

Newport Convent Primary School



Roll number:04067F

Mathematics Policy

Newport Convent Primary School Mathematics Policy

1. Introductory Statement and Rationale:

(a) Introductory Statement

This working document is a statement of the aims and objectives, principals and strategies for implementing the mathematics programme at Newport Convent Primary School. It was formulated by all the stakeholders and informed by the Primary Mathematics Curriculum (2023), the needs of the children in Newport Convent Primary School and the expertise and experience of the staff of Newport Convent Primary School.

The policy has been developed:

- To benefit teaching and learning in our school
- To ensure high quality learning, teaching and assessment for all children attending our school
- To provide a coherent approach to the teaching of Maths across the whole school
- To ensure that pupils are given adequate opportunities to develop skills and understanding of concepts and support them in realising their full potential as envisaged in the Primary Mathematics Curriculum (2023)

(b) Rationale:

Learning Mathematics

Mathematics is the study of the relationships, connections and patterns that surround us, and is thus intrinsic to our concept of the world. Mathematics greatly enhances our capacity to understand and engage fully with the world around us. A child's mathematical learning journey begins from birth. Children initially learn Mathematics through their interactions and experiences in their home environment. They later build on this learning through early childhood, primary, special and post-primary education.

Every child is mathematical

Every child has an innate, intuitive and instinctive sense of Mathematics. Every child is capable of engaging with mathematical concepts and ideas from birth, and deepening and developing their learning over time. Primary mathematics

education evokes children's innate ability to think and communicate mathematically, to solve problems and to make sense of the world using Mathematics. Children are encouraged and supported to have a positive disposition to Mathematics and to develop their mathematical understanding, language, communication skills, perseverance and resilience, interactions and expressions.

Mathematics is both a human and social phenomenon

Mathematics learning is dependent on social and cultural experiences as well as on children's educational experiences in school. Primary mathematics education provides children with playful and engaging learning experiences that promote mathematical thinking, such as modeling, thinking aloud and maths talk. It also provides opportunities for children to collaborate, communicate mathematical thinking and express their understanding in multiple ways and in various contexts.

Mathematics is a tool that helps us to make sense of our world

Mathematics is used to think about, see and organise our everyday lives and the world. Primary mathematics education equips children with mathematical, statistical and financial literacy skills and tools. It helps them to better function in, critically engage with and navigate the world around them. It also enables children to develop the language of Mathematics so that they can communicate and solve problems using Mathematics.

Mathematics is beautiful and worthy of pursuit in its own right

It is important that children have the opportunity to engage with Mathematics as a discipline in its own right and to explore its many intriguing aspects. Through playful, creative and engaging learning opportunities, children can experience the beauty and power of Mathematics. Primary mathematics education fosters a love of Mathematics. It provides children with the opportunity to explore, discover and refine their ideas. Children are supported to think critically and flexibly, and to be creative and innovative in their approach to learning Mathematics.

Mathematics is everywhere and for everyone

Mathematics is a human activity that develops in response to everyday problems and interactions. Primary mathematics education provides children with opportunities to engage with appropriately rich, meaningful and challenging Mathematics in educational settings, including social and familial settings. Such engagement results in children co-constructing knowledge and skills as they interact and collaborate to solve real and complex problems.

2. Vision:

Our school cherishes all pupils equally and recognise that all children are unique, competent and caring individuals. We aim to provide a strong foundation for every child to thrive and flourish and support them in realising their full potential as envisaged in the Primary Mathematics Curriculum (2023). This will take place through high quality learning, teaching and assessment that is inclusive and responsive. It is our vision that as the children in Newport Convent Primary School work towards the Learning Outcomes in the Mathematics Curriculum and engage in rich mathematical learning experiences, they will simultaneously build and develop the key competencies:

- Being an active citizen
- Being creative
- Being a digital learner
- Being mathematical
- Being a communicator and using language
- Being well
- Being an active learner

3.Aims:

We endorse the aims of the Primary Mathematics Curriculum (2023). The over-arching aim of the Primary Mathematics Curriculum is the development of mathematical proficiency. Mathematical proficiency encompasses conceptual understanding, procedural fluency, adaptive reasoning, strategic competence, and productive disposition. Importantly, all five aspects are interwoven and interdependent.

Conceptual Understanding: The comprehension of mathematical concepts, operations and relations

Procedural Fluency: The ability to use a variety of mathematical procedures in an effective and efficient way

Adaptive Reasoning: The capacity to use logic to understand, explain and justify one's thinking

Strategic Competence: The skill to devise, represent and solve mathematical problems

Productive Disposition: The tendency to see Mathematics as practical, useful and worthwhile

4.Strands and Elements

Strands and Strand Units:

Strands outline the main categories of mathematical learning (what children learn) across five domains or content areas of primary mathematics: algebra; data and chance; measures; number; and shape and space. Each strand has a set of strand units.

Algebra	Data and chance	Measures	Number	Shape and space
Patterns, rules and relationships	Data	Measuring	Uses of number	Spatial awareness and location
Expressions and equations	Chance	Time	Numeration and counting	Shape
		Money	Place value and base ten	Transformation
			Sets and operations	
			Fractions	

The strand structure of the curriculum should not be taken to imply that topics are to be explored in isolation. Where appropriate, connections should be made between and across the strands, and with other areas of learning, to enhance their interrelatedness and relevance for learning.

Elements:

Elements describe the main categories of processes (how children learn) that children engage in as they learn Mathematics. These processes include connecting, communicating, reasoning, justifying, representing, problem-solving, generalising and argumentation, and are categorised into four elements: understanding and connecting;

communicating; reasoning and applying; and problem solving. These are central to the development of the children's mathematical proficiency.

<p>Element 1: Understanding and connecting</p>	<p>Children make connections between related concepts and procedures-the 'why' and the 'how' of Mathematics-and between the new and prior knowledge, in order to make sense of what they are learning. They apply and connect their understanding to contexts within Mathematics, with other areas of learning and with the real world.</p>
<p>Element 2: Communicating</p>	<p>Children use appropriate language and/or means of communication and a variety of representations and conventions to convey thinking, ideas, relationships and logical arguments. They improve and refine their thinking and communication through engaging in inquiry-based learning and social learning environments that promote discourse and groupwork.</p>
<p>Element 3: Reasoning</p>	<p>Children develop and apply reasoning to make , assess and justify ideas and conjectures. They engage in logical thought and actions such as analysing, proving, inferring, and generalising. They plan and construct solid arguments to justify their explanations, proofs and decision making.</p>
<p>Element 4: Applying and problem solving</p>	<p>Children investigate, develop, select, apply, interpret, model and compare a variety of problem-solving situations and strategies as they explore Mathematics and deepen their mathematical understanding. They apply their mathematical knowledge and skills in flexible, efficient and creative ways to solve problems; conduct investigations; and develop and share their computational thinking.</p>

5. Learning Outcomes:

Learning Outcomes describe the expected mathematical learning and development for children at the end of a two-year period, when due account is taken of individual abilities and varying circumstances. Learning Outcomes will help teachers in Newport Convent Primary School to:

1. plan, teach and reflect on their use of appropriate methods for teaching and learning
2. use appropriate assessment methods to gather evidence of children's mathematical thinking
3. provide focused feedback to children and parents.

Reflecting the principles and pedagogical approaches in the Primary Curriculum Framework, the 'stem' **Through appropriately playful and engaging learning experiences'** will be used to introduce the Learning Outcomes across all stages. We, the staff at Newport Convent Primary School, will endeavour to use a playful and engaging approach to Mathematics to present Mathematics as an open and accessible learning space, while encouraging the children to appreciate the beauty, challenge and power of Mathematics.

We recognise the importance of creating a learning environment that motivates the children to develop their mathematical proficiency and provides for rich learning experiences that reflect relevant pedagogical approaches as outlined in chapter 6, 'The Primary Mathematics Curriculum in Practice'.

The curriculum recognises that children learn, and teachers teach in a variety of contexts. Therefore, the learning and teaching journey is varied and different across contexts.

A Learning Outcomes approach recognises that teachers are best placed to determine the learning needs and strengths of the children in their class. The teachers at Newport Convent Primary School will make decisions about what, and how, to teach and assess using appropriate pedagogical approaches and tools.

Learning Outcomes, when shared with children, can support them to have clear expectations and to be active agents in their own learning.

The following tables provide an overview of the Learning Outcomes and Labels for each Strand.

Learning Outcomes for Stages 1-4

Stage 1:	Stage 2:	Stage 3:	Stage 4:
Junior and Senior Infants	First and second classes	Third and fourth classes:	Fifth and sixth classes:

Through appropriately playful and engaging learning experiences, children should be able to

Patterns, rules and relationships	explore, extend and create patterns and sequences.	identify and express relationships in patterns, including growing or shrinking shape patterns and number sequences.	identify rules that describe the structure of a pattern and use these rules to make predictions. represent the relationships between quantities.	identify, explain and apply generalisations, including properties of operations, mathematical models and patterns. represent mathematical structures in multiple ways, including verbal expressions, diagrams and symbolic representations.
Expressions and equations		interpret the meaning of symbols or pictures in number sentences.	represent and express problems with known and unknown values in different ways to include the use of appropriate letter symbols or words.	articulate, represent and solve mathematical situations through the use of expressions and equations that include letter symbols.

Learning Outcomes for Data and Chance Strands

Stage 1:	Stage 2:	Stage 3:	Stage 4:
Junior and Senior Infants	First and second classes	Third and fourth classes:	Fifth and sixth classes:

Through appropriately playful and engaging learning experiences, children should be able to

Data	explore, interpret and explain data in a variety of ways for a range of purposes.	pose questions of interest, record and use data as evidence to answer those questions and communicate the findings.	pose questions of interest and collect, display and critically analyse data in a range of ways for a range of purposes and communicate the findings.	pose questions, collect, compare, summarise and represent data selectively to answer those questions. critically analyse and evaluate findings; and communicate inferences, conclusions and implications from the findings.
Chance			describe and test predictability and (un)certainty in events.	use probability to make informed decisions and predictions. represent and express probability in different forms.

