Maths Long Term Plan 2024 – 25 (in line with WRMH v3)

Archbishop Runcie CE First School

Our original Mission
"A school for the education of children only of the labouring mining and manufacturing and other poorer classes in the Parish of Gosforth and for no other purpose."

The school first existed as a force for social change and we remember this within our historic original mission as we continue to inspire and transform the minds and hearts of everyone we serve today and, thus, the wider world.

In light of our ever changing community, we seek to develop love and determination and, in doing so, enable everyone associated with our school to experience life in all its fullness, as promised by Jesus.

Current Mission
Inspired by the parable of the lost sheep, our mission is to enable everyone within our school community to flourish through our unconditional love and determination, as demonstrated by the good shepherd. We are reminded that every single member of our school community is equally valued and loved in the image of God.

Vision
In 1 Corinthians 16:13-14, Paul urged the church in Corinth to:

Be courageous; be strong.
Do everything in love.

This epistle helps us understand;

- that God's love sets self aside, over and over, endlessly, for the good of others.
- that our thoughts and deeds should spring from, and be done, in love and with strength and courage – referred to as determination.

Values
Rooted in the epistle above, the Christian values of love and determination are at the core of teaching and culture within the school.

Updated May 2024

Intent

At Archbishop Runcie CE First School, we recognise that Mathematics is more than just a core subject – it is a universal language that enables understanding of the world, providing important tools for fields like engineering, physics, architecture, medicine and business, developing children's abilities to think logically and methodically (Ofsted Research Review, 2021). Mathematics is celebrated as a way for children of all ages to think in new ways now and help change the world in the future, a key part of ensuring children can experience life in all its fullness. In Early Years, we believe that developing practitioners' own understanding of mathematics, their understanding of how children typically learn, and how this relates to effective pedagogy is essential for laying the foundations for learning.

For Key Stage 1 and 2, the study of Maths is a combination of declarative knowledge, procedural knowledge and conditional knowledge.

Knowledge:	How do children know it?		Examples:
Declarative 'I know that'	Facts and formulae	Relationship between facts (conceptual understanding)	I know that... 3x5=15 I know that... there are 100 pence in a pound
Procedural 'I know how'	Methods	Relationship between facts, procedures and missing facts (principles/mechanisms)	I know how, in $15 \div x = 3$, $x = 5$, because 3x5=15 I know how... £1.15 is 115p because 100p is £1 and you

Implementation

At Archbishop Runcie, we have a daily dedicated maths teaching input from Nursery to Year 4. Research tells us a sequential curriculum provides better results and allows teachers to focus on concepts and small steps being taught, rather than designing a sequences of learning. In school, we follow White Rose Maths small steps (alongside other schools within the Gosforth Schools' Trust including Gosforth Central Middle School that the vast majority of our children will continue onto). We use Master the curriculum resources to support our delivery of WRMH.

In Early Years, maths is also woven into the school day, to allow children to learn mathematical skills through their environment and routines, exposing them and extending their mathematical thinking.

Ten Town (rhymes, visuals and stories) is used to support number recognition and correct number formation; explicit teaching of correct number formation helps to effectively prepare children for Year 1.

In Key Stage 1 and 2, in addition to multiplication and division units of learning, times table knowledge is taught explicitly. This is further enhanced through intervention sessions and use of Times Table Rockstars; this ensures children are prepared for the statutory multiplication tables check (MTC) at the end of Year 4 and embeds their declarative knowledge.

This curriculum is focused on automaticity of declarative knowledge, then using this to formulate methods (procedural knowledge) with all children being exposed to problem solving (which requires conditional knowledge). In addition, leaders and staff know that children's capabilities to solve word problems are not just reliant on these three areas of knowledge but also proficiency in reading.

In Early Years, picture books are used to discuss mathematical ideas and extend thinking. We have mapped out quality picture

Impact and Next Steps

The impact of the our maths curriculum is that:

- Children become fluent in all basic skills, including times tables, and are able to apply this fluency to more complex reasoning problems.
- Children are equipped for the next stage of their education
- Children retain important knowledge and attain fluency in multiplication tables
- Children can confidently use a variety of 'maths knowledge statements' and language as detailed in the Calculation Policy.
- Children are resilient learners with a positive growth mind-set.
- During their time at ARFS, children continue to move through a progressive curriculum which enables them to build on the skills and knowledge effectively

			add the remaining 15p
Conditional 'I know when'	Strategies	Relationship between information, strategies and missing information (reasoning)	I know when I have £15.25 and I divide it by 5 that I have 300p with a remainder of 25p

This means that reasoning and problem solving are not 'generic skills' but instead require deep bodies of declarative and procedural knowledge that can then be applied to problems when understood properly.

In order to facilitate this, the school follows a mastery approach – this means children across all classes acquiring a deep, long-term, secure and adaptable understanding of the subject. There are a number of key principles that underpin this:

- That all children who work hard at Maths can succeed
- It rejects the idea that groups of children 'just can't do Maths'
- That whole-class teaching, with all children working together on the same concept at the same time, is required before the class can move on
- If a pupil fails to grasp a concept or procedure, this is identified quickly and early intervention ensures the pupil is ready to move forward with the whole class
- A typical lesson teaches the small step, with retrieval opportunities to consolidate prior learning and previous small steps that have been developed in a sequence of learning. Generally, pupils sit facing the teacher and the teacher leads back and forth interaction, including questioning, short tasks, explanation, demonstration, and discussion
- Key facts such as multiplication tables and addition facts within 10 are learnt to automaticity to avoid cognitive

books to use each week to support dedicated daily teaching time as well as rhymes and songs (EEF Improving Mathematics in Early Years and Key Stage 1).

