



Harvington C.E. First and Nursery School

Maths

Intent and Implementation

Progression of Knowledge and Skills for Maths

Maths Curriculum Intent Statement:

Our aims in teaching Maths at Harvington First and Nursery School are to help each pupil to achieve their potential and to provide them with the necessary understanding, concepts, skills and confidence to use maths in everyday situations. At Harvington First and Nursery School a practical approach will allow pupils to be involved in a variety of activities to assist in the development of mathematical language, reasoning, concepts and problem-solving skills. We advocate learning through a variety of activities which include the use of stories, songs, games, outdoor learning and imaginative play. It is important to ensure that the work is relevant, motivating and enjoyable to ensure that our pupils can experience success.

Our curriculum intent includes planned opportunities to:

- Promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion;
- Ensure children have access to a high-quality maths curriculum that is both enjoyable and challenging;
- Provide children with activities that enable them to make connections between concepts and explore at a greater depth;
- Develop mathematical knowledge, skills and vocabulary;
- Develop mental maths/maths fluency skills including recall of basic number facts;
- Promote confidence and competence with numbers and the number system;
- Develop the ability to solve problems through decision-making and reasoning in a range of contexts including through other curriculum lessons;
- Develop a practical understanding of the ways in which information is gathered and presented;
- Explore features of shape and space, and develop measuring skills in a range of contexts;
- Understand the importance of mathematics in everyday life and be given the opportunity to apply what they have learnt to real life situations;
- Develop independence and inquisitive minds;
- Reinforce our Christian values including perseverance;
- Revisit work at a deeper level.

Maths Curriculum Implementation:

The maths curriculum follows the National Curriculum objectives for each year group; long term planning grids ensure all objectives are covered and revisited over the course of the year. We use Maths Frame times table assessments and PUMA tests to develop children's mental and written mathematical skills. Calculation policies ensure progression throughout the school in addition, subtraction, multiplication and division methods and provide staff with a clear picture about what has learnt before and what will be covered next. We ensure there are opportunities to develop maths skills through many other curriculum areas to further apply maths skills.

Early Years Foundation Stage (EYFS)

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding, such as using manipulatives, including small pebbles and tens frames for organising counting, children will develop a secure base of knowledge and mathematical vocabulary from which mastery of mathematics is built.

In addition, the curriculum provides rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics, including shape, space and measure. Children are encouraged to develop positive attitudes towards mathematics by exploring patterns and relationships, making connections, discussing their thinking with adults and peers, and approaching challenges with confidence. They are encouraged to persevere, learn from mistakes and develop resilience as mathematicians.

Mathematics is taught through a balance of adult-directed teaching, high-quality interactions, practical experiences and child-initiated play. Adults model mathematical language throughout the day and provide opportunities for children to explain their thinking, justify their ideas and solve problems in meaningful contexts. Learning is carefully sequenced to build progressively on prior knowledge and support children in achieving the Early Learning Goals.

Children's mathematical development is assessed through ongoing observations, professional judgement and practical activities. Assessment is used to inform future planning, identify next steps and ensure that all children make good progress towards the Early Learning Goals.

Early Learning Goal: Number

Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number.
- Subitise (recognise quantities without counting) up to 5.
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Early Learning Goal: Numerical Patterns

Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system.

- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Maths lessons are taught each day and are organised as follows in KS1 and KS2:

5-10 mins: Warm up – including a range from Flashback from White Rose Hub and previous year group (to recover prior learning), Times Table Facts, I See Reasoning, Chris Quigley Mastery and CLIC questions taken from Big Maths.

25 mins: Main session following objectives from the National Curriculum and our Long-Term plan which we have organised ourselves. This session involves teacher talk and lots of input / taking part from children. Where possible this is a hands on approach and children use practical resources.

25 mins Independent activities – Differentiation and Independent Learning

Independent learning tasks should be appropriately differentiated to meet the needs of all pupils, ensuring that every child can access the learning while providing appropriate challenge.

Where appropriate, differentiation should be clearly displayed on the classroom board, with tasks organised into distinct sections to support pupil understanding and independence.

The use of printed worksheets should be kept to a minimum. Wherever possible, pupils should record their work directly into their exercise books to promote presentation, independence and consistency across the curriculum.