Learning Outcomes for Measurement

Stage 1:	Stage 2:	Stage 3:	Stage 4:
Junior and Senior Infants	First and second classes	Third and fourth classes:	Fifth and sixth classes:

Through appropriately playful and engaging learning experiences, children should be able to

Measuring	demonstrate an awareness that attributes such as length, weight, capacity and area can be measured and compared.	compare, approximate and measure length, weight, capacity and area using appropriate instruments and record using appropriate units of measurement.	compare, estimate and measure length, weight, capacity, area and volume using appropriate instruments and record and communicate appropriately. identify the relationship between equivalent units of measurement and rename measures using equivalent units.	determine and calculate units of measurement in fractional and/or decimal form to solve practical problems. find, interpret and deduce measures experimentally with increasing precision.
Time	develop a sense of time and its uses.	understand how time is measured, expressed and represented. explore equivalent expressions of time.	compare, approximate and measure time using appropriate units of measurement. identify the relationship between different units and representations of time.	solve and pose practical tasks and problems involving the interpretation and calculation of time.
Money	develop an awareness of money and its uses.	recognise the value of money and use euro and cent in a range of meaningful contexts.	transfer knowledge of the base ten system in number to monetary contexts and use for purposes of calculation.	solve and pose practical tasks to investigate and make informed judgements about transactions and financial plans.

Learning Objectives in Mathematics

Stage 1: Junior and Senior Infants	Stage 2: First and second classes	Stage 3: Third and fourth classes:	Stage 4: Fifth and sixth classes:
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Through appropriately playful and engaging learning experiences, children should be able to

Uses of number	develop an awareness that numbers have a variety of uses.			
Numeration and counting	develop an awareness that the purpose of counting is to quantify. use a range of counting strategies for a range of purposes.	demonstrate proficiency in using and applying different counting strategies.		
Place value and base ten	develop a sense of ten as the foundation for place value and counting.	understand that digits have different values depending on their place or position in a number. use estimation to quickly determine number values and number calculations.	explore equivalent numerical expressions of numbers using the base ten system.	investigate how decimals and percentages (and fractions) can be compared, ordered and expressed in related terms.
Sets and operations	recognise and understand what happens when quantities (sets) are partitioned and combined.	select, make use of and represent a range of addition and subtraction strategies.	understand and apply flexibly the four operations; and the relationships between operations.	build upon, select and make use of a range of operation strategies.
Fractions	develop an awareness of part-whole relationships using a variety of models (area, length and set).	recognise and name fractions according to their part-whole relationships. explore the concept of equivalence in terms of simple fractions.	compare and express in equivalent terms; and order fractions. calculate the fraction of quantities and express in multiple ways.	explore (model, compare and convert) the relationships between fractions, decimals and percentages investigate proportionality and ratios of quantities (sets).

Learning Objectives for Shape and Solids

Stage 1:	Stage 2:	Stage 3:	Stage 4:
Junior and Senior Infants	First and second classes	Third and fourth classes:	Fifth and sixth classes:

Through appropriately playful and engaging learning experiences, children should be able to

Spatial awareness and location	<p>develop a sense of spatial awareness in relation to their bodies and the immediate environment.</p> <p>describe the spatial features of objects and their relative position in space.</p>	<p>use spatial knowledge for the purposes of orientation and navigation.</p> <p>visualise and model location using symbolic co-ordinates.</p>	<p>describe, interpret and record directional instructions and location.</p> <p>compare and classify angles, recognising them as a property of a shape and as a description of a turn.</p>	<p>describe location on the full co-ordinate plane.</p> <p>interpret scale maps and create simple scale drawings.</p>
Shape	<p>explore and recognise properties of 3-D and 2-D shapes.</p>	<p>examine, categorise and model 3-D and 2-D shapes.</p>	<p>investigate and analyse the properties of 3-D and 2-D shapes and identify classes of shapes based on these properties.</p> <p>represent shapes with drawings and models and calculate dimensions of shapes.</p>	<p>construct 3-D and 2-D models or structures given defined measurements and/or specific conditions.</p> <p>investigate and construct angles in the context of shape; and solve angle-related problems.</p>
Transformation	<p>explore the effects of shape movements.</p>	<p>understand that shapes and line segments can be reflected, rotated and translated.</p>	<p>model and explain the effects of transformations on shapes and line segments.</p>	<p>perform and devise a range of steps involving transformations.</p> <p>analyse and show how shapes are enlarged on scaled diagrams.</p>

5. Approaches and Methodologies:

The staff at Newport Convent Primary School recognise that ‘How’ children learn is as important as ‘what’ children learn. In providing for playful and engaging mathematical learning experiences, it is essential to offer opportunities for children to:



Figure 8: Mathematical learning opportunities

Technology and mathematical tools can be useful to support children's mathematical thinking and conceptual understanding. These can also reduce

procedural load and support children to represent complex ideas.

The **five key pedagogical practices** for the classroom are:

- Fostering productive disposition
- Encouraging playfulness
- Emphasising mathematical modelling

- Using cognitively challenging tasks
- Promoting maths talk.

The five key pedagogical practices are acknowledged as essential to the provision of quality mathematical learning experiences. They are dynamic and naturally link with each other.

Teachers can help foster children's **productive disposition** by:

- demonstrating enthusiasm for Mathematics themselves
- providing rich and meaningful contexts for learning
- celebrating effort and success
- valuing the process as well as the product of learning
- normalising struggle and mistakes as part of the learning process
- Giving children opportunities to interact and work collaboratively with their peers
- facilitating children to find patterns and make connections
- encouraging children to take risks and persevere
- engaging children in meaningful self-assessment and reflection.

Teachers can help encourage **playfulness** with Mathematics by:

- playful in their own dispositions and interactions with children
- tapping into children's interests and curiosities
- integrating mathematical learning with playful activities throughout the day
- signalling when children encounter Mathematics in spontaneous play and exploration
- introducing and reinforcing mathematical language as it arises through play
- encouraging multiple means of expression and representation
- providing opportunities for children to explore and experiment with mathematical ideas
- allowing a safe space for spontaneity, creativity and imaginative play with Mathematics
- providing access to a wide range of resources, visual supports and technologies.

Teachers can help emphasise **mathematical modeling** by:

- providing opportunities for sense-making
- allowing freedom and autonomy for children to develop and express their own models and solution pathways

- using model-eliciting activities, questions, prompts and feedback to provoke situations for modeling
- encouraging individuality, choice and independence
- facilitating children to build, test and apply mathematical models
- challenging children to test and refine their models through collaboration
- celebrating diversity and creativity in working with mathematical models
- supporting children to generalise their models for a range of different contexts and purposes.

Teachers can help promote the use of **cognitively challenging tasks** by:

- selecting, designing or modifying tasks to appropriately stretch and deepen children's understanding
- providing opportunities for deep and sustained engagement with mathematical content and processes through the use of tasks
- allowing children to grapple with ideas and problems freely and to explore problems with multiple correct solution pathways
- encouraging different ways of solving problems
- assisting children to make connections with prior and new learning
- encouraging children to express and communicate their ideas frequently and openly
- holding high expectations for what children are capable of understanding, doing and communicating
- providing opportunities for children to collectively share and evaluate their experiences from working with tasks
- celebrating individual and collaborative effort and success in grappling with challenging tasks.

Teachers can help promote the use of **maths talk** by:

- providing a safe environment for children to share and exchange thinking and ideas
- encouraging active listening, respect and value for all contributions
- identifying and selecting appropriate situations and problems to promote maths talk
- re-casting everyday experiences using mathematical words and phrases
- prompting maths talk through strategic, skilful, open and thoughtful questioning
- providing suggestions for parents on how to promote and stimulate maths talk at home
- allowing waiting time and time for sustained interactions, collective sharing and reflection

- re-voicing children's mathematical ideas
<https://www.pdst.ie/primary/stem/lets-talk/maths>

6. Maths Talk:

Talk and discussion is an integral part of the learning process. Through maths talk, children can engage in rich mathematical processes which deepen their understanding of Mathematics. Maths talk equips children with tools to make their thinking visible. Research suggests that mathematical language plays a vital role in students' success in numeracy. Consistency of the mathematical language across the curriculum experienced by students is of paramount importance. The following is a glossary of the mathematical terms for Newport Convent Primary School:

JUNIOR INFANTS	
Strand and Strand Unit	Mathematical Language
Algebra: Patterns, Rules and Relationships	same, different, pattern, matching, odd one out, repeat, unit, colour, size, shape, copy, extend, create, repeat, before, after, bigger, smaller, growing, shrinking, more than, less than, unit of repeat.
Data and Chance: Data	same, different, matching, sort, set, size, shape, colour, more, less, most, least, how many?
Shape and Space: Shape	2-D SHAPES: sides, straight, corners, round, same, different, circle, triangle, rectangle, square 3-D SHAPES: cube, sphere, faces, corners, sides, edges, curved, flat, roll, stack, slide, same, different

Shape and Space: Spatial Awareness and Location	next to, between, besides, inside, outside, above, below, near, far, in front of, behind, opposites, over, under, through, left, right
Number: Numeration and Counting	one, two, three, four, five, six, seven, eight, nine, ten, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, number, number before, number after, 'how many?', odd one out, same, different, more, less, 'what do you see?', one more, one less, greater, smaller, empty, none, none left, all gone, nothing, same, before, after, digits, forward, backward, bigger, smaller.
Number: Uses of Number	before, after, in-between, first, second, third, fourth, fifth
Number: Sets and Operations	more, less, the same as, 'how many?', 'how many more?' , number, number before, number after, numbers 1–9, one more, one less, first, then, now, more, less, 'how many more/less?', same, different, add, combine, total, altogether
Measures: Measuring	Length: long, longer, longest, short, shorter, shortest, tall, taller, tallest measure, estimate
Measures: Measuring	Capacity: full, empty, almost full, almost empty, nearly full, nearly empty, holds more, holds less, narrow, wide, measure, container
Measures: Measuring	Weight: big, bigger, small, smaller, heavy, heavier, light, lighter, same, different, more, less, balance, up, down