Maths vocabulary, symbols and methods are carefully sequenced and also standardised through the calculation policy.

As per the school's historic and current mission, vision, values and ethos, there is a clear focus in equity – as such, differentiation is not a tool that staff use often. Instead, there is a focus on 'keep up' rather than 'catch up', with all children exposed to the same learning with an appropriate level of support and challenge. This is made possible by there being additional time built into the curriculum plans (consolidation weeks).

We use concrete, practical resources to ensure that children are introduced to difficult mathematical ideas in a more 'hands on' approach to embed their learning. Using concrete resources is key to conceptual understanding. Initially supported, children can use these practical resources if and when they need them throughout the small steps of learning. Pictorial representations allow children to make links between the practical resources and mathematical concepts. This is a key stepping stone before using more abstract mathematical notations. Manipulatives and representations are used to effectively develop and deepen understanding. In Years 1-4, key vocabulary, CPA representations and support for children are displayed on the Maths working wall which is situated at the front of the classroom.

NFER assessments are used to provide gap analysis termly, alongside ongoing formative assessment to inform teaching and learning within the classroom. At the end of each unit, children also complete a WRMH assessment to assess children's knowledge and understanding of concepts. Using this method of assessment ensures that any misconceptions can be addressed swiftly through either intervention or consolidation.

preparing them for their next step in their learning. Children are provided opportunities to revisit and consolidate small steps of learning.

- Beyond ARFS, children leave the school ready for the next phase of learning and will have the skills to apply their learning to a wide range of problems in real life.
- Beyond their school life, Children have developed skills in logical and methodical thinking they can take with them into future careers.

overload in the working memory and enable pupils to focus on new concepts		

Maths rationale

The reasons we chose the White Rose Maths Primary Scheme of Learning can be summarised by the following points:

- It provides a powerful CPA approach (concrete, pictorial then abstract) including in its use of models and images, which helps secure pupils understanding of mathematics and to make connections between different representations. Like all learning, maths begins with our youngest children who have a fantastic allocation of resources to enable success from the start of their maths journey.
- There is a great emphasis on mathematical language, questioning, explaining, reasoning and problem solving. This allows pupils to discuss the mathematics they are doing, support each other to take ideas further, and develop a broad and secure understanding.
- It provides a connected, progressive curriculum, aiding the development of carefully sequenced lessons. (See more below on progression within the scheme).
- It develops the skills of teachers, without interfering with professional judgement by being over prescriptive.
- The curriculum is designed to use skills that have already been learnt in different contexts (sometimes called 'interleaving') whenever possible. This helps pupils to remember and to make connections between different parts of the curriculum.
- It combines the best of both 'mastery' and 'spiral' approaches in the curriculum. It follows many of the mastery principles – spending longer on topics to help gain deeper understanding, making connections, keeping the class working together on the same topic and a fundamental belief that, through effort, all pupils are capable of understanding, doing and improving at mathematics. But also recognising that just spending a good chunk of time on a topic doesn't mean that all pupils will 'master' it the first time they see it, and that they need to see it again and again in different contexts and in different years to help them truly develop their understanding on their journey to mastery, so we've built in the revisiting and reinforcing features of spiral curricula too.
- It is a curriculum that is ambitious and that works for all, with everybody studying the same topic and being provided with support and challenge as needed. Many of the teaching strategies we advocate for all pupils are particularly useful for pupils with SEND.
- At AFRS, we ensure that our learning environments are routine and purposeful – our maths lessons, like many others across the school, rely heavily on strong pedagogical practices such as; no hands up, low noise level, questioning, my turn-your turn and talk partners. This allows our children to be targeted (when required), discuss mathematical concepts confidently and gives their learning the focus and attention that it requires.
- In Reception and KS1, we focus on Mastering Number to ensure quick recall of number facts and this is supported through the use of low distraction, concrete resources such as Rekenreks. The use of Rekenreks continues into Year 1 where the emphasis shifts to learning addition and subtraction to support further application of these number bonds. As the children progress through the school, Ready to Progress documents are used to ensure that learning is appropriate and relevant for our learners. This also allows for swift intervention and consolidation as required. As our children progress through Year 2 and into KS2, they become familiar with the use of technology and testing of number facts in their learning as to support the computerisation of the Multiplication Tables Check in Year 4. Geometry is sequenced throughout our curriculum to mirror the teaching in WRM.

Our maths curriculum is supported throughout our school environment with themed days in Nursery and Reception and completing extra-curricular activities in KS1 and 2 such as STEM week and Make £5 Grow. Problem solving and reasoning opportunities are also sought through Barvember and maths investigations throughout the academic calendar.

***Sp**	Opportunity for spiritual development
***Mo**	Opportunity for moral development
***So**	Opportunity for social development
***Cu**	Opportunity for cultural development

Long Term Plan

Each long term plan is dependent on the number of weeks in each term. Teachers will ensure that there is enough coverage throughout the unit to ensure that units are complete before each half term. How the small steps are covered within the units are at the teachers' discretion dependent on the needs of the class but must be planned effectively to ensure that coverage and pace is appropriate.