Extension activities should be planned for pupils who complete their learning successfully. These should provide meaningful challenge and may include:

- CLIC activities;
- Word problems linked to the current learning objective;
- Multi-step reasoning and problem-solving tasks;
- Other activities that deepen understanding and encourage pupils to apply their learning in different contexts.

SEND – Children with either specific EHCP targets or working below their year group will complete differentiated work.

Adults delivering intervention sessions during the main session should return to the classroom promptly once the intervention has concluded. They should then complete impact marking for the pupils they have supported or provide additional support within the classroom as directed by the class teacher.

Weekly Problem-Solving

A dedicated problem-solving session will take place every Friday to develop pupils' reasoning, resilience and critical thinking skills.

The problem-solving activity does not need to directly link to the mathematical learning from that week. Instead, it should provide opportunities for pupils to apply a range of mathematical strategies, think creatively, persevere when faced with challenge, and develop confidence in tackling unfamiliar problems.

Staff are encouraged to use a variety of high-quality resources to ensure tasks remain engaging and appropriately challenging. These may include:

- Puzzle and Problems
- Chris Quigley Problem-Solving Resources
- Outdoor Learning Maths Cards
- I See Reasoning
- Logic Puzzles
- Twinkl Maths Mysteries

Activities should encourage discussion, collaboration, multiple approaches and the explanation of mathematical thinking, promoting a positive attitude towards problem-solving across the school.

In our Early Years mathematical opportunities are provided through continuous provision along with daily whole class teaching in Reception. See further details in Curriculum Intent and Implementation document.

Beat That Multiplication Grid

Each class will have a designated timetable slot each week to complete the **Beat That Multiplication Grid**.

Class teachers are responsible for recording each pupil's score and monitoring progress over time.

Pupils will take a copy of their multiplication grid home to practise their multiplication facts regularly.

Once a pupil achieves full marks on the same level on **two consecutive occasions**, they will progress to the next multiplication grid level.

Pupils working below age-related expectations will begin on the multiplication grid level that matches their assessed stage of learning, ensuring appropriate challenge and success.

Planning:

Long term planning: National Curriculum and Development Matters objectives, Calculation Policy for KS1 and KS2.

Medium Term: Overview showing which objectives are covered throughout the half term which we have written ourselves (see separate documents for each year group).

For medium term planning, teachers use the objectives set for their year group using the National Curriculum. The objectives from each term are clear and progression within each year group is evident as well as common vocabulary and methods which are built upon as the children move through the school. Each year group follows their calculation policy to ensure progression from year to year-this is in line with the strategies from the 2014 National Curriculum.

Short Term: Weekly maths planning is shown on SMART notebooks, showing warm up and main session tasks and progression in learning throughout the week. This shows exactly what is being taught and in which sequence.

For short term planning, staff split the termly plans into smaller sequences of linked objectives. They plan straight onto SMART notebook, allowing them to be more detailed and it is clear what is being taught when. Vocabulary, resources, WALTs and assessment opportunities are seen clearly.

Friday will be an opportunity to assess mental maths skills through 'Times Table Rockstars'. Mental maths skills will be practised daily and with a longer, specific session on a Friday. Results are tracked online.

Assessment:

At Harvington First and Nursery School, we recognise that Assessment for learning lies at the heart of promoting learning and in raising standards of attainment. We further recognise that effective AFL depends on using the information gained.

Assessment procedures within our school:

- Make ongoing assessments and respond appropriately to pupils during 'day-to-day' teaching. These 'immediate' responses are mainly verbal with some being recorded for assessment evidence. They also inform next steps for learning.

- Written feedback in books is in response to the success criteria of the lesson. Targets are set at the end of each piece of work to extend learning. Staff use impact marking during the lesson to check each child's understanding and move their learning on there and then.
- Each term children take the 'PUMA' maths paper which gives them a standardised score transferred as working towards, at expected level or at greater depth.
- Tracking of multiplication fact progression.
- We use 'Excel' to record our assessments. Children are assessed in all areas of maths and given an overall maths judgement. The judgements are: working below the year group, working towards, expected and greater depth. Results are tracked termly by the maths lead and assessment lead.
- Children's progress is discussed with parents at parents' evenings and recorded on their end of year report.