SENIOR INFANTS

SENIOR INFANTS	
Strand and Strand Unit	Mathematical Language
Number: Numeration and Counting	numbers 1–20, number names (1-20), number before, number after, "how many?", first, second, third, last, number order, rows, columns, arrays, 10 frame, number sequence (forward

	and backward), 'what do you see?', same, different, pattern, less, more, greater, smaller ,digit, double digits, 10 frames, after, count on , tens, ones, digits, backward, forward, 'how many tens/ones?', before, after, tens, ones, combine, partition, take away
Number: Uses of Number	before, after, number order, number before, number after, how many? greater than, smaller than, number sequence (forward and backward), ordinal numbers to 10, last
Number: Sets and Operations	before, after, 'how many?', same, different, pattern, 1 or 2 less, 1 or 2 more, greater, bigger, smaller, add 1 or 2 more, take away 1 or 2, cross 1 or 2 out, count on, count back, more, less, 'how many more/less? 'backward, forward, before, after, add, combine ,put together, 'how many altogether?', plus, equals, makes, same as, 'how many more?', same, different, subtract, take away ,total, altogether, partition, part-whole models, missing part, addition, subtraction, number bonds, count on, count back ,zero, same ,empty .none ,all gone.
Number: Place Value and Base Ten	numbers 1–19, digit, double digits, after, before, count on, tens, ones, 'how many?', 'how many tens/ones? same, different
Number: Fractions	divide, partition, split, share, equal parts, half, halves, same, different
Algebra: Patterns, Rules and Relationships	pattern, repeat, sequence, pattern rule, same, different, order, before, after, next, bigger, smaller, growing, shrinking, more than, less than, unit of repeat, 'how many?', number

	patterns, counting sequence, counting in 1s, 2s, 5s and 10s
Measures: Time	before, after, morning, afternoon, evening, night, days of the week, months of the year, seasons of the year, first, then, next, timetable, sequence, hours, minutes, clock hands, early, late, o'clock
Measures: Measuring	<p>Length and Area: long, short, tall, length, area, more, less, same, different, bigger, smaller, taller, shorter, longer</p> <p>Weight: heavy, heavier, heaviest, light, lighter, lightest, bigger, smaller, same, different, almost, extra, less, more</p> <p>Capacity: full, almost full, half full, almost empty, empty, cupful, spoonful, containers, capacity, how much can it hold?, order, estimate, measure, more, less, same, different</p>
Measures: Money	coin, cash, euro, cent, amount, total, same, price, enough, expensive, cheap, change, free, cards, bank, 'how much?', buy, sell, value, more, less, same, customer, shopkeeper
Data and Chance: Data	block graphs, tally marks, pictogram, 'how many?', more, less, 'how many more/less?', same, different, 'what is the same/different?', most, least
Shape and Space: Shape	2-D Shapes: sides, corners, straight, round, curved, same, different, circle,

	<p>triangle, square, rectangle, combine, construct</p> <p>3-D Shapes: 2d and 3d shape names, shape properties, faces, corners, sides, edges, curved, flat, roll, stack, slide, same, different</p> <p>symmetry, mirror, combine, dissect, composite, flip, turn, slide, equal, same, different</p>
<p>Shape and Space: Transformation</p>	<p>symmetry, mirror, combine, dissect, composite, flip, turn, slide, equal, same, different</p>
<p>Shape and Space: Spatial Awareness and Location</p>	<p>on, in, near, far, in front of, behind, between, under, left, right, up, down, forward, backward, turn</p>

FIRST CLASS

FIRST CLASS	
Strand and Strand Unit	Mathematical Language
<p>Number: Numeration and Counting</p>	<p>Numbers 1-20, count, counting, skip counting, more, more than, less, less than, pattern, counting pattern, total, number sentence, part-whole model, order, smaller, greater, greater than, smallest, greatest, addition/subtraction sentence, number story</p>
<p>Number: Sets and Operations</p>	<p>Number sentences: number story, addition sentence, number line, change, part, whole, part-whole model, subtraction sentence, take away, more, fewer, same</p> <p>Addition: add, addition, addition sentence, addend, order, simplify, 10 frame, number line, count along, forward, counter, total,</p>

	<p>number sentence,100-square, solve, check, strategy, method, addition problem, 1-digit numbers, 2-digit numbers, teens, pairs, number pyramid, addition problem, vertical, tens, ones, column method, strategy</p> <p>Subtraction: subtract, subtraction, subtraction sentence, backward, number sentence, part-whole model, take away, difference, total, number line, number sentence,100-square, solve, check, strategy, method, subtraction problem, 2-digit numbers, teens, greater than, difference, number pyramid</p>
<p>Number: Fractions</p>	<p>half/halves, share, split, same, different, equal/equally, part, whole, shape, set, group, even,1 quarter, 3 quarters, 4 quarters, equal parts, arrange, group, number sentence</p>
<p>Number: Place Value and Base Ten</p>	<p>tens, ones, teens, 10 frame, counter, bead, abacus, tower, number sentence, partition</p> <p>numeral, drawing, expanded form, part-whole model, odd number, even number, greater than, less than, regroup</p>
<p>Measures: Time</p>	<p>before, after, first, next, last, less than, more than, estimate, unit, measurement, minute, hour, day, week, month, year, clock, clock face, hour (hand), minute (hand), later, o'clock, half past, half an hour</p>

<p>Measures: Measuring</p>	<p>Length and Area: measure, length, width, height, shortest, longest, order, shorter than, longer than, same length as, unit of measurement, estimate, actual, tallest, least, most, area, smallest, greatest, smaller than, bigger than, widest, narrowest, describe, compare, 2D shape</p> <p>Weight and Capacity: weight, heavy, heaviest, light, lightest, balance, kilogram (kg), empty, full, most, least, capacity, greatest capacity, smallest capacity, litre</p>
<p>Measures: Money</p>	<p>value, highest value, lowest value, total value, sum, price, cost, amount, spend</p>
<p>Shape and Space: Shape</p>	<p>2-D Shapes: shape family, corner, vertex/vertices, side, longer, shorter, curved, straight, tetromino</p> <p>3-D Shapes: cube, cuboid, pyramid, sphere, cylinder, side, face, square, rectangle, triangle, circle, semicircle, next to, on, below, face, edge, corner, shape family</p>
<p>Shape and Space: Transformation</p>	<p>symmetry, symmetrical, line(s) of symmetry, shape, half, reflect (flip), reflection, mirror line, rotate (turn), rotation, translate (slide), translation, tessellate, tessellating, pattern</p>
<p>Shape and Space: Spatial Awareness and Location</p>	<p>direction, position, turn, half turn, left, up, right, down, move forward, move backward, turn to the left, turn to the right, clockwise, anticlockwise, start, end</p>

Data and Chance: Data	most/least, more than/fewer than, less than, fewest, some, none, tally, tally chart, pictogram, key, block graph, record information, represent, interpret
Algebra: Patterns, Rules and Relationships	Patterns, repeating, growing (increasing), shrinking (decreasing), symmetrical, predict, before, next, continue, term, change, adding, subtracting, rule, odd, even, multiple,

SECOND CLASS	
Strand and Strand Unit	Mathematical Language
Number: Numeration and counting	Numbers from zero to two hundred, count(up, forward, back(ward), ones(units), tens, estimate, repeated addition, skip counting, group counting, twos, fives, ones, tens, twenties, hundreds, order, fewer, fewest, small, smallest, less, less than, least,($<$), large, largest, greater than, greatest, bigger, more, most,($>$), equal to, (=), nearly, roughly, close to, about the same as, just over, just under, exact, jump, pattern, next, number line, odd numbers, even numbers,increase
Number: Sets and Operations	Addition, add, added, +, plus, total, altogether, subtraction, take-away minus, -,left, compare, difference, greater/less than, how many more/less, equals, reasonable estimate, whole amount, part, ten, hundred, number line, number story, number sentence, fact family, branching bond, bar model , turnaround facts, opposite, inverse, strategy, doubles, near doubles, in-between doubles, even, odd, fact

	groups, bonds of 10, zero, take-away, missing parts, difference, count on/back, calculation, related facts, multiples of 10 more, less, row, column, above, below, renaming, column method, check, left, in the beginning, used, number sentence, true balance, same, match, equals(=),not equal (\neq), more than, greater than,($>$), less than ($<$), numberless word problems, problem solve, STARS, borrow, tens, units
Number: Place Value and Base Ten	Hundreds, tens, units, ones, one-digit, two-digit, three-digit number, teens, place value, compare, order, fewer, fewest, small, smallest, less, less than, least,($<$), large, largest, greater than, greatest, bigger, more, most,($>$), equal to, (=),nearly, roughly, close to, about the same as, just over, just under, exact, round to the nearest ten, bundles, groups, left over, next, before, how many, abacus, notation board
Number: Fractions	Fraction, half/halves, quarter(s), $\frac{1}{2}$, $\frac{2}{2}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$ same value, different appearance, wholes, parts, sets, compare, share, fair, piece, doubles, bar models, divide.
Measures: Time	Time, clock, watch, stopwatch, timer, digital, minute(s), second(s), hour(s), day(s), week(s), month(s), year(s), season(s), fortnight(s), afternoon, halfway, last, longer, shorter, compare, order, greater than, less than, $<$, $>$, faster, slower, fastest, slowest, calendar, date, names of days, months and seasons, year, leap year, 1 st , 2 nd , 3 rd ,, weekdays, weekend, analogue, digital, long minute hand,