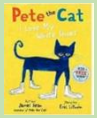
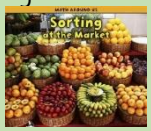
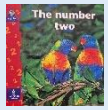
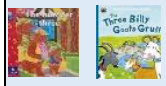
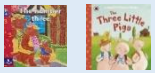
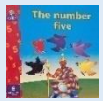
Key:

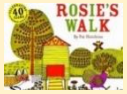
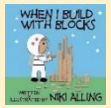
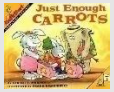
Unit of learning:	**Colour code:**
Number	
Measurement	
Geometry	
Statistics	
Consolidation	
Discrete declarative knowledge	
Additional Maths opportunities	

Nursery

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Colours	Colours	Match	Match	Sort	Sort	Number 1	Number 2	Number 2	Pattern	Pattern	Consolidation	Consolidation
Week 14	**Week 15**	**Week 16**	**Week 17**	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**	**Week 25**	**Week 26**
Number 3	Number 3	Number 4	Number 4	Number 5	Number 5	Consolidate 1-5	Number 6	Height and Length	Mass	Capacity	Consolidation	Consolidation
Week 27	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**	**Week 33**	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**
Sequencing	Positional Language	More than/fewer than	Shape 2D	Shape 3D	Consolidate more than/fewer than	Number composition	What comes after?	What comes before?	Numbers to 5	Consolidation	Consolidation	Consolidation

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12 & 13
Colours: Red Blue Yellow	**Colours:** Green Purple Mix of colours	**Match:** Buttons and colours	**Match:** Match number shapes Match shapes Patterns	**Sort:** Colour Size Shape	**Sort:** What do you notice?	Number 1	Number 2		**Pattern** - AB	**Pattern** - ABC	Consolidation activities
Red Blue Yellow	Green Purple Mix of colours	Buttons and Colours Matching Towers Matching Shoes	Match Numbers Match Shapes Pattern Handprints – big and small	Colour Size Shape	What do you notice? Guess the rule	Subitising Counting Numeral Ten Town – King 1	Subitising dice patterns Subitising random patterns Subitising different sizes Ten Town – Tommy 2	Counting Numeral	Extend AB colour patterns Extend AB outdoor patterns AB movement patterns	Fix my pattern Extend ABC colour patterns Extend ABC outdoor patterns	

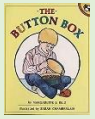
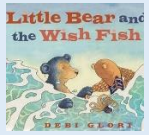
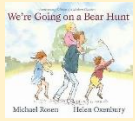
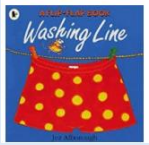
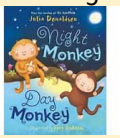
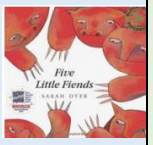
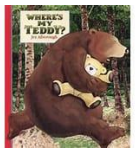
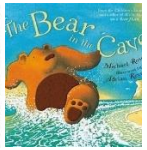
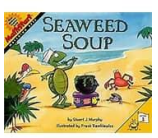
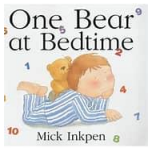
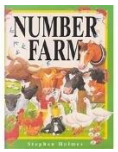
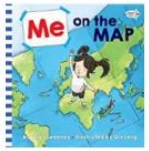
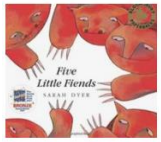
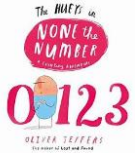
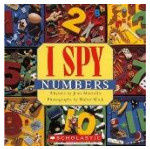
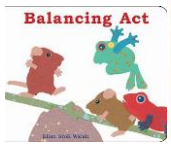
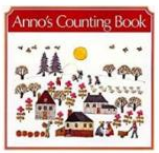
Pete the Cat 		Simon Sock 		Sorting at the Market 		How to count to 1 	1,2,3 to the Zoo  		Beep, Beep, Vroom, Vroom 		Winter activity week
1,2,3,4,5, Once I caught a Fish Alive		5 Little Speckled Frogs	5 Little Ducks	5 Currant Buns	5 Fat Sausages	1 Finger, 1 Thumb	1, 2, Buckle my Shoe	2 Little Dickie Birds	Head, Shoulders, Knees and Toes	Zoom, Zoom, Zoom	
Week 14	**Week 15**	**Week 16**	**Week 17**	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**	**Week 25 & 26**
Number 3		Number 4		Number 5		Consolidate numbers 1 - 5	Number 6	Length and height	Mass	Capacity	Consolidation activities
Subitising different patterns Subitising different sizes Ten Town – Thelma 3	Counting 3 Numeral 3 Composition of 3 Triangles	Counting 4 Numeral 4 Squares and Rectangles	Composition of 4	Counting 5 Numeral 5 Pentagon	Composition of 5	Counting Numerals Subitising	Introduce 10 frame Counting 6 6 on a 10 frame	Tall and Short Long and Short Tall/Long and Short	Balance Scale – objects animals Numicon	Full/Empty Nearly full/Empty More/Less	Capacity Length and Height Mass
The Three Billy Goats Gruff 	The Three Little Pigs 	Pete the Cat and his Four Groovy Buttons  		Five Small Stars  		Five Small Stars  	Six Dinner Sid  	Jack and the Beanstalk 	Dear Zoo /So Light so Heavy  	Goldilocks and the Three Bears 	The Best Bug Parade 
3 Blind Mice	3 Little Kittens	4 Little Snowmen	4 Little Teddy Bears	5 Fingers	Alice the Camel	5 Little monkeys jumping on the Bed	Sing a Song of Sixpence	I'm a Little Bean	5 Little Monkeys swinging in the Tree	When Goldilocks went to the House of the Bears	Recap previous songs