Moderation:

In school moderation during whole staff meetings, training days and Key Stage meetings.

Cluster school moderations for each year in KS1 and KS2 throughout the year, identifying an agreed judgement and next steps for learning.

Early Years moderation with the cluster group.

Resources:

Children have the opportunity to use a wide range of concrete resources such as number lines, number squares, digit cards and numicon to support their work. They use computing in mathematics lessons where it will enhance their learning, as in modelling ideas and methods. We have a variety of Maths Apps and subscribe to 'Purple Mash' and 'My Maths' to support learning in class, within intervention groups and at home for homework tasks. Maths learning walls display resources to support children during their independent work with examples of methods, vocabulary or extra resources.

The teaching of maths is enriched through:

- Theme/Cross curricular lessons
- Whole school maths days
- Computing sites/Apps
- Homework tasks in KS2-My maths times tables
- Use of money in real life situations: Book Fair, Charity events.
- Cooking activities
- MFL-French mathematical language
- Family learning sessions and family workshops

Monitoring:

Maths is monitored by the Maths Lead following the Monitoring policy. This includes observations of lessons, discussions with children and analysing assessments. The Maths Lead is responsible for writing, updating and evaluating the Maths Action plan. Each term assessment data is analysed against target data and priorities set for all classes.

<u>Nursery</u>		
<u>End of Autumn Checkpoint Rising 3's</u>	<u>End of Spring Checkpoint Rising 3's</u>	<u>End of Summer Checkpoint Rising 3's</u>
React to changes of amount in a group of up to three items Climb and squeeze themselves into different types of spaces Build with a range of resources	Compare amounts, saying 'lots', 'more' or 'same' Develop counting-like behaviour, such as making sounds, pointing or saying some numbers in sequence Complete inset puzzles Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'	Count in everyday contexts, sometimes skipping numbers – '1-2-3-5' Notice patterns and arrange things in patterns
<u>End of Autumn Checkpoint Rising 4's</u>	<u>End of Spring Checkpoint Rising 4's</u>	<u>End of Summer Checkpoint Rising 4's</u>
Develop fast recognition of up to 3 objects, without having to count them individually ('subitising') Show 'finger numbers' up to 3 Experiment with their own symbols and marks as well as numerals Understand position through words alone – for example, "The bag is under the table," – with no pointing Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc	Recite numbers past 5 Say one number for each item in order: 1,2,3,4,5 Show 'finger numbers' up to 5 Describe a familiar route Make comparisons between objects relating to size, length, weight and capacity Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc Combine shapes to make new ones – an arch, a bigger triangle, etc Extend and create ABAB patterns – stick, leaf, stick, leaf	Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle') Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5 Solve real world mathematical problems with numbers up to 5 Compare quantities using language: 'more than', 'fewer than' Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round' Discuss routes and locations, using words like 'in front of' and 'behind' Notice and correct an error in a repeating pattern Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'
<u>Vocabulary</u>	<u>Planned learning activities</u>	
In the Foundation Stage, language is mostly spoken. Of course this does not mean that children should not have sight of the written word, but preferably this should always be in conjunction with the appropriate imagery so that they can begin to associate and recognise words they cannot necessarily yet read fluently.	Adult directed maths focus groups Continuous provision including: water/sand trays, cooking, measuring equipment, maths area Nursery rhymes/songs/stories with a maths focus Objects to count with may include (natural resources, plastic, people, numicon) Visual number line which children refer to in mathematical learning Number digit cards/ gel numbers/ gel numicon Numbers present in all areas (eg 5 children can play here/ money in role play, counters, numbers on phones/calculators)	