	<p>short hour hand, o'clock, half past, _:30, (nine thirty, etc), quarter past, _:15, (nine fifteen, etc), quarter to, _:45,(nine forty-five, etc), a.m. and p.m. , day, night ,midnight, midday, noon, morning, afternoon, evening, duration, how long, time number lines, timetable, second hand, digital, analogue, earlier, later</p>
<p>Measures: Measuring</p>	<p>estimate, measure, length, height, width, long, longer, longest, short, shorter, shortest, tall, taller, tallest, wide, wider, widest, narrow, narrower, narrowest, metre (m), ruler, measuring tape, less than (<), greater than (>), half(1/2), quarter (1/4), centimetre (cm), weigh, weight, heavy, heavier, heaviest, light, lighter, lightest, balance scales, balanced, compare, estimate, units, equals (=), kilograms (kg), about, more than, most, least, full, empty, half full, quarter full, greater/greatest capacity, less/least capacity, units, cups, litre (l), litres, bar model, add, total, subtract, take away, difference, count on, area, covers a large/larger/the largest area, covers less, row, column, square units, square metre (sq m),standard, non-standard, estimate, accurate,</p>
<p>Measures: Money</p>	<p>Money, coin(s), note(s), metal, paper, currency, cent, euro, market, trader, customer, stall(s), €, c, euro, cent, symbol, decimal point, altogether, total, how much?, bank card, debit card, credit card, exact amount/change, bus/train fare, contactless (payment), same value, different appearance, greater than, less than, more, less, most, least,</p>

	worth the same, finding change, spent, customer, exchange
Shape and Space: Shape	2-D shape, circle, triangle, square, rectangle, semi-circle, oval, hexagon, parallelogram, regular shape, corner, vertex/vertices, (straight/curved) side, polygon, 3-D shape, cube, cuboid, sphere, cylinder, cone, pyramid, roll, stack, slide, (flat) face, (straight/curved) edge, curved surface, point, side, properties, common, different, sort, Venn diagram, set, belongs, doesn't belong.
Shape and Space: Transformation	Bird's eye/aerial view, top, bottom, middle, left, right, centre, full turn, half turn, quarter turn, clockwise, anticlockwise, opposite, square, corner, right angle, reflection, mirror symmetry, lines of symmetry, flip, slide/translation, turn/rotation, flip/reflection, tessellate, tessellations, cover, without gaps, repeat,
Shape and Space: Spatial Awareness and Location	Bird's eye/aerial view, street view, top, bottom, middle, left, right, centre, between, map, location, grid, column, row, grid reference, full turn, half turn, quarter turn, clockwise, anticlockwise, opposite, journey, route,
Data and Chance: Data	Data, graph, collect, record, represent, analyse, tally marks, pictogram, survey, answer, more, less, most, least, fewer, difference between, symbol, more than, less than, fewer than, most likely, least likely, most popular, least popular, total, key, odd, even, compare,

	altogether, popular, block graph, information, twice, half, scale,
Algebra: Patterns, Rules and Relationships	Patterns, repeating, growing (increasing), shrinking (decreasing), symmetrical, elements, core, predict, before, next, continue, term, change, adding, subtracting, rule, odd, even, multiple,

THIRD CLASS	
Strand and Strand Unit	Mathematical Language
Number: Sets and Operations	combine, partition, make, count, altogether, add, plus, equals, more, sign, sum, jump, split, total, rename, regroup, estimate, hundreds, units, tens, digit, less than, more than, take away, subtract, minus, leave, difference between, compare, how much less? equals, how many are left? count on, count back, count, equal groups of, times, multiply by, amount, total, equals, altogether, columns, rows, repeated, multiplication, jumps section, share, equally, fair, shares, one each, two each, groups of, repeat, repeated subtraction, how many times?, divide, divided by, divided into, left over, remainder
Number: Place Value and Base Ten	Numbers 0-999, units, tens, hundreds, digit, teens, number, rename, groups, bundles, the same as, equals, as many as, swap/exchange, value, one-, two-, three-digit numbers, decimal, decimal point, tenth(s)
Number: Fractions	whole, parts, equal, fold, sets, share, between, half, halves, quarters,

	eighths, tenths, equivalent, same as, amount, divide, fraction, decimal fraction, decimal, decimal point, tenth(s)
Algebra: Expressions and Equations	frame, pattern, sequences, order, describe, equals
Algebra: Patterns, Rules and Relationships	pattern, sequences, order, describe, skip, jump
Measures: Time	names of the days, months, seasons, hours, minutes, digital, next/last, early, earlier, earliest, late, later, latest, exactly, just before, just after, today/yesterday/tomorrow, date, o'clock, half past, quarter to, quarter past, long/short hand, before/after, first/second/third etc. counting in fives,
Measures: Measuring	<p>Length: length, width, height, long, longer, longest, short, shorter, shortest, thick, thin, compare, estimate, measure, the same as, metre, metre stick, centimetre, about, longer than, shorter than, tall, taller than</p> <p>Area: estimate, cover, surface, edge, flat, overlap, fit, space, same area as, greater/smaller area than, angles, squares, square units, regular, irregular, tessellate</p> <p>Weight: weigh, weighs, weight, balance, heavy, heavier, heaviest, light, lighter, lightest, too many, too few, about, just over, just under, estimate, kilogramme, half, quarter, grammes</p> <p>Capacity: full, empty, measure, compare, estimate, litre, millilitre,</p>

	nearly full, nearly empty, half, quarter, container, holds more, holds less, capacity, exactly
Measures: Money	coins, cent, price, spend, how much? buy, sell, pay, change, costs less, more, equals, exchange, cheap, cheaper, total cost, amount, altogether, same value as, calculate
Shape and Space: Shape	2-D Shapes: square, rectangle, triangle, circle, semicircle, oval, hexagon, size, corners, sides, curved, flat, straight, edge, round, point, side, fit together, construct, design, regular, irregular, tessellate 3-D Shapes: solid, prism, triangular prism, pyramid, cube, cuboid, cylinder, sphere, cone, square, circle, rectangle, point, sides, faces, edges, vertices, roll, slide, straight, round, curved, solid, skeleton
Shape and Space: Transformations	fold, line, axis, symmetry, symmetrical, mirror, reflection, match, complete, half, fit, exactly
Shape and Space: Spatial Awareness and Location	angle, corner, square corner, right angle, fits exactly, vertical, horizontal, parallel, rotation, clockwise, anticlockwise
Data and Chance: Data	count, how many? rows, columns, collect, collection, sets, construct, record, table, chart, information, more, fewer/less, fewest/least, difference, tally, total, estimate, pictogram, block graph, bar chart, title
Data and Chance: Chance	happen, occur, certain, possible, impossible, maybe, yes, no, perhaps, will, will not, might, might not, likely,

	unlikely, very likely, definitely, toss, predict
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FOURTH CLASS	
Strand and Strand Unit	Mathematical Language
Number: Sets and Operations	combine, partition, make, count, altogether, add, plus, equals, more, sign, sum, jump, split, total, regroup, estimate, units, tens, hundreds, digit, less than, more than, take away, subtract, minus, leave, difference between, compare, how much less? how many are left? count on, count back, count, equal groups of, times, multiply by, amount, total, altogether, equals, columns, rows, repeated, horizontally, vertically, inverse, rounding, share, equally, fair, shares, sharing, one each, two each, groups of, grouping, repeat, repeated subtraction, how many times?, divide, divided by, divided into, left over, remainder, inverse
Number: Place Value and Base Ten	Numbers 0-9999, units, tens, hundreds, thousands, digit, number, rename, groups, bundles, regroup, tenths, hundredths, whole numbers, order, estimate
Number: Fractions	unit, whole, parts, share between, half, halves, quarters, thirds, sixths, ninths, twelfths, fifths, tenths, decimal fractions, tenths, hundredths, whole numbers, order, estimate
Algebra: Expressions and Equations	frame, pattern, sequences, order, describe
Algebra: Patterns, Rules and Relationships	pattern, sequences, order, describe

<p>Measures: Time</p>	<p>names of the days, months, seasons, hours, minutes, digital, next/last, early, earlier, earliest, late, later, latest, exactly, just before, just after, today/yesterday/tomorrow, date, o'clock, half past, quarter to, quarter past, long/short hand, before/after, first/second/third etc., counting in fives, rename, timetable</p>
<p>Measures: Measuring</p>	<p>Length: length, width, height, long, longer, longest, short, shorter, shortest, thick, thin, compare, estimate, measure, the same as, metre, metre stick, centimetre, about, longer than, shorter than, tall, taller than, kilometre, measurement</p> <p>Area: estimate, cover, surface, edge, flat, overlap, fit, space, same area as, greater/smaller area than, angles, squares, square units, regular, irregular, tessellate</p> <p>Weight: weigh, weighs, weight, balance, heavy, heavier, heaviest, light, lighter, lightest, too many, too few, about, just over, just under, estimate, kilogramme, half, quarter, grammes, total</p> <p>Capacity: full, empty, measure, compare, estimate, litre, millilitre, nearly full, nearly empty, half, quarter, container, holds more, holds less, capacity, exactly</p>
<p>Measures: Money</p>	<p>coins, cent, price, spend, how much? buy, sell, pay, change, costs, less, more, equals, exchange, cheap, cheaper, total cost, amount, altogether, same value as, calculate</p>

<p>Shape and Space: Shape</p>	<p>2-D Shapes: square, rectangle, triangle, circle, semicircle, oval, size, corners, sides, curved, flat, straight, edge, round, point, side, fit together, construct, design</p> <p>3-D Shapes: solid, prism, triangular prism, pyramid, cube, cuboid, cylinder, sphere, cone, square, circle, rectangle, point, sides, faces, edges, vertices, roll, slide, straight, round, curved, construction, net, tessellate, parallelogram</p>
<p>Shape and Space: Transformations</p>	<p>fold, line, axis, symmetry, symmetrical, mirror, reflection, match, complete, half, fit, exactly</p>
<p>Shape and Space: Spatial Awareness and Location</p>	<p>angle, corner, square corner, right angle, fits exactly, vertical, oblique, horizontal, parallel, rotation, clockwise, anti-clockwise, greater than, less than, acute, obtuse, diagonal, strut, perpendicular, direction</p>
<p>Data and Chance: Data</p>	<p>count, how many?, rows, columns, collect, collection, sets, construct, record, table, chart, information, more, fewer/less, fewest/least, difference, tally, total, estimate, pictogram, block graph, bar chart, title, scale, bar-line</p>
<p>Data and Chance: Chance</p>	<p>happen, occur, certain, possible, impossible, maybe, yes, no, perhaps, will, will not, might, might not, likely, unlikely, very likely, definitely, toss, predict, occurrence, likelihood, random, uncertainty, experiment</p>