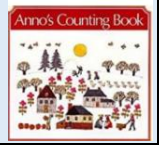
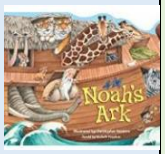
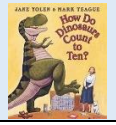
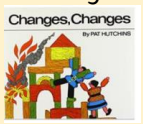
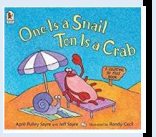
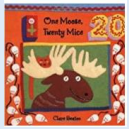
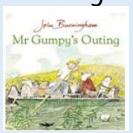
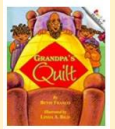
	Week 27	Week 28	Week 29	Week 30	Week 31	Week 32	Week 33	Week 34	Week 35	Week 36	Week 37	Week 38 & 39
	Sequencing	Positional language	More than/fewer than	2D shape Revisit pattern from Autumn term	3D shape Revisit pattern from Autumn term	Consolidation: more than/fewer than One more/one less	Numbers 1 – 5 composition	What comes after?	What comes before?	Numbers to 5	Consolidation activities Ready for Reception .	
	Nursery Rhyme Sequence Daily Sequence The very hungry Caterpillar Sequence	On or under In or out In front or behind	More Fewer More or Fewer	Circles Triangles Squares and Rectangles	Cubes and cuboids Cylinders Spheres	More and fewer Positional Language Sequencing	Composition of 3 Composition of 4 Composition of 3 and 4	Full number track Hidden number Build a number line	Full number track Missing number Puzzle	Birthday party, 1-1 correspondence Digit stars – ordering numbers Number maze – number recognition	Composition More or fewer	Shape pattern What comes after
	The Very Hungry Caterpillar 	Rosie's Walk 	The Three Little Pigs 	Bear in a Square 	When I Build with Blocks 		Crash! Boom! 	One Ted falls out of Bed 	One to10 and Back Again 	One Mole Digging a hole 	Just enough carrots 	Which one comes next 
	5 Little men in a Flying Saucer Incy Wincy Spider (sequence)	Humpty Dumpty	1 Elephant went out to Play	Ring a ring a roses	London Bridge is falling down	Recap previous songs	One Big Hippo Balancing	Sleeping Bunnies	Five Little Monkeys Jumping on the Bed	Five Little Apples	Recap previous songs	

Reception

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12 & 13
Matching/ Sorting	Size/ Capacity	Repeating Pattern	Numbers 1-3/ Composition of 3	Triangles and Circles	Positional Language	Numbers to 5	1 more/ 1 less	Shapes with 4 sides/ Sequencing	Zero Comparing numbers to 5	Composition of 4/5	Mass/ Capacity
Week 14	**Week 15**	**Week 16**	**Week 17**	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**	**Week 25**
Just Like Me			**It's Me 1,2,3**			**Light and Dark**			Alive in 5		
Alive in 5 6,7,8 Comparing two amounts	Making pairs	Length and height Time – Days of the Week	9 and 10	Number bonds to 10	3D shape/ Pattern	Number Pattern/ Build numbers beyond 10	Ordering Numerals to 20	Match, rotate, manipulate (shape)	Adding more	Taking away	Compose and decompose
Week 27	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**	**Week 33**	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38 & 39**
Growing 6,7,8			**Building 9,10**			**To 20 and Beyond**					
Doubling	Sharing	Odd/Even Visualise and Build	Problem solving	Patterns and Relationships	Spatial Reasoning- Mapping						
Find My Pattern			**On the Move**								

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
	Matching and Sorting	Compare amounts Compare size, mass, capacity	Explore pattern	Comparing 1,2,3 Composition of 1,2,3	Circles and Triangles	Positional Language	Representing Numbers to 5	One more or less	Shapes with 4 sides Time	Introducing zero Composition of 5	Comparing numbers to 5 How many altogether?	Mass Capacity

	Identify matching buttons Sorting buttons in groups	Compare – more and fewer Compare taller and shorter Compare longer and shorter Capacity using boxes	AB Patterns AB Shape patterns Mistakes in repeated pattern Patterns using body and movement	Number 1,2,3 Number 1,2,3 sorting and subitising Composition of 3 Find 1 more/Find 1 less Ten Town – King One, Tommy Two, Thelma Three	Sorting shapes Make shape pictures Circles and triangles with real life objects	Where's teddy Positional language – obstacle course	Number 4 and 5 Composition of 4 Composition of 5 Ten Town – Freddie Four, Fiona Five	Finding 1 more to a number Finding 1 less 1 more and 1 less	Sorting rectangles and squares Shape hunt Day and Night	Zero Ten Town – Zero Pond Composition of 5 Equal and unequal groups	Composition of numbers How many altogether? How many are hiding/	Balance Scales Full and Empty Measuring capacity Measuring ingredients
	The Button Box 	Mr Big / My Cat likes to hide in Boxes 	Pattern Fish 	The Little Bear and the Wish Fish 	Circle Triangle 	We're going on a Bear Hunt 	The Ugly 5 	Washing line 	Day Monkey, Night Monkey 	Ten in the Bed 	Five Little Friends 	Who sank the boat? 
Songs this	Counting rhymes to 10 In and out the Dusty Bluebells My hat it has 3 corners Ten Town songs and rhymes to 10						Counting rhymes to 10 Days of the Week 10 in the Bed There's a hole in my bucket Ten Town songs and rhymes to 10					
Additional Books	        	     										

