facts to the 10th multiplication table.</li> <li>• Multiplies and divides whole numbers by multiples of 10, 100 and 1000.</li> <li>• Multiplies and divides decimal fractions to two decimal places by 10, 100 and 1000.</li> <li>• Multiplies whole numbers by two digit numbers. □ Multiplies decimal fractions to two decimal places by a single digit.</li> <li>• Divides whole numbers and decimal fractions to two decimal places, by a single digit, including answers expressed as decimal fractions, for example, <math>43 \div 5 = 8.6</math>.</li> <li>• Applies the correct order of operations in number calculations when solving multi-step problems.</li> <li>• Identifies familiar contexts in which negative numbers are used.</li> <li>• Orders numbers less than zero and locates them on a number line.</li> </ul>
	Multiples, factors and primes	<ul style="list-style-type: none"> <li>• Identifies multiples and factors of whole numbers and applies knowledge and understanding of these when solving relevant problems in number, money and measurement.</li> </ul>
	Fractions, decimal fractions and percentages	<ul style="list-style-type: none"> <li>• Uses knowledge of equivalent forms of common fractions, decimal fractions and percentages, for example, <math>\frac{3}{4} = 0.75 = 75\%</math>, to solve problems.</li> <li>• Calculates simple percentages of a quantity, and uses this knowledge to solve problems in everyday contexts, for example, calculates the sale price of an item with a discount of 15%.</li> <li>• Calculates simple fractions of a quantity and uses this knowledge to solve problems, for example, find <math>\frac{3}{5}</math> of 60.</li> <li>• Creates equivalent fractions and uses this knowledge to put a set of most commonly used fractions in order.</li> <li>• Expresses fractions in their simplest form.</li> </ul>

<b>Number, Money and Measure</b>	Money	<ul style="list-style-type: none"> <li>Carries out money calculations involving the four operations.</li> <li>Compares costs and determines affordability within a given budget.</li> <li>Demonstrates understanding of the benefits and risks of using bank cards and digital technologies.</li> <li>Calculates profit and loss accurately, for example, when working with a budget for an enterprise activity.</li> </ul>
	Time	<ul style="list-style-type: none"> <li>Reads and records time in both 12 hour and 24 hour notation and converts between the two.</li> <li>Knows the relationships between commonly used units of time and carries out simple conversion calculations, for example, changes 1 3/4 hours into minutes.</li> <li>Uses and interprets a range of electronic and paper-based timetables and calendars to plan events or activities and solve real life problems.</li> <li>Calculates durations of activities and events including situations bridging across several hours and parts of hours using both 12 hour clock and 24 hour notation.</li> <li>Estimates the duration of a journey based on knowledge of the link between speed, distance and time.</li> <li>Chooses the most appropriate timing device in practical situations and records using relevant units, including hundredths of a second.</li> <li>Selects the most appropriate unit of time for a given task and justifies choice.</li> </ul>
	Measurement	<ul style="list-style-type: none"> <li>Uses the comparative size of familiar objects to make reasonable estimations of length, mass, area and capacity.</li> <li>Estimates to the nearest appropriate unit, then measures accurately: length, height and distance in millimetres (mm), centimetres (cm), metres (m) and kilometres (km); mass in grams (g) and kilograms (kg); and capacity in millilitres (ml) and litres (l).</li> <li>Calculates the perimeter of simple straight sided 2D shapes in millimetres (mm), centimetres (cm) and metres (m).</li> <li>Calculates the area of squares, rectangles and right-angled triangles in square millimetres (mm<sup>2</sup>), square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>).</li> <li>Calculates the volume of cubes and cuboids in cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>).</li> <li>Converts between common units of measurement using decimal notation, for example, 550 cm = 5.5 m; 3 009 kg = 3009 g.</li> <li>Chooses the most appropriate measuring device for a given task and carries out the required calculation, recording results in the correct unit.</li> <li>Reads a variety of scales accurately.</li> <li>Draws squares and rectangles accurately with a given perimeter or area.</li> <li>Demonstrates understanding of the conservation of measurement, for example, draw three different rectangles each with an area of 24 cm<sup>2</sup>.</li> <li>Shows awareness of imperial units used in everyday life, for example, miles or stones.</li> </ul>