FIFTH CLASS

Strand and Strand Unit	Mathematical Language
<p>Number: Sets and Operations</p>	<p>combine, partition, make, count, altogether, add, plus, equals, more, sign, sum, jump, split, total, regroup, estimate, units, tens, hundreds, digit, less than, more than, take away, subtract, minus, leave, difference between, compare, how much less?, equals, how many are left?, count on, count back, operation, odd, even, square, rectangular, triangular, composite, prime, factors, multiples, consecutive, divisible, divisors, count, equal groups of, times, multiply by, amount, total, altogether, equals, columns, rows, repeated, estimate, long multiplication, places of decimals, calculator, share, equally, fair, shares, one each, two each, groups of, repeat, repeated subtraction, how many times?, divide, divided by, divided into, left over, remainder, places of decimals, estimate, multiples, round</p>
<p>Number: Place Value and Base Ten</p>	<p>units, tens, hundreds, thousands, ten thousands, tenths, hundredths, thousandths, decimal point, number, digits, rename, bundles, groups, regroup, value</p>
<p>Number: Fractions</p>	<p>denominator, numerator, improper, mixed numbers, tenths, hundredths, thousandths, equivalent, sets, hundredths, percent, percentages, order, decimal point, decimal places</p>

<p>Algebra: Expressions and Equations</p>	<p>frame, pattern, sentences, order, describe, true, false, equation, open sentence, unknown</p>
<p>Algebra: Patterns, Rules and Relationships</p>	<p>frame, pattern, sequences, order, describe, predict, priority, symbols, signs, values, properties, brackets, terms, positive, negative, temperatures, thermometer, increase, decrease, compare, owe, balance</p>
<p>Measures: Time</p>	<p>names of the days, months, seasons, hours, minutes, digital, next/last, early, earlier, earliest, late, later, latest, exactly, just before, just after, today/yesterday/tomorrow, date, o'clock, half past, quarter to, quarter past, long/short hand, before/after, first/second/third, counting in fives, timetables, analogue</p>
<p>Measures: Measuring</p>	<p>Length: length, width, height, long, longer, longest, short, shorter, shortest, thick, thin, compare, estimate, measure, the same as, metre, metre stick, centimetre, about, longer than, shorter than, tall, taller than, kilometre, measurement, millimetre, perimeter, distance</p> <p>Area: estimate, cover, surface, edge, flat, overlap, fit, space, same area as, greater/smaller area than, angles, squares, square units, regular, irregular, tessellate, perimeter</p> <p>Weight: weigh, weighs, weight, balance, heavy, heavier, heaviest, light, lighter, lightest, too many, too few, about, just over, just under, estimate, kilogramme, half, quarter, grammes</p>

	<p>Capacity: full, empty, measure, compare, estimate, litre, millilitre, nearly full, nearly empty, half, quarter, container, holds more, holds less, capacity, exactly, intervals</p>
<p>Measures: Money</p>	<p>coins, cent, price, spend, how much?, buy, sell, pay, change, costs, less, more, equals, exchange, cheap, cheaper, total cost, amount, altogether, same value as, calculate, bill, value for money</p>
<p>Shape and Space: Shape</p>	<p>2-D Shapes: square, rectangle, triangle, circle, semicircle, oval, size, corners, sides, curved, flat, straight, edge, round, point, side, fit together, construct, design, rhombus, parallelogram, hexagon, trapezium, octagon, pentagon, equilateral, isosceles, scalene, right-angled, quadrilateral, polygon, regular, irregular, tessellating, tangrams</p> <p>3-D Shapes: solid, prism, triangular prism, pyramid, cube, cuboid, cylinder, sphere, cone, square, circle, rectangle, point, sides, faces, edges, vertex, vertices, roll, slide, straight, round, curved, polyhedron, tetrahedron</p>
<p>Shape and Space: Transformations</p>	<p>fold, line, axis, symmetry, symmetrical, mirror, reflection, match, complete, half, fit, exactly</p>
<p>Shape and Space: Spatial Awareness and Location</p>	<p>angle, corner, square corner, right angle, fits exactly, vertical, horizontal, parallel, rotation, clockwise, anti-clockwise, greater than, less than, acute, obtuse, diagonal, strut,</p>

	perpendicular, direction, reflex, sum, degrees, protractor
Data and Chance: Data	count, how many?, rows, columns, collect, collection, sets, construct, record, table, chart, information, more, fewer/less, fewest/least, difference, tally, total, estimate, pictogram, block graph, bar chart, title
Data and Chance: Chance	happen, occur, certain, possible, impossible, maybe, yes, no, perhaps, will, will not, might, might not, likely, unlikely, very likely, definite, definitely, toss, predict, absolutely, probable, improbable, expect, experiment, investigate, actual, frequently, frequency, outcome

SIXTH CLASS

Strand and Strand Unit	Mathematical Language
Number: Sets and Operations	combine, partition, make, count, altogether, add, plus, equals, more, sign, sum, jump, split, total, regroup, estimate, units, tens, hundreds, digit, less than, more than, take away, subtract, minus, leave, difference between, compare, how much less? equals, how many are left? count on, count back, count, equal groups of, times, multiply by, amount, total, altogether, equals, columns, rows, repeated, estimate, long multiplication, places of decimals, calculator, share, equally, fair, shares, one each, two each, groups of, repeat, repeated subtraction, how many times?, divide, divided by, divided into, left over, remainder, places of decimals, estimate, multiples, round, odd, even, square, rectangular,

	triangular, composite, prime factors, multiples, consecutive, divisibles, divisors, common, square root
Number: Place Value and Base Ten	units, tens, hundreds, thousands, ten thousands, hundred thousands, number, digits, rename, bundles, groups, regroup, rename, relationship, tenths, hundredths, thousandths , decimal point, decimal place
Number: Fractions	denominator, numerator, improper, mixed numbers, tenths, hundredths, thousandths, relationship, compare, order, equivalence, simplify, hundredths, percent, percentages, order, decimal point, decimal place
Algebra: Expressions and Equations	frame, pattern, sentences, order, describe, true, false, equation, open sentence unknown, symbols, variable, simple, complex, variable, frame, pattern, sentences, describe, replace, substitute, symbols
Algebra: Patterns, Rules and Relationships	frame, pattern, sequences, order, describe, predict, order, priority, symbols, signs, values, properties, brackets, terms, positive, negative, temperatures, thermometer, increase, decrease, compare, balance
Measures: Time	names of the days, months, seasons, hours, minutes, digital, next/last, early, earlier, earliest, late, later, latest, exactly, just before, just after, today/yesterday/tomorrow, date, o'clock, half past, quarter to, quarter past, long/short hand, before/after, first/second/third etc., counting in fives, timetable, analogue, speed, distance, international time zones, convert

<p>Measures: Measuring</p>	<p>Length: length, width, height, long, longer, longest, short, shorter, shortest, thick, thin, compare, estimate, measure, the same as, metre, metre stick, centimetre, about, longer than, shorter than, tall, taller than, kilometre, measurement, millimetre, perimeter, distances, area</p> <p>Area: estimate, cover, surface, edge, flat, overlap, fit, space, same area as, greater/smaller area than, angles, squares, square units, regular, irregular, tessellate, compare, sets, are, hectare</p> <p>Weight: weigh, weighs, weight, balance, heavy, heavier, heaviest, light, lighter, lightest, too many, too few, about, just over, just under, estimate, kilogramme, half, quarter, grammes, tonne</p> <p>Capacity: full, empty, measure, compare, estimate, litre, millilitre, nearly full, nearly empty, half, quarter, container, holds more, holds less, capacity, exactly, graduated cylinder, volume</p>
<p>Measures: Money</p>	<p>coins, cent, price, spend, how much?, buy, sell, pay, change, costs, less, more, equals, exchange, cheap, cheaper, total cost, amount, altogether, same value as, calculate, bill, value for money, unitary method, convert, currency, exchange rate charges</p>
<p>Shape and Space: Shape</p>	<p>2-D Shapes: square, rectangle, triangle, circle, semicircle, oval, size, corners, sides, curved, flat, straight, edge, round, point, side, fit together, construct, design, rhombus,</p>

	<p>parallelogram, hexagon, trapezium, octagon, pentagon, equilateral, isosceles, scalene, right-angled, quadrilateral, polygon, regular, irregular, tessellate, tangrams</p> <p>3-D Shapes: solid, prism, triangular prism, pyramid, cube, cuboid, cylinder, sphere, cone, square, circle, rectangle, point, sides, faces, edges, vertices, roll, slide, straight, round, curved, polyhedron, tetrahedra, octahedron, net, template</p>
<p>Shape and Space: Transformations</p>	<p>fold, line, axis, symmetry, symmetrical, mirror, reflection, match, complete, half, fit, exactly</p>
<p>Shape and Space: Spatial Awareness and Location</p>	<p>angle, corner, square corner, right angle, fits exactly, vertical, horizontal, parallel, rotation, clockwise, anti-clockwise, greater than, less than, acute, obtuse, diagonal, strut, perpendicular, direction, reflex, sum, degrees, protractor, construct</p>
<p>Data and Chance: Data</p>	<p>count, how many?, rows, columns, collect, collection, sets, construct, record, table, chart, information, more, fewer/less, fewest/least, difference, tally, total, estimate, pictogram, block graph, bar chart, title, data set, investigate, average</p>
<p>Data and Chance: Chance</p>	<p>happen, occur, certain, possible, impossible, maybe, yes, no, likelihood, perhaps, will, will not, might, might not, likely, unlikely, very likely, definitely, toss, predict, absolutely, probable, improbable, expect, experiment, investigate,</p>