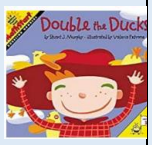
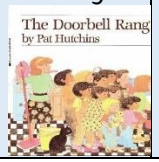
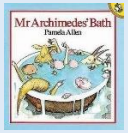
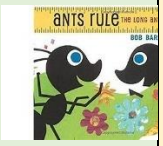
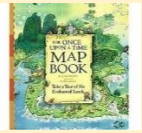
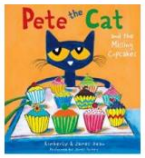
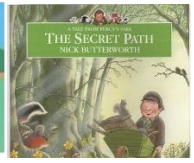
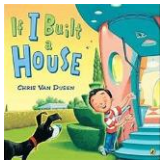
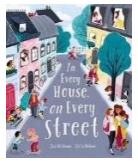
	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25
	Combining two amounts	Making pairs	Length and Height Time	Counting to 9 and 10	Number bonds to 10	3D shape Pattern	Build numbers beyond 10	Counting patterns beyond 10	Match, rotate, manipulate	Addition	Subtraction	Compose and Decompose
	Representing 6 Making 7 Making 8 One more and one less Ten Town – Seal Six, Sir Seven, Eric Eight	Making pairs Combining 2 groups Adding more	Comparing height Comparing length Days of the week Measuring height Measuring time	Representing 9 and 10 Ordering numbers to 10 Composition of 9 and 10 Ten Town – Nina Nine, Tia Ten	Making 10 Counting backwards from 10 Comparing numbers within 10	3D shapes and real life objects Making 3D prints Patterns Movement patterns	Number patterns Matching pictures to numerals Ten frame fill Ten Town teen numbers	Missing numbers Ordering numerals to 20 Race to 20 Ten town teen numbers	Find my match – shape Find my match – models Match and fill Tangrams	Counting on Adding More Adding unknown then (problem solving)	Take away with pebbles Take away Unknown then (problem solving)	Making new shapes – Triangles Making new shapes – Squares Grandpa's Quilt Tangrams
	Anno's Counting Book 	Noah's Ark 	Titch 	How do Dionsaurs count to Ten? 	Number Bond Friends 	Changes, Changes 	One is a Snail, Ten is a Crab 	One Moose, 20 Mice 	Which one doesn't belong 	Mr Gumpy's Outing 	The Shopping Basket 	Grandpa's Quilt 
	10 fat sausages Days of the Week Number Bond rhymes Banana, Banana, Meatball Ten Town songs and rhymes to 10						10 Green Bottles Number songs to 20 Ten Town songs and rhymes to 20					

Additional Books

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Doubling	Sharing and grouping	Even and Odd Visualise and Build	Deepen Understanding	Patterns and Relationships	Mapping

This term the children will focus on consolidating skills already taught and begin looking at place value in preparation for Year 1.

- Sort objects
- Count objects
- Represent objects
- Count, read and write forwards from any number 0 to 10
- Count, read and write backwards from any number 0 to 10
- Count one more
- Count one less
- One-to-one correspondence to start to compare groups
- Compare groups using language such as equal, more/greater, less/fewer
- Introduce <, > and = symbols
- Compare numbers
- Order groups of objects
- Order numbers
- Ordinal numbers (1st, 2nd, 3rd …)
- The number line

	Doubles Doubling Double Dice Double Dominoes	Sharing Sharing picnic More people Grouping	Even and Odd One Odd Day Match How many Cubes	Adding and Subtracting Composition of Number Problem Solving	Comparing lengths Composition of number and number bonds Patterns	Making maps Journey to school X marks the spot Designing mazes	
	Double the Ducks 	The Doorbell Rang 	One Odd Day 	Mr Archimede's Bath 	Ants Rule 	The Secret Path 	
	Doubles, Doubles, Dancing Doubles Jack Hartman - Odd and Even song Ten Town songs and rhymes to 20						
Additional Books	     						

Year 1

<table>
<tr><td rowspan="3">Autumn</td><td colspan="2">Weeks 1 - 5</td><td colspan="2">Week 6 -10</td><td>Week 11</td><td>Week 12 - 13</td></tr>
<tr><td colspan="2">Place value
*Cu</td><td colspan="2">Addition and subtraction</td><td>Shape</td><td>Consolidation
*Cu</td></tr>
<tr><td>Discrete declarative knowledge: Number Bonds to 5 (addition & subtraction)