	Dice, Dominoes Phones, Calculators Number displays Birthday board Number bond facts inside and outside Odd and evens displayed Junk modelling Water and sand play Containers for pouring Measuring jugs/ pipettes Number formation (IWB, sand, glitter, water/ paintbrushes/ paint)
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Reception					
Autumn 1 Focus	Autumn 2 Focus	Spring 1 Focus	Spring 2 Focus	Summer 1 Focus	Summer 2 Focus
Counting to 10 1:1 correspondence Identify and represent numbers to 5 Patterns Circles and triangles	Counting to 20 Number doubles Positional Language Identify and represent numbers Subitise to 5 Squares and Rectangles Measure objects using cubes (height and length)	Counting to 20 Number doubles Number bonds to 5 1:1 correspondence in counting 1 more and 1 less Comparing and ordering Addition and subtraction	Number doubles Counting to 30 Addition and subtraction 2D shapes: square, rectangle, circle, triangle Sharing objects equally Recognising teen numbers	Number doubles Order and compare Odd and even numbers Addition and subtraction Sharing objects equally Measure using cubes Capacity-full, empty, half full/empty, nearly full, nearly empty	Counting beyond 20 Odd and even numbers Comparing and ordering Addition and subtraction Number bonds
End of Autumn Checkpoint		End of Spring Checkpoint		End of Summer Checkpoint	
Count objects, actions and sounds Subitise Count beyond ten Select, rotate and manipulate shapes to develop spatial reasoning skills		Link the number symbol (numeral) with its cardinal number value Compare numbers Understand the ‘one more than/one less than’ relationship between consecutive numbers Explore the composition of numbers to 10 Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can		Automatically recall number bonds for numbers 0–5 and some to 10 Continue, copy and create repeating patterns Compare length, weight and capacity	
Vocabulary In the Foundation Stage, language is mostly spoken. Of course this does not mean that children should not have sight of the written word, but preferably this should always be in conjunction with the appropriate imagery so that they can begin to associate and recognise words they cannot necessarily yet read fluently.		Planned learning activities Adult directed maths focus groups Continuous provision including: water/sand trays, cooking, measuring equipment, maths area Nursery rhymes/songs/stories with a maths focus Objects to count with may include (natural resources, plastic, people, numicon) Visual number line which chn refer to in mathematical learning Number digit cards/ gel numbers/ gel numicon Numbers present in all areas (eg 5 chn can play here/ money in role play, counters, numbers on phones/calculators) Dice, Dominoes Phones, Calculators Number displays			

	Birthday board Number bond facts inside and outside Odd and evens displayed Junk modelling Water and sand play Containers for pouring Measuring jugs/ pipettes Number formation (IWB, sand, glitter, water/ paintbrushes/ paint
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Year 1

<u>Autumn 1</u>	<u>Autumn 2</u>	<u>Spring 1</u>	<u>Spring 2</u>	<u>Summer 1</u>	<u>Summer 2</u>
<u>Number and Place Value – 3 weeks</u> - count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number - count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s - given a number, identify 1 more and 1 less - identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least - read and write numbers from 1 to 20 in numerals and words <u>Addition and Subtraction – 2 weeks</u> - read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs - represent and use number bonds and related subtraction facts within 20 <u>Measurement – 1 week</u>	<u>Number and Place Value – 2 weeks</u> - count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number - count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s - given a number, identify 1 more and 1 less - identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least - read and write numbers from 1 to 20 in numerals and words <u>Addition and subtraction – 2 weeks</u> - add and subtract one-digit and two-digit numbers to 20, including 0 - solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing	<u>Geometry-shape – 2 weeks</u> Recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles] 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] <u>Addition and Subtraction – 1 week</u> - add and subtract one-digit and two-digit numbers to 20, including 0 - solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$ <u>Measurement – 1 week</u>	<u>Measurement – 2 weeks</u> - measure and begin to record the following: time (hours, minutes, seconds) - recognise and know the value of different denominations of coins and notes <u>Position and Direction – 1 week</u> - describe position, direction and movement, including whole, half, quarter and three-quarter turns <u>Fractions – 1 week</u> - recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity - recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity <u>Multiplication and Division – 2 weeks</u> - solve one-step problems involving multiplication and division, by calculating the answer	<u>Addition and Subtraction – 1 week</u> - represent and use number bonds and related subtraction facts within 20 <u>Measurement – 2 weeks</u> - sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] - recognise and use language relating to dates, including days of the week, weeks, months and years - tell the time to the hour and half past the hour and draw the hands on a clock face to show these times <u>Geometry-shape – 2 weeks</u> - recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles]	<u>Multiplication and Division – 2 weeks</u> - solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher <u>Position and Direction – 1 week</u> - describe position, direction and movement, including whole, half, quarter and three-quarter turns <u>Problem solving and consolidation</u>