	actual, frequently, frequency, outcome, occurrence
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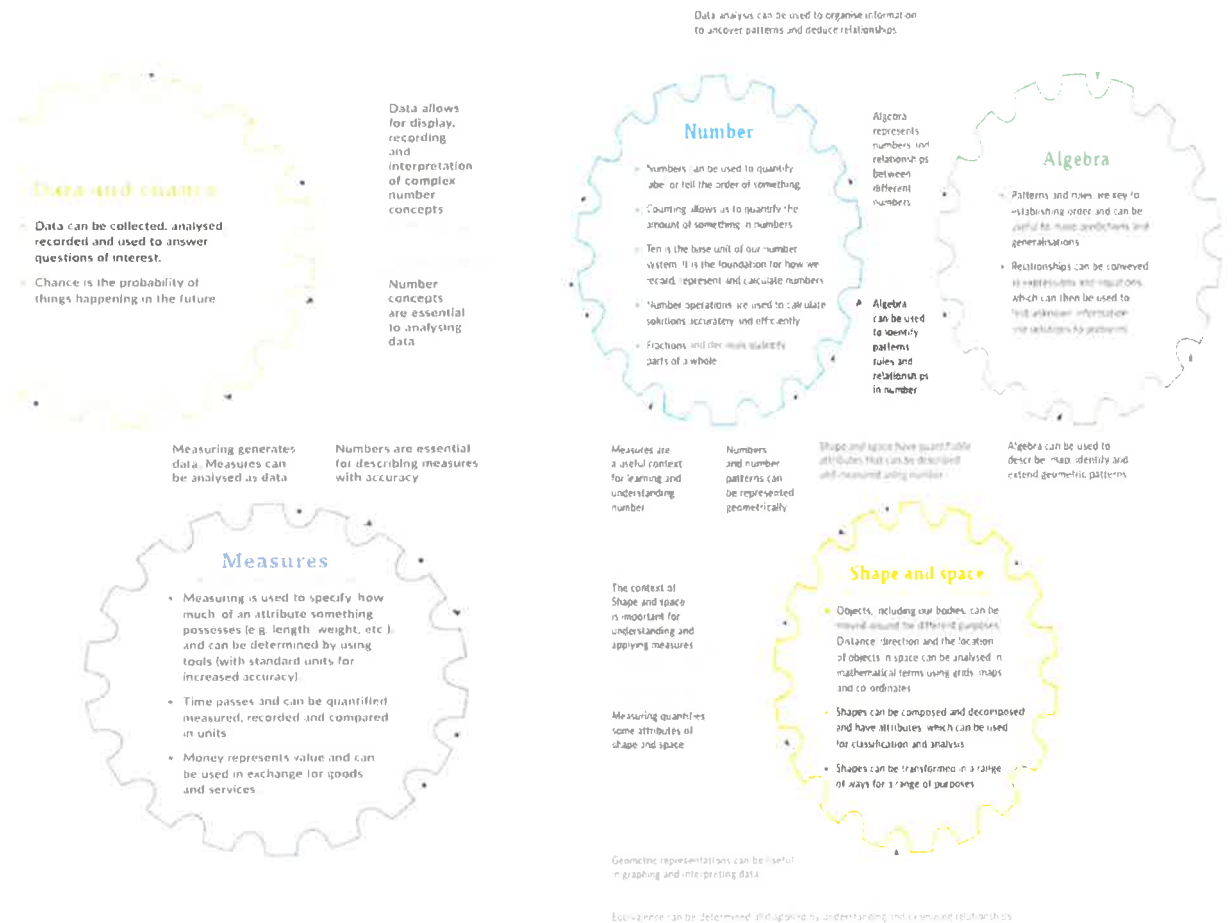
7.Linkage and Integration:

Integration:

A cross curricular approach will help the child to make connections between curricular areas, add to the child's enjoyment of mathematics and encourage transfer of learning.

Linkage:

Where appropriate, connections should be made between and across the strands, and with other areas of learning, to enhance their interrelatedness and relevance for learning. See graphic overleaf which highlights a number of connections that can be made between strands.



8.Tables:

There will be a common approach to the teaching of number facts.

Schematic Teaching of Addition Tables

Addition and Subtraction Tables

From 1st to 6th class.

Addition and Subtraction tables are introduced in First Class.

Addition 1-10

Subtraction 1-10

Examples:

2 plus 2 is 4

4 take away 2 is 2

Multiplication and Division Tables

From 3rd to 6th class.

- **Multiplication and Division tables are introduced in Third Class.** Preparatory work includes practical sorting, and grouping, understanding concepts, reasoning, counting in sequence.
- Multiplication/Division tables will be introduced as repeated addition and repeated subtraction
- **When introduced in Third Class,** begin with 2x,4x,8x, followed by 3x,6x,9x times tables.
- Then teach 5x and 10x tables
- Then teach 7x tables
- Division is taught in the same order
- We start off by introducing multiplication by saying '3 groups of 2 are 6', '4 groups of 2 are 8'. When the children are competent at this they will progress to saying '3 2s are 6', '4 2s are 8'. They will then be introduced to other terminology such as '3 times 2 is 6' and '4 times 2 are 8', etc. Children should be aware of the commutative properties of multiplication tables and their relationship with division.
- As division is the inverse of multiplication it will be taught in this manner. Lots of preparatory work will be done initially on multiplication e.g. multiplication tables, pattern work on the hundred square, learning the multiples.
- Children will be taught strategies to assist understanding and easy recall of the basic facts.

1. Commutative law
2. Placing multiples on the hundred square
3. Use of fingers for calculating 9 times
4. Use of cubes, e.g. making sets of 6, e.g. pick up 3 of these, $3 \times 6 = 18$.

Activities for tables

- Use of games, e.g. bingo, etc.
- Loop games
- Competitions e.g. Last man standing, Buzz, Beat the clock (My Personal Best)
- ICT, e.g. Balloon Tables game, Sundae Times
- Singing the tables, clapping rhymes.

Tables are linked through course content in 1st and 3rd class. Tables are introduced through practical activities and examination of number patterns.

Pupils are taught to improve computation, efficiency and confidence.

Tables are linked to Mental Maths by problem solving.

Cubes, lollipop sticks and counters are used as practical aids in learning and understanding tables for **all** children. It may be of particular benefit for those with differing needs.

Parents have a very active role in assisting children learn tables as part of their homework assignment.

The 100 square is used to demonstrate the functions of tables.

Progress in tables is assessed through quizzes, ICT games and teacher designed tests.

The school will adapt a common approach to all areas to ensure continuity and consistency especially when transferring from the junior groups to the senior groups. The school as a whole will encourage the accurate and effective use of mathematical language.

9. Standardisation of some mathematical procedures in the school:

The children will be taught the following strategies. However in line with the **new PMC** children will be encouraged to select, apply and make use of **a range of operational strategies**.

(a) Subtraction:

From September 2024 onwards, children entering 2nd class will use the regrouping/renaming strategy for subtraction, meaning that by September 2028 all children from 2nd-6th will use this subtraction strategy. Children who have already learnt to subtract using the borrow and pay back method will continue to do so.

(b) Long Multiplication:

$$\begin{array}{r} 54 \\ \times 23 \\ \hline 162 \rightarrow 54 \times 3 \\ 1080 \rightarrow 54 \times 20 \\ \hline 1242 \end{array}$$

(c) Long Division:

$$\begin{array}{r} 28 \overline{) 5992} \\ \underline{56} \\ 39 \\ \underline{28} \\ 112 \\ \underline{112} \\ 0 \end{array}$$

d m s n strategy
Divide Multiply Subtract Next Number

(d) Time Calculations:

Hrs	Mins	
1 hr	35 mins.	
+ 2 hrs	45 mins.	
<hr/>		
3 hrs	80 mins.	(1hr. 20 mins.)
= 4 hrs	20 mins.	

Hrs	Mins	(Regroup)
3hrs	15mins	
<u>2hrs</u>	<u>45mins</u>	

(e) Finding a Fraction of a Number:

(a) Use Unitary Method. e.g. Find $\frac{3}{8}$'s of 72

$\frac{8}{8} = 72$	
$\frac{1}{8} = 9$	8 72
$\frac{3}{8} = 27$	<hr/>
	9
	<u>x3</u>
	27

(b) of = multiply

Find $\frac{3}{8}$ of 72 $\rightarrow \frac{3}{8} \times \frac{72}{1}$

(f) Given a fraction find the whole number:

e.g. $\frac{7}{9}$ of a number is 42. Find the whole number.

$$\frac{7}{9} \text{ of } \underline{\quad\quad} = 42$$

$$\frac{1}{9} = 6$$

$$\frac{9}{9} = 54$$

$$\frac{9}{9} = 6 \times 9 = 54$$

AND

Divide by the top, multiply by the bottom:

e.g. $\frac{7}{9}$ of 42:

$$42 \div 7 = 6$$

$$6 \times 9 = 54$$

(g) Fractions: Addition of Mixed Numbers:

$$2 \frac{5}{6} + 3 \frac{3}{4} \quad \text{LCD} = 12$$

$$= 2 \frac{10}{12} + 3 \frac{9}{12}$$

$$= 5 + 1 \frac{7}{12} = 6 \frac{7}{12}$$

(h) Subtraction of mixed numbers:

$$3 \frac{1}{5} - 2 \frac{7}{10} \quad \text{LCD} = 10$$

$$= 3 \frac{2}{10} - 2 \frac{7}{10}$$

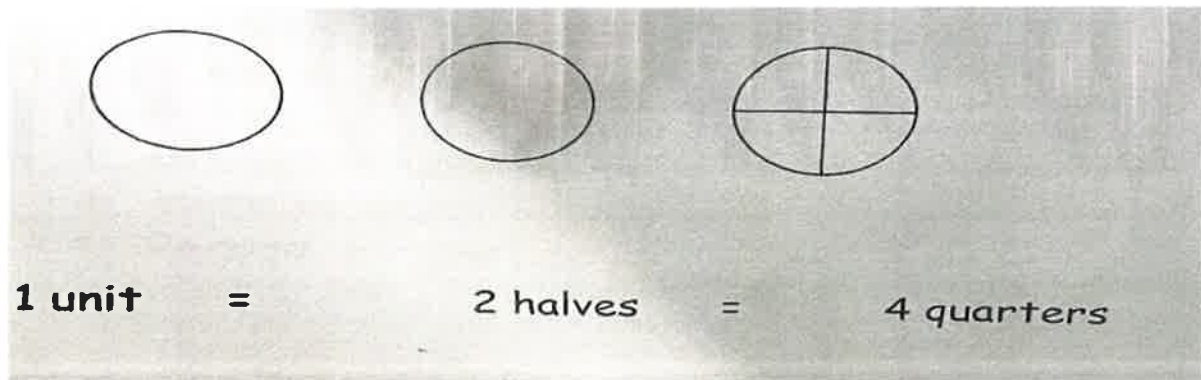
$$= 2 \frac{12}{10} - 2 \frac{7}{10}$$

$$= \frac{5}{10}$$

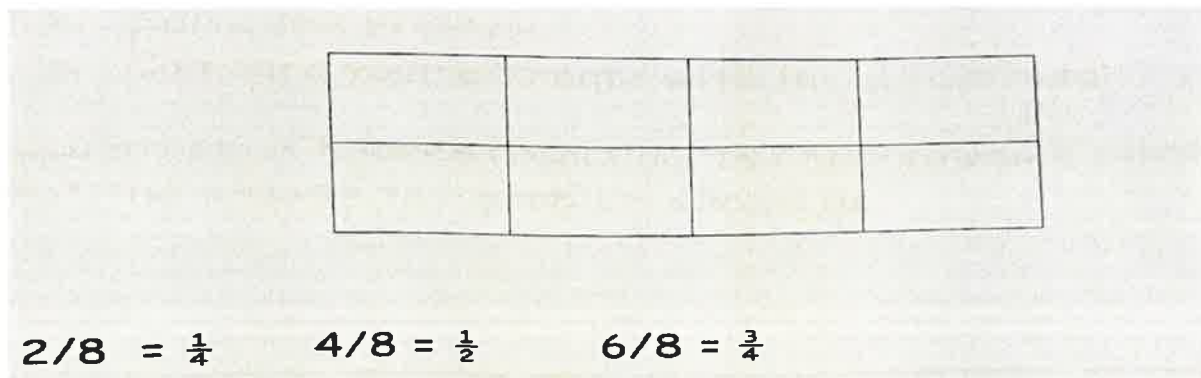
$$= \frac{1}{2}$$

Fractions: Fractions will be introduced by using **Fraction walls** and **Fraction Circles:**

e.g.



Paper folding will also be used to explain the equivalence of fractions:

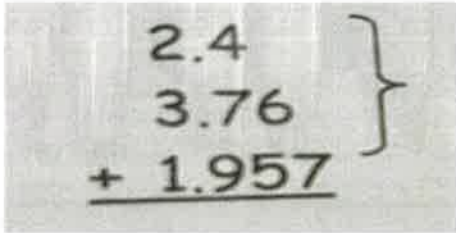


(i)Decimals:

Language: The decimal point is used to separate the pieces from the wholes.

Decimals: The decimal point never moves during number operations:

e.g. $2.4 + 3.76 + 1.957$


$$\begin{array}{r} 2.4 \\ 3.76 \\ + 1.957 \\ \hline \end{array}$$

10. Estimation:

Estimation skills are developed in all strands and strand units and at all levels.

In teaching Measures at all levels, we take every opportunity to have the children practise estimation of

- Lengths
- Heights
- Widths
- Distances
- Weights
- Volume
- Capacity

Key strategies for Measures:

1. Estimate
2. Discuss or consider
3. Measure or do
4. Record or report.

Estimation Procedure for number

- Estimate first
- Write down your estimate

- Solve the problem
- Compare your estimate with the actual result

Calculators: Children from 5th and 6th classes using calculators are encouraged to estimate first what the answer to a problem should be.

11.Mental Maths:

It is school policy that mental arithmetic is a feature of daily mathematical activity.

Resources used:

- Bingo boards
- Target boards
- Number fans
- Number lines
- Hundred squares
- Games
- Multiplication and division grids
- Tables activities
- ICT games

12.Collaborative and Cooperative Learning

Three/four members in a group

Mixed abilities, allow for a mix of cultural diversity

Explaining and allocating roles

Golden Rule in group work: Nobody is finished until everybody is finished.

Children will be trained in discussion skills before they effectively use them in a group.

Discussion skills

- Turn-taking
- Active listening

- Responding positively to the opinions of others
- Confidence in putting forward an opinion
- Ability to explain clearly their point of view

13. Problem Solving:

The focus is on real life problem solving.

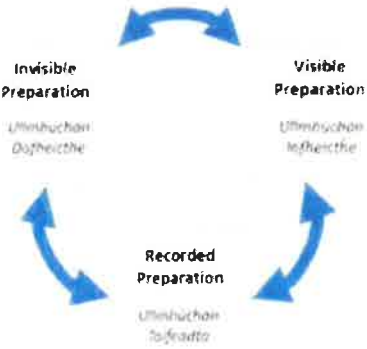
Types of problems

- Word problems
- Practical tasks
- Open-ended investigations
- Puzzles
- Games
- Projects
- Mathematical trails

Strategies used:

- RUDE
- RAVE CCC

14. Arrangements for Individual Teachers, Planning and Reporting:

 <p>The diagram illustrates a cyclical process of teacher preparation. It consists of three nodes arranged in a triangle, connected by blue curved arrows pointing clockwise. The top-left node is 'Invisible Preparation' with the Irish text 'Uimhachan Dotheicthe' below it. The top-right node is 'Visible Preparation' with 'Uimhachan Ighreicthe' below it. The bottom-center node is 'Recorded Preparation' with 'Uimhachan Safradta' below it.</p>	<p>Invisible Preparation eg</p> <ul style="list-style-type: none"> • collaboration with colleagues and others • Ongoing reflection • Engagement with curriculum supports • “not recorded” preparation <p>Visible Preparation eg</p> <ul style="list-style-type: none"> • Pupils’ learning experiences • The learning environment • Appropriate resources • embracing learning opportunities as they arise <p>Recorded Preparation eg</p> <ul style="list-style-type: none"> • Long and short term plans • Support Files • Assessment folder/portfolio • End of year reports • Personal notes/notes on Aladdin
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Teachers should base their yearly and short-term plans on the approaches set out in this whole school plan for maths and the primary maths curriculum. Each class teacher will familiarise themselves with the learning outcomes for their own class level. Each teacher will bear in mind that in planning, a balance between the strands should be kept throughout the year. Work covered will be outlined in the Cuntas Míósúil.

15.Resources:

Teaching materials will be provided at all class levels and in every strand. Children will experience a variety of materials and will have the freedom to choose from these when exploring a mathematical task. Teaching resources that are required weekly will be stored in each classroom while other resources are shared and will be stored centrally.

Mathematical resources in Newport Convent Primary School:

- **Compare bears and cards**
 - **Manipulatives for Infants such as vehicles, animals, cubes, counters, etc**
 - **Pegboards, pegs and pattern cards**
 - **Whiteboards**
 - **Blackboards**
 - **Sand and sand-trays**
 - **Hundred squares**
 - **Counters**
 - **Unifix cubes**
 - **Lollipop sticks**
 - **Numicon**
 - **Number-lines**
 - **3-D shapes**
 - **2-D shapes**
 - **Decks of cards**
 - **Dice**
 - **Beanbags**
 - **Clocks-teaching clock and small clocks**
 - **Deines blocks**
 - **Magnetic Deines block set**
 - **Notation boards**
 - **Coins (plastic and magnetic) and euro notes**
 - **Dominoes**
 - **Weights**
 - **Weighing scales (metric)**
 - **Balance weighing scales**
-
- **Maths games: Addition and Subtraction Bingo ,Multiplication and Division Bingo ,Multiplication Bingo, Time Bingo, Multiplication 0-12 flash cards, Division 0-12 flash cards ,Multiplication Puzzle)**

- Clock face stamps
- Multiplication and division grids
- Magnetic polydron construction kit
- Sandpaper numbers 1-10
- Magnetic pizza fractions
- Magnetic fraction wall
- Fraction and decimal tower cubes
- Geoboards
- Counting sticks
- Large protractor and compass
- Measuring tapes
- Meter sticks
- 30cm rulers
- Measuring spoons, jugs and droppers,
- Abacus
- Geo-strips
- Blank foam dice
- Tangrams
- Number fans
- Multiplication and division fidgets
- 2 classroom sets of calculators
- Place value arrows
- Bead strings
- Laminated hundred boards
- HTU trays
- Graphing pocket chart
- Maths sets

16. Assessment

Assessment is an integral part of learning and teaching. It involves teachers and children working together to use information to inform and support learning and teaching. These decisions are informed and shaped by:

- **knowledge of the child** and their prior learning (relationship with child, parent, previous teacher; Reports/Support files; observations)
- **knowledge of the curriculum**
<http://www.pmc.oide.ie/> <http://www.curriculumonline.ie/> [CPD supports](#)
- **knowledge of pedagogy.** (appropriate & engaging learning experiences; reflective practice; taking account of children's interests and prior learning)

Children as mathematical learners:

Providing children with regular time to talk about their learning, reflect and determine their next steps contributes to their identity and confidence as mathematical learners.

Opportunities for assessing mathematical learning:

Children's mathematical learning can be assessed along a continuum from 'intuitive' to 'planned interactions' to 'assessment events' as shown in Figure 10. The three types of assessment are complementary, and necessary, to gain a comprehensive picture of a child's progress and achievement.