Subitising</td><td>Days of the week</td><td>Left and right - https://www.youtube.com/watch?v=4VZLVcYsaQk</td><td colspan="2">Discrete declarative knowledge: Number Bonds to 10 (addition & subtraction)</td><td colspan="2">Months of the year</td></tr>
<tr><td rowspan="3">Spring</td><td colspan="2">Week 14 - 16</td><td colspan="2">Week 17 -19</td><td>Week 20 - 21</td><td>Week 23 - 23</td><td>Week 24 - 25</td><td>Week 26</td></tr>
<tr><td colspan="2">Place value (within 20)</td><td colspan="2">Addition and subtraction (within 20)
STEM WEEK * Sp</td><td>Place value (within 50)</td><td>Length and height
*Mo</td><td>Mass and volume</td><td>Consolidation</td></tr>
<tr><td colspan="2">Discrete declarative knowledge: Number Bonds to 20 (addition & subtraction)</td><td colspan="2">Counting in 2s
Doubles and halves</td><td>Rote count to 100</td><td>Counting in 10s</td><td colspan="2">Counting in 5s</td></tr>
<tr><td rowspan="3">Summer</td><td>Week 27 - 29</td><td>Week 30 - 31</td><td>Week 32</td><td>Week 33</td><td>Week 34 - 35</td><td>Week 36</td><td colspan="2">Week 37 - 38</td><td>Week 39</td></tr>
<tr><td>Multiplication and division
Launch TTRS</td><td>Fractions</td><td>Position and direction</td><td>Consolidation & Assessment</td><td>Place value (within 100)</td><td>Money
*So/Cu/Mo</td><td colspan="2">Time
*Sp/So</td><td>Consolidation</td></tr>
<tr><td colspan="2">Discrete declarative knowledge: 2 x table</td><td colspan="2">Discrete declarative knowledge: 10 x table</td><td colspan="2">Discrete declarative knowledge: Number Bonds to 100 (addition & subtraction)</td><td colspan="3">Discrete declarative knowledge: 5 x table</td></tr>
</table>

Year 2

Autumn	Weeks 1 – 4	Week 5 - 9	Week 10 - 12	Week 13
	Place value	Addition and subtraction	Shape	Consolidation & NFER
Discrete declarative knowledge	Count in steps of 2 Double and halve Number bonds to 100 (addition **& subtraction**)		Count in steps of 3 Count in steps of 5 and 10	

Spring	Week 14 - 15	Week 16 - 20	Week 21 - 22	Week 23 - 25	Week 26
	Money *So/Mo/Cu	Multiplication and division Launch TTRS STEM WEEK	Length and height *Mo	Mass, capacity and temperature	Consolidation & NFER
Discrete declarative knowledge	Multiplication and division facts for 5 & 10 times tables	Number bonds to 10, 20, 100 (addition **& subtraction**)	Multiplication and division facts for 2, 5 & 10 times tables		

Summer	Week 27 - 29	Week 30 - 32	Week 33	Week 34 - 35	Week 36 - 37	Week 38 - 39
	Fractions	Time *So/Mo/Cu	NFER & Consolidation	Statistics	Position & direction	SATs & Consolidation

Discrete declarative knowledge	Multiplication and division facts for up to 6 x 3 (first half of 3 x table)	Recap 2 x, 5 x, 10 x facts	Multiplication and division facts for up to 12 x 3 (second half of 3 x times table)	Recap 2 x, 3 x, 5 x, 10 x facts

Year 3

Autumn	**Week 1 - 3**	**Week 4 - 8**			**Week 9 -12**	**Week 13**	
	Place value	Addition and subtraction			Multiplication and division A Relaunch TTRS	Consolidation & **NFER**	
Discrete declarative knowledge	Recap 2 x, 3 x, 5 x, 10 x facts	Multiplication and division facts for up to 6 x 4 (first half of 4 x table)		Multiplication and division facts for up to 12 x 4 (second half of 4 x times table)		Recap 2 x, 3 x , 4 x, 5 x, 10 x facts	
Spring	**Week 14 - 16**	**Week 17 - 19**		**Week 20 - 22**		**Week 23 - 25**	**Week 26**
	Multiplication and division B	Length and perimeter STEM WEEK		Fractions A		Mass and capacity	Consolidation & **NFER**
Discrete declarative knowledge	Multiplication and division facts for up to 6 x 8 (first half of 8 x table)	Recap 2 x, 3 x, 4 x, 5 x, 10 x facts		Multiplication and division facts for up to 12 x 8 (second half of 8 x times table)		Recap 2 x, 3 x, 4 x, 5 x, 8 x, 10 x facts	
Summer	**Week 27 - 28**	**Week 29 - 30**	**Week 30 - 32**	**Week 33**	**Week 34 - 35**	**Week 36 - 37**	**Week 38 - 39**
	Fractions B	Money *So/Mo/Cu	Time *So/Mo/Cu	**NFER** & Consolidation	Shape	Statistics	Consolidation
Discrete declarative knowledge	Multiplication and division facts for 2, 5, 10 and 3, 4, 8 x tables	Multiplication and division facts for up to 6 x 6 (first half of 6 x table)		Multiplication and division facts for up to 12 x 6 (second half of 6 x times table)		Multiplication and division facts for 2, 5, 10 and 3, 4, 6, 8 x tables	

Year 4

The Year 4 statutory multiplication check occurs in week 1-2 of Summer 2, so time is given for multiplication consolidation in this week.