- Compare, describe and solve practical problems for: - lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] - mass/weight [for example, heavy/light, heavier than, lighter than] capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]	number problems such as $7 = ? - 9$ Fractions – 2 weeks - recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity - recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity	- Compare, describe and solve practical problems for: time [for example, quicker, slower, earlier, later] Measurement – 2 weeks Measure and begin to record the following: - lengths and heights - mass/weight capacity and volume	using concrete objects, pictorial representations and arrays with the support of the teacher	3-D shapes [for example, cuboids (including cubes), pyramids and spheres] Problem solving – 1 week One step word problems involving numbers and measure	
Vocabulary Number and Calculation same different count(ing) forwards backwards share left over more (than) less (than) total fewer (than) equal (to) most least sum difference distance between total first plus add(ition) subtract(ion) minus ones tens column(s) multiples twenty one twenty two twenty three (<i>and so on up to</i>) ninety nine one hundred first second third fourth (<i>and so on up to</i>) nineteenth twentieth order number amount value size odd even numberline double halve pair how much how many larger smaller estimate compare together altogether bonds zero between above below Fractions (one) half (one) (two))three) quarters sharing group (ing) part whole equal parts same size bar Measurement (time, mass, length, capacity, money) TIME year month week weekend day Monday Tuesday Wednesday Thursday Friday Saturday Sunday January February March April May June July August September October November December night hour minute second morning afternoon evening yesterday today tomorrow before after old(er) new(er) clock (face) o'clock half past birthday watch hour (hand) minute (hand) minutes past/to quarter past/to half past/to fast(er) quick(er) slow(er) early earlier late later MASS weigh weight heavy heavier (than) heaviest light lighter (than) lightest balance (weighing) scales ruler LENGTH long(er)(est) short(er)(est) gram/g kilogram/kg centimetre/cm metre/m far distance measure long(er)(est) short(er)(est) CAPACITY volume full empty more than less than half full MONEY coin note amount penny/p pound/£ <i>coin values:</i> one pence two pence Five pence ten pence twenty pence fifty pence Geometry SHAPE PROPERTIES pattern 2-D rectangle square circle triangle 3-D cube cuboid pyramid sphere side(s) POSITION AND DIRECTION left right top middle bottom in front of behind between above below around near close far up down forwards backwards inside outside clockwise					Assessment PUMA 1-End of each term Ongoing teacher assessment

Year 1

Autumn 1 & 2	Count in 2's up to 24, linking with even numbers and supporting doubles. Count in multiples of 10 in order up to 120.
Spring 1 & 2	Focus on counting in multiples of 5 up to 60, linking with knowledge of counting in 10s. Continue to develop fluency of counting in 2's and 10's.
Summer 1	Count in multiples of 10, 2 and 5 in order with growing fluency.
Summer 2	Count in multiples of 10, 2 and 5 in order fluently.

Teaching methodologies:

- Count pairs of objects
- Count straws bundled in tens
- Sing counting songs
- Hundred square
- Number lines
- Pictorial representations on display
- Rolling Numbers