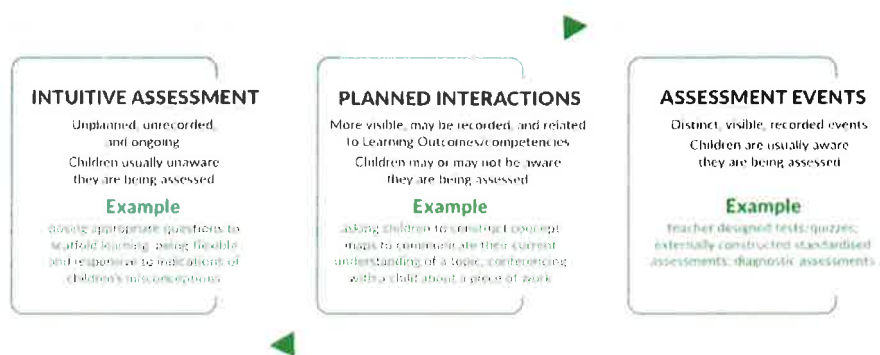


Figure 10 Assessment continuum

*Portfolios: Portfolios can be assembled, digitally or otherwise, to compile evidence of children's mathematical learning and provide a source of self-reflection, feedback and Maths assessment. Artefacts could include pictures and work samples, among others.

Methods for assessing mathematical learning:

Teachers will continually assess children's mathematical knowledge, skills and dispositions using multiple assessment methods as stated below, in interchangeable ways to build a rich picture of children's mathematical learning.

- Observations
- Questioning
- Conferencing
- Tasks
- Feedback
- Portfolios
- Summative tests
- Peer and self-assessment methods

Assessment is used by teachers to inform their planning, selection and management of learning activities so that they can make the best possible provision for meeting the varied mathematical needs of the children in our school.

Standardised tests will be carried out in May each year. Class teachers input the scores of standardised tests results into Aladdin where a class graph is generated to identify class averages in all strands and strand units, and specific areas of the maths curriculum requiring attention.

Standardised tests can also be used to determine the children who require SET hours including children who receive scores at or below SET policy's qualifying percentile on the standardised tests and children of exceptional ability who score on or above the 95th percentile in both the Sigma-T and Micra-T tests.

Ballard Westward is administered twice per year, at Christmas and in Summer.

Where an area of weakness has been identified. A more detailed test will be given. Diagnostic testing will be used in this situation by the SET teacher with parental consent. Errors will be analysed and used as a means of identifying children's strengths and readiness for further learning.

17. Children with Different Needs

- The maths programme aims to meet the needs of all children in the school. This will be achieved by teachers varying pace, content and methodologies to ensure learning for all children. The introduction and development of each topic will be structured in a graded, sequential way to allow the individual child to develop and participate at his/her own level and pace.
- When a child demonstrates a particular difficulty, either with a topic, strand or overall, the class teacher will provide extra support and assistance to the child.
- Those children who receive scores at or below SET policy's qualifying percentile on the standardised tests will have priority in attending the S.E.T team for supplementary teaching for maths. The availability of supplementary teaching for Maths, however, depends on the case load of the S.E.T team. Arrangement will be in accordance with the recommended selection criteria as determined by the DES and laid out in the school's SEN policy. Support will include various models depending on needs of child/class. Should it be decided that withdrawal is required, parents will be notified, and permission will be sought if not already given.
- Children with exceptional ability in maths will be given extra work based on the concept being taught in class to enable them to reach their full potential. ICT allows children to work at their own level and challenges children of all abilities.

Parents will be consulted and opportunities for further development will be explored. Teachers should keep a record of the differentiated approach adopted for these children. Children with exceptional ability will attend the S.E.T. team. They will undertake some of the following activities:

- Coding
- Maths games e.g. Ooodle , Mensa for Kids, Factor Frenzy, Ratio Raiders)
- Logic and problem solving
- Exploration of number: integers, triangular square, prime numbers, factors, multiples and operations.

18.Organisation:

Timetabling:

In line with the requirements as set out by the Primary Curriculum Framework for Schools and Special Schools the time spent on mathematics shall be 3 hours per week for Infants and 4 hours per week for 1st – 6th class students. Where possible the S.E.T team will facilitate team-teaching/in-class support.

Homework:

Homework can involve revision of the day's work in school or mental maths problems. Individual teachers have the freedom to assign homework in mathematics when it is beneficial to the children. The homework assigned should consider the range of abilities within the class. Children attending SET should not receive two sets of mathematics homework.

Homework for the most part should not require teaching at home. It should be reasonable and achievable. Concepts for homework should be already well established in classroom practice.

However, there may also be times when homework will require a parent to “work with” their child to complete a task. It is desirable for parents to play an active role in these homework activities. It provides a link between teacher and parent and encourages parental involvement in their child's education.

It is important that parents are aware of the correct terminology and methods being used by the children. To prevent parents giving a child the wrong methodology, no homework will be given on a particular concept until it has been well established in classroom practice.

Types of homework:

- Written consolidation of work done in class
- Tables
- Problem solving
- Practical assignments
- Collecting data

19. ICT

ICT is very important in the teaching of maths with opportunities for the pupils to engage in interactive activities and games developing understanding of mathematical concepts, problem solving skills and self - motivation in mathematical activities. Our Maths programmes have comprehensive ICT interactive exercises for all concepts at each level. The interactive white board is a very valuable resource in teaching of maths, with opportunities for the pupils to engage in interactive activities and games developing understanding of mathematical concepts and problem-solving skills. The iPads are also used for an individual approach to learning mathematics through ICT.

20. Staff Development

All teachers are made aware of any opportunities for further professional development through participation in courses available in Limerick Education Centre or other venues, either in person or online. Skills and expertise within the school are shared and developed through inputs at staff meetings. All permanent or contracted teachers will avail of all department training regarding the new primary maths curriculum.

21. Parental Involvement:

As parents are the primary educators, their involvement is considered an important aspect to successful implementation of the New Primary Maths Curriculum. Through their exposure to common maths concepts in the home and local environment, children can be equipped with necessary maths skills. In Newport Convent Primary School, from the very outset, the vital role of parents is highlighted in the School Information Booklet, which is distributed at the induction meeting for parents of Junior Infants. Throughout the school, the input of parents is actively encouraged. The Parents' Association may also assist the school in multiple ways, through provision of resources and support for the teachers and parents.

22. Success criteria:

We hope this plan will make a difference to the teaching and learning of mathematics in our school.

- ✓ We as teachers will communicate on a regular basis and ensure consistency between classes.
- ✓ We will plan our individual work with due regard for the level of attainment and understanding the child has reached prior to entering our class and when leaving to begin another class. A Learning Outcomes approach recognises that teachers are best placed to determine the learning needs and strengths of the children in their class.
- ✓ We will endeavour to evoke children's innate ability to think and communicate mathematically, to solve real world problems in mathematical terms and support children to develop the language of mathematics.
- ✓ We will encourage the children to have a positive disposition to mathematics and to develop their mathematical understanding, language, communication skills, perseverance and resilience, interactions and expressions.
- ✓ We will endeavour to provide the children with learning experiences that give rise to mathematical thinking, such as modelling, thinking aloud and 'maths talk'.
- ✓ We will provide opportunities for the children to collaborate, communicate mathematical thinking, and express their understanding in multiple ways and in various contexts.
- ✓ We will endeavour to follow the procedures and methodologies consistently as laid out in this policy.
- ✓ We will know the plan has achieved its aims by seeking feedback from the pupils, from parents, from teachers at staff-meetings, from results and information collated via various methods of assessment, from listening to the language the pupils use when working on a problem and explaining how they arrived at an answer.
- ✓ We will welcome feedback from second level schools in the area as to how our past pupils measure up in competency in mathematics.

The greatest indicator of our success will be that the plan will enhance our pupils learning and understanding, that they will be able to think critically and flexibly and communicate mathematically, solve problems and to make sense of the world mathematically.

23. Implementation and Review

(a) Roles and Responsibilities:

The plan will be supported, developed and implemented by the whole school under the direction of the teacher with responsibility for mathematics along with the principal of the school and supported by the Board of Management.

As part of our policy review, we also consulted with pupils and parents. There was a very positive attitude towards Maths and how we are implementing the Maths curriculum. amongst the pupils and parents with 80.4% of parents reporting that their children enjoy Maths and that 84.3% felt their children were good at Maths. There was even a more positive attitude expressed in the children surveys with over 95% of children reporting that they liked Maths and felt they were good at Maths. While 86.3% of parents felt informed by the school how their child was doing in Maths, we identified that there were some parents who reported that they did not know what their child's strengths and weaknesses were and a small number of children felt they did not know if they were good at Maths. As a result, we will ensure to regularly inform the parents of their children's progress in Maths. We will also endeavour to practice tables in all classes from 1st-6th 2-3 times per week using games such as Daily Ten to ensure that all children have a good knowledge of basic number facts as a small number of parents felt concerned that their children did not know their basic number facts. We will also inform parents of online games they can use at home as this was a suggestion from parents on how we could help them further support their children at home.

The principal and the post holder will co-ordinate and monitor the progress of the plan in classrooms by formal and informal discussions with the teachers, encourage and accept feedback on its implementation, and report to staff on findings. Whole staff feedback on its implementation and development will be reported at staff meetings.

Class teachers are responsible for the implementation of the maths curriculum for their own classes. This plan reflects a new curriculum. Teachers will use this time to fully implement the new curriculum into their classrooms. Upon next review, all teachers will review the implementation of all strands and elements in all class levels, the development of mathematical proficiency among our pupils, the provision of mathematical learning opportunities, our use of the five key pedagogical practices in our classrooms and the learning outcomes of the children to further develop our whole school plan.

Results from the standardised maths tests (Sigma T) will be analysed every year and areas of concern/weakness will be highlighted and discussed.

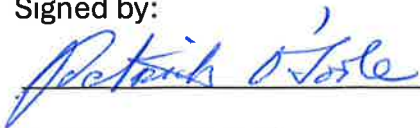
(b) Time frame for review:

The Maths Policy was completed in May 2025 in consultation with all stakeholders and will be initially reviewed annually to embed and every two years thereafter by teachers, post-holders and BOM.

Ratification and Communication


Following ratification by the Board of Management, a copy of this plan will be available to parents and guardians on the school website.

Signed by:



Chairperson B.O.M

Date: 18/06/25



Principal

18/6/25