<b>Number, Money and Measure</b>	Mathematics – its impact on the world, past, present and future	<ul style="list-style-type: none"> <li>• Researches and presents examples of the impact mathematics has in the world of life and work.</li> <li>• Contributes to discussions and activities on the role of mathematics in the creation of important inventions, now and in the past.</li> </ul>
	Patterns and relationships	<ul style="list-style-type: none"> <li>• Explains and uses a rule to extend well known number sequences including square numbers, triangular numbers and Fibonacci sequence.</li> <li>• Applies knowledge of multiples, square numbers and triangular numbers to generate number patterns.</li> </ul>
	Expressions and equations	<ul style="list-style-type: none"> <li>• Solves simple algebraic equations with one variable, for example, <math>a - 30 = 40</math> and <math>4b = 20</math>.</li> </ul>
<b>Shape, Position and Movement</b>	Properties of 2D shapes and 3D objects	<ul style="list-style-type: none"> <li>• Describes 3D objects and 2D shapes using specific vocabulary including regular, irregular, diagonal, radius, diameter and circumference. Applies this knowledge to demonstrate understanding of the relationship between 3D objects and their nets.</li> <li>• Identifies and describes 3D objects and 2D shapes within the environment and explains why their properties match their function.</li> <li>• Knows that the radius is half of the diameter.</li> <li>• Uses digital technologies and mathematical instruments to draw 2D shapes and make representations of 3D objects, understanding that not all parts of the 3D object can be seen.</li> </ul>
	Angle, symmetry and transformation	<ul style="list-style-type: none"> <li>• Uses mathematical language including acute, obtuse, straight and reflex to describe and classify a range of angles identified within shapes in the environment.</li> <li>• Measures and draws a range of angles to within <math>0 \pm 2</math>.</li> <li>• Knows that complementary angles add up to <math>90^\circ</math> and supplementary angles add up to <math>180^\circ</math> and uses this knowledge to calculate missing angles.</li> <li>• Uses knowledge of the link between the eight compass points and angles to describe, follow and record directions.</li> <li>• Interprets maps, models or plans with simple scales, for example, 1 cm:2 km.</li> <li>• Describes, plots and records the location of a point, in the first quadrant, using coordinate notation.</li> <li>• Identifies and illustrates line symmetry on a wide range of 2D shapes and applies this understanding to complete a range of symmetrical patterns, with and without the use of digital technologies.</li> </ul>

<b>Information Handling</b>	Data and analysis	<ul style="list-style-type: none"> <li>• Devises ways of collecting data in the most suitable way for the given task.</li> <li>• Collects, organises and displays data accurately in a variety of ways including through the use of digital technologies, for example, creating surveys, tables, bar graphs, line graphs, frequency tables, simple pie charts and <u>spreadsheets</u>.</li> <li>• Analyses, interprets and draws conclusions from a variety of data.</li> <li>• Draws conclusions about the reliability of data taking into account, for example, the author, the audience, the scale and sample size used.</li> <li>• Displays data appropriately making effective use of technology and chooses a suitable scale when creating graphs.</li> </ul>
	Ideas of chance and uncertainty	<ul style="list-style-type: none"> <li>• Uses the language of probability accurately to describe the likelihood of simple events occurring, for example equal chance; fifty-fifty; one in two, two in three; percentage chance; and <math>1/6</math>.</li> <li>• Plans and carries out simple experiments involving chance with repeated trials, for example, 'what is the probability of throwing a six if you throw a die fifty times?'</li> <li>• Uses data to predict the outcome of a simple experiment.</li> </ul>