Year 2

<u>Autumn 1</u>	<u>Autumn 2</u>	<u>Spring 1</u>	<u>Spring 2</u>	<u>Summer 1</u>	<u>Summer 2</u>
<u>Number and Place Value – 2 weeks</u> - recognise the place value of each digit in a two-digit number (10s, 1s) - identify, represent and estimate numbers using different representations, including the number line - read and write numbers to at least 100 in numerals and in words - count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward - compare and order numbers from 0 up to 100; use <, > and = signs - use place value and number facts to solve problems	<u>Multiplication and Division – 2 weeks</u> - recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables - calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs - show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot - recognise odd and even numbers - solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	<u>Number and Place Value – 2 weeks</u> - count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward - recognise the place value of each digit in a two-digit number (10s, 1s) - identify, represent and estimate numbers using different representations, including the number line - compare and order numbers from 0 up to 100; use <, > and = signs - read and write numbers to at least 100 in numerals and in words - use place value and number facts to solve problems	<u>Measurement – 2 weeks</u> - recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value - find different combinations of coins that equal the same amounts of money - solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	<u>Problem solving questions linked to number and measure (KS1 assessments) – 2 weeks</u>	<u>Position and Direction – 2 weeks</u> - order and arrange combinations of mathematical objects in patterns and sequences - use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)
<u>Addition and Subtraction – 2 weeks</u> - recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 - add and subtract numbers using concrete objects, pictorial	<u>Addition and subtraction – 2 weeks</u>	<u>Addition and Subtraction – 1 week</u> - Solve problems with addition and subtraction: - using concrete objects and pictorial representations, including those	<u>Measurement – 1 week</u> - compare and sequence intervals of time - tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times - know the number of minutes in an hour and the number of hours in a day	<u>Statistics – 2 weeks</u> - interpret and construct simple pictograms, tally charts, block diagrams and tables - ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity - ask-and-answer questions about totalling and comparing categorical data	<u>Recap of written methods from the calculation policy – 2 weeks</u>
			<u>Position and Direction – 1 week</u>	<u>Geometry-shape – 2 weeks</u> - identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line - identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces	<u>Problem solving and consolidation – 2 weeks</u>
					Written methods – addition, subtraction Measure – Time (1 week) Money (1 week)

representations, and mentally, including: - a two-digit number and 1s - a two-digit number and 10s 2 two-digit numbers - adding 3 one-digit numbers - show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot <u>Statistics – 2 weeks</u> - interpret and construct simple pictograms, tally charts, block diagrams and tables - ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity ask-and-answer questions about totalling and comparing categorical data	- add and subtract numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and 1s - a two-digit number and 10s 2 two-digit numbers - adding 3 one-digit numbers - recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems <u>Fractions – 2 weeks</u> - recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity write simple fractions, for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods <u>Geometry-shape – 2 weeks</u> - identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line - identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces - identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] - compare and sort common 2-D and 3-D shapes and everyday objects <u>Measurement – 1 week</u> - choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales,	- order and arrange combinations of mathematical objects in patterns and sequences - use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise) <u>Fractions – 2 weeks</u> - recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity - write simple fractions, for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	- identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] - compare and sort common 2-D and 3-D shapes and everyday objects	
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		thermometers and measuring vessels compare and order lengths, mass, volume/capacity and record the results using >, < and =			
<u>Vocabulary</u> Number and Calculation digit numeral twenty one twenty two twenty three twenty four <i>and so on up to</i> ninety nine one hundred multiple commutative place value step counting > as 'greater than' < as 'less than' partition place holder place value estimate estimation inverse array calculate multiplication division times tables Fractions (one) (two) third(s) sharing grouping two quarters third one third two thirds equivalent 'one and a quarter' one and 2 quarters one and a half one and 3 quarters half as much twice as much numerator denominator Measurement (time, mass, length, capacity, temperature, money) TIME analogue Five/ten/1/4 pas/to clockwise anticlockwise MASS gram kilogram LENGTH height width metre centimetre millimetre CAPACITY litre millilitre TEMPERATURE degrees celcius thermometer MONEY price cost amount change Geometry SHAPE PROPERTIES vertical horizontal vertices edges faces quadrilateral polygon prism cone symmetry POSITION AND DIRECTION straight curved rotate rotation Angle right angle Statistics pictogram tally chart block diagram table data category(ies)					<u>Assessment</u> PUMA 2 -End of each term Ongoing teacher assessment Maths Frame assessment at the end of each half term.

Autumn 1	Consolidate counting in steps of 2, 5 and 10 in order from 0 up to 12x.
Autumn 2	Count in steps of 2 and 5 from 0 up to 12x fluently. Recall multiples of 10 up to 12x10 in any order, including missing numbers and related division facts with growing fluency.
Spring 1	Recall multiples of 2 up to 12x2 in any order, including missing numbers and related division facts. Recall multiples of 10 up to 12x10 fluently.
Spring 2	Recall multiples of 5 up to 12x5 in any order, including missing numbers and related division facts. Recall multiples of 2 up to 12x2 in any order, including missing numbers and related division facts with growing fluency.
Summer 1	Count in multiples of 3 to 12x3 in order from 0. Recall multiples of 2 up to 12x2 in any order, including missing numbers and related division facts fluently. Recall multiples of 5 up to 12x5 in any order, including missing numbers and related division facts with growing fluency.
Summer 2	Count in multiples of 3 to 12x3 in order from 0 with growing fluency. Recall multiples of 5 up to 12x5 in any order, including missing numbers and related division facts fluently.