Autumn

Week 1 - 4	Week 5 - 7	Week 8	Week 9 -11	Week 12 & 13
Place value	Addition and subtraction	Measurement (Area)	Multiplication and division A Relaunch TTRS	Consolidation & **NFER**

Discrete declarative knowledge				
Multiplication and division facts for 2, 5, 10 and 3, 4, 6, 8 x tables	Multiplication and division facts for up to 6 x 9 (first half of 9 x table) Emphasise that product adds up to 9 (Finger trick)	Multiplication and division facts for up to 12 x 9 (second half of 9 x times table)	Multiplication and division facts for 2, 5, 10 and 3, 4, 6, 8, 9 x tables	Multiplication and division facts for up to 6 x 12 (first half of 12 x table)

Spring

Week 14 - 16	Week 17 -18	Week 19 - 22	Week 23 - 25	Week 26
Multiplication and division B	Length and perimeter STEM WEEK	Fractions	Decimals A	Consolidation & **NFER**

Discrete declarative knowledge				
Multiplication and division facts for up to 12 x 12 (second half of 12 x times table)	Multiplication and division facts for 11 x table	Multiplication and division facts for up to 6 x 7 (first half of 7 x table)	Multiplication and division facts for up to 7 x 12 (second half of 7 x times table)	

Summer

Week 27 - 28	Week 29 - 30	Week 31 - 32	Week 33	Week 34 - 35	Week 36	Week 37 - 38	Week 39
Decimals B	Make £5 grow enterprise project Money *So/Mo/Cu	Time *So/Mo/Cu	Year 4 MTC Consolidation & **NFER**	Shape	Statistics	Position and direction	Consolidation
Multiplication and division facts for x 6	Multiplication and division facts for x 7	Multiplication and division facts for x 8	Multiplication & division facts for up to 12 x 12				

Teaching Multiplication Tables (2 week rubric)
Years 2 – 4 11:50am-12:00pm daily

Week 1	Teach	Week 2	Practise
Monday	Counting stick with all multiples displayed (count forwards & backwards in multiples) Song: Rolling numbers https://www.youtube.com/watch?v=jf2BHuSbt_Y Use numicon to identify multiples of 3/patterns in ones digits	**Monday**	Counting stick multiples inc super size (recap after weekend break)
Tuesday	Counting stick missing multiples. How do you know? Prove it. There are 3 ways to find this missing multiple, what are they?	**Tuesday**	Song: Rolling numbers Venn diagram
Wednesday	100 square – unpick patterns, tricky multiples to remember. Phrases to help. Chanting tables - Choral "reading" of whole tables - MTYT (gradually delete known facts and repeat)"one times x is y, two times x is z etc)	**Wednesday**	Song: Rolling numbers Mix it up
Thursday	Counting stick + 10 mile version	**Thursday**	Song: Rolling numbers Bingo
Friday	Weekly quiz multiples in order then multiples mixed up (10 secs per question)	**Friday**	Weekly quiz (6 secs per question) multiples in order, mixed up, missing digit, super-size

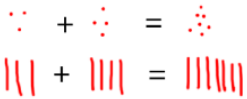
- Children should not do TTRS when they have "finished their work" - everyone needs at least 10 mins discrete tables practice each day plus dedicated TTRS time each day
- Remember no-hands-up and direct questioning towards children who need more practice (not those that know the answer), in particular SEND/PP
- TTRS included on homework stickers
- TTRS leader board should be displayed in classroom - highest engagement/accuracy/best effort etc

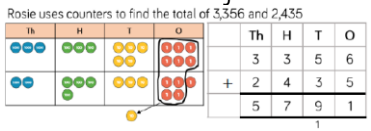
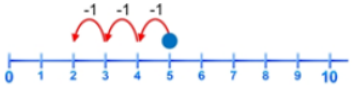
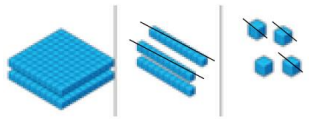
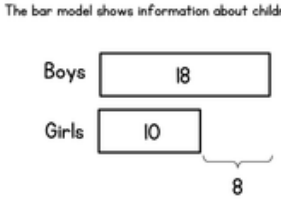
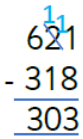
Maths Calculation Policy
Archbishop Runcie CE First School

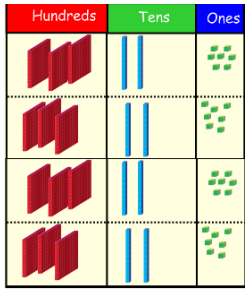
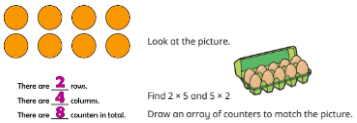
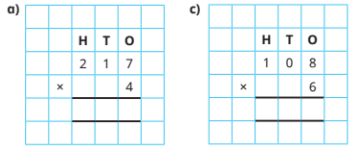
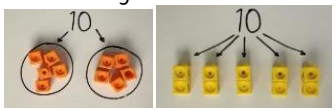
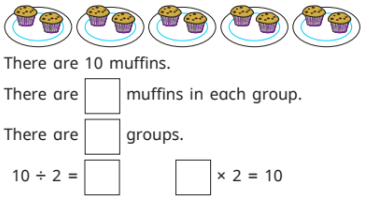
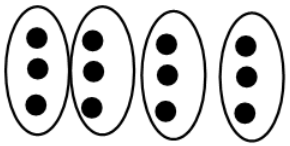
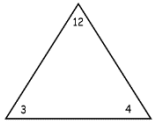
What does Maths look like at Archbishop Runcie First School?

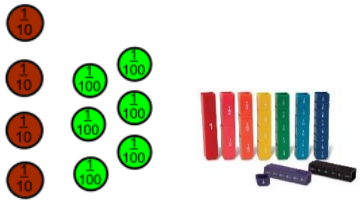
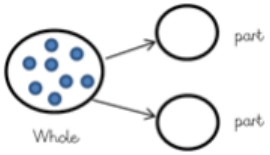
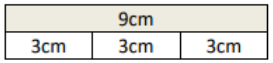
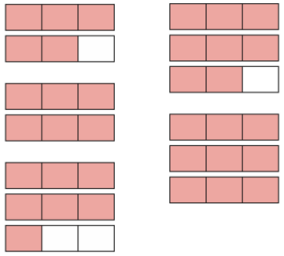
At Archbishop Runcie CE First School, we see Maths as a journey and therefore ensure consistency across the school. Each classroom has a selection of age and unit appropriate concrete resources to scaffold learning; these resources are progressive and mapped out throughout each year group.