Year 3

<u>Autumn 1</u>	<u>Autumn 2</u>	<u>Spring 1</u>	<u>Spring 2</u>	<u>Summer 1</u>	<u>Summer 2</u>
<u>Number and Place Value – 2 weeks</u> - count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number - recognise the place value of each digit in a 3-digit number (100s, 10s, 1s) - compare and order numbers up to 1,000 - identify, represent and estimate numbers using different representations - read and write numbers up to 1,000 in numerals and in words - solve number problems and practical problems involving these ideas <u>Addition and Subtraction – 2 weeks</u> - add and subtract numbers mentally, including: - a three-digit number and 1s - a three-digit number and 10s - a three-digit number and 100s - add and subtract numbers with up to 3	<u>Multiplication and Division – 2 weeks</u> - recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables - write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods - solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects <u>Addition and subtraction – 2 weeks</u>	<u>Number and Place Value – 1 week</u> - count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number - identify, represent and estimate numbers using different representations - solve number problems and practical problems involving these ideas <u>Addition and Subtraction – 1 week</u> - estimate the answer to a calculation and use inverse operations to check answers - solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction <u>Statistics – 1 week</u> - interpret and present data using bar charts, pictograms and tables <u>Fractions – 2 weeks</u>	<u>Multiplication and Division – 2 weeks</u> - recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables - write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods - solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects <u>Measurement – 2 weeks</u> - tell and write the time from an analogue clock,	<u>Statistics – 2 weeks</u> - interpret and present data using bar charts, pictograms and tables - solve one-step and two-step questions [for example ‘How many more?’ and ‘How many fewer?’] using information presented in scaled bar charts and pictograms and tables <u>Geometry-shape – 2 weeks</u> - draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them - recognise angles as a property of shape or a description of a turn - identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle	<u>Measurement – 1 week</u> - measure the perimeter of simple 2-D shapes <u>Problem solving – 2 weeks</u> - Number and place value - solve number problems and practical problems involving these ideas - Fractions - solve problems that involve all of the above - Multiplication and division - solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects <u>Measurement – 1 week</u> - estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as

digits, using formal written methods of columnar addition and subtraction <u>Geometry-shape – 2 weeks</u> - draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them - recognise angles as a property of shape or a description of a turn - identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle - identify horizontal and vertical lines and pairs of perpendicular and parallel lines	- add and subtract numbers mentally, including: - a three-digit number and 1s - a three-digit number and 10s - a three-digit number and 100s - add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction <u>Measurement – 2 weeks</u> - measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	- count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 - recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators - recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators - recognise and show, using diagrams, equivalent fractions with small denominators <u>Measurement – 1 week</u> - measure the perimeter of simple 2-D shapes	- including using Roman numerals from I to XII, and 12-hour and 24-hour clocks - estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight - know the number of seconds in a minute and the number of days in each month, year and leap year - compare durations of events [for example, to calculate the time taken by particular events or tasks] <u>Fractions – 2 weeks</u> - add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$] - compare and order unit fractions, and fractions	- identify horizontal and vertical lines and pairs of perpendicular and parallel lines <u>Measurement – 1 week</u> - add and subtract amounts of money to give change, using both £ and p in practical contexts <u>Problem solving linked to number and measure – 1 week</u>	o'clock, am/pm, morning, afternoon, noon and midnight compare durations of events [for example, to calculate the time taken by particular events or tasks] <u>Problem solving and consolidation</u>
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			with the same denominators • solve problems that involve all of the above		
<u>Vocabulary</u> Number and Calculation hundreds one hundred and one one hundred and two one hundred and three <i>and so on up to</i> one thousand multiple(s) inverse operations integer(s) decimal(s) remainder Fractions fifths sixths sevenths eighths ninths Tenths numerator denominator order unit-fraction non-unit fraction Measurement millimetre perimeter roman numerals to XII am/pm duration noon midnight analogue clock digital clock Geometry orientation degree(s) right angle perpendicular parallel horizontal vertical quadrilateral polygon polyhedron polyhedra acute obtuse reflex reflection Statistics interpret data category(ies) scale					<u>Assessment</u> PUMA 3-End of each term Ongoing teacher assessment Maths Frame Assessment at the end of each half term