Methods of calculation used across the school

	Concrete	Pictorial	Abstract	Key vocabulary
Place value	• Use of Base 10 to represent place value of numbers • Place value grids with Base 10 representations • Place value grids with place value counters • Numicon	• Place value grids with drawn Base 10/place value counters/plain counters • Ten Town for number formation	• Numbers written in books, one digit per square • Some chn may feel comfortable writing Th, H, T, O above each digit	thousands, hundreds, tens, ones, partition, portioning, part, whole, subatise
Addition	• Cubes and double sided counters and Numicon to show parts and wholes e.g. four is a part, 3 is a part. The whole is 7.   • Use of Tensframe and counters to visualise making next 10 • Base 10	• Use numbered number lines to add, by counting on in ones. Encourage children to start with the larger number and count on • Part whole models to help to build calculations • Squares, lines and dots to represent hundreds, tens and ones  • Pictorial representations begin to model column methods in preparation	• Abstract equations e.g. 4 + 3 = 7 • Use of partitioning thousands, hundreds and tens in an equation to make working out simpler Eg. 45 + 22 = 40 5 20 2 40 + 20 = 60 5 + 2 = 7 60 + 7 = 67 Therefore 45 + 22 = 67 • Use of column method for children who are confident 425 + 321 746	addition, add, plus, total, altogether, combine, sum, increase, fact family

		for more formal written methods in future 		
Subtraction	• Use of cubes, double sided counters and Numicon to encourage inverse and parts/wholes to ensure children understand number sentence fully • Children physically remove amount being subtracted using concrete resources • Use of Base 10 to exchange 1 ten stick for 10 ones, 1 hundred for 10 tens, etc when exchanging	• A numbered number line to demonstrate 'counting back'  • Pictorial images of Base 10 used and drawn to show 'crossing out' of subtracted numbers  • Bar models used to show difference and help with missing number problems 	• Abstract equations e.g. 7 – 3 = 4 • Abstract equations consisting of missing numbers to encourage use of inverse method • Use of column method for children who are confident 	subtract, minus, difference, take away, decrease, inverse, fact family
Multiplication	• Use of Numicon, cubes and counters to physically make equal groups and count equal groups made 	• Equal groups are written/drawn pictorially e.g. use of triangles for X lots of 3. • Children exposed to real life examples of equal groups to consolidate understanding  • Arrays are drawn and shown pictorially to	• Children recall times tables by rote and then apply this to solve multiplication problems e.g. 2 x 3 = ____ • Use multiplication facts to complete sequences and missing number problems e.g. 2, ___, 6, 8, ____, 12 • Children can partition numbers to tens and	double, multiplication, multiply, multiplied by, equal groups, arrays, fact family, inverse

	• Create arrays using cubes  • Use Base 10 to represent multiplication as repeated addition e.g. 327 x 4 	represent number sentences 	ones when completing more complex multiplication sentences e.g, 4 x 15 = 4 x 10 = 4 x 5 = • Use column method of multiplication where necessary for 2 digit and 3 digit numbers. 	
Division	• See division as grouping and sharing  10 has been shared into 2 groups of 5. 10 has been shared into 5 groups of 2. • Use of arrays to link to 'fact families' of multiplication and division. • Use stem sentences e.g. "If I know 3 x 5 = 15 then I know 5 x 3 = 15 and I also know 15 ÷ 3 = 5 and 15 ÷ 5 = 3." 	• Use pictures and shapes to represent division calculations.  • Children can use dots (two dots per square) to represent objects in a problem, using circles to split them into groups.  E.g. Rose has 12 apples. She shares them with 4 friends. How	• Once chn are secure with division in a concrete and pictorial sense, they can move onto abstract calculations. 12 ÷ 4 = 3. • Chn can then make 'fact families' to see connection between multiplication and division facts. 3 x 4 = 12 4 x 3 = 12 12 ÷ 4 = 3 12 ÷ 3 = 4  Use of triangles to represent numbers could be used. • Once fluent in this, chn could move onto missing number problems which	equal groups, divide, divided by, divided into, half, share, share equally, equal groups, fact family, inverse

		many apples does each person get?	encourages use of inverse. 12 ÷ ___ = 3 ___ ÷ 4 = 3. ___ = 12 ÷ 3	
Fractions	• Using concrete resources to supporting finding half/quarters etc – link to division and 'sharing'  • Use folded strips of paper to represent fractions • Create 'fraction wall' to investigate equivalent fractions using strips of paper • Use of fraction cubes/counters to support recognising and counting in fractions 	• Use of pictorial shapes to 'shade' in. • Could use part whole models to 'share' counters into part/part /whole  • Use of bar models to show fractions of amounts  • Seeing fractions in bar models to add and compare fractions • Use of a fraction wall will be useful in finding equivalent fractions  	• Once children are secure in using pictorial representations, they will write fractions numerically within a square in their books • They will be able to represent the whole number and the fraction (mixed numbers) and improper fractions • Children will recognise fractions on a number line 	part, whole, numerator, denominator, equivalent fractions, mixed number, improper fractions, whole number, integer