Autumn 1	Count in multiples of 3 to 12×3 in order from 0 fluently.
Autumn 2	Recall multiples of 3 up to 12×3 in any order, including missing numbers and related division facts with growing fluency. Count in multiples of 4 to 12×4 in order from 0 with growing fluency. Introduce (relating to $\times 4$) and begin to count in multiples of 8 from 0 to 12×8.
Spring 1	Recall multiples of 3 up to 12×3 in any order, including missing numbers and related division facts fluently. Count in multiples of 4 to 12×4 in order from 0 with fluently. Count in multiples of 8 to 12×8 in order from 0 with growing fluency.
Spring 2	Recall multiples of 4 up to 12×4 in any order, including missing numbers and related division facts with growing fluency. Count in multiples of 8 to 12×8 in order from 0 fluently.
Summer 1	Recall multiples of 4 up to 12×4 in any order, including missing numbers and related division facts fluently. Recall multiples of 8 up to 12×8 in any order, including missing numbers and related division facts with growing fluency.
Summer 2	Recall multiples of 8 up to 12×8 in any order, including missing numbers and related division facts fluently.

Year 4

Autumn 1			Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Number and Place Value 4 weeks - count in multiples of 6, 7, 9, 25 and 1,000 - recognise the place value of each digit in a four-digit number - order and compare numbers beyond 1,000 - recall multiplication and division facts for multiplication tables up to 12 × 12-ongoing - find 1,000 more or less than a given number - count backwards through 0 to include negative numbers - round any number to the nearest 10, 100 or 1,000 - read Roman numerals to 100 (I to C) and know that over time, the	Multiplication and Division – 2 weeks - recall multiplication and division facts for multiplication tables up to 12 × 12 - use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers - recognise and use factor pairs and commutativity in mental calculations - multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout - solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit,	Statistics – 1 week - interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs - solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs Fractions – 2 weeks - recognise and show, using diagrams, families of common equivalent fractions - add and subtract fractions with the same denominator - solve problems involving increasingly harder fractions to	Measurement – 2 weeks - convert between different units of measure [for example, kilometre to metre; hour to minute] - estimate, compare and calculate different measures, including money in pounds and pence - read, write and convert time between analogue and digital 12- and 24-hour clocks - solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days Fractions – 2 weeks - count up and down in	Number and Place Value 1 week - count in multiples of 6, 7, 9, 25 and 1,000 - round any number to the nearest 10, 100 or 1,000 - identify, represent and estimate numbers using different representations Fractions – 2 weeks - find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths - round decimals with 1 decimal place to the nearest whole number - compare numbers with the same number of decimal places up to 2 decimal places	Fractions – 2 weeks - count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10 - recognise and write decimal equivalents of any number of tenths or hundreds - recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ - add and subtract fractions with the same denominator Problem Solving-2 weeks - solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why - solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects Geometry – 2 weeks - describe positions on a 2-D grid as coordinates in the first quadrant - describe movements between positions as translations of a given unit to the left/right and up/down		

numeral system changed to include the concept of 0 and place value <u>Addition and Subtraction – 2 weeks</u> add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	integer scaling problems and harder correspondence problems such as n objects are connected to m objects <u>Measurement – 2 weeks</u> - measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres - find the area of rectilinear shapes by counting squares - read, write and convert time between analogue and digital 12- and 24-hour clocks <u>Geometry-shape – 2 weeks</u> - compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes - identify lines of symmetry in 2-D	calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number <u>Geometry – 3 weeks</u> - identify acute and obtuse angles and compare and order angles up to 2 right angles by size - describe positions on a 2-D grid as coordinates in the first quadrant - describe movements between positions as translations of a given unit to the left/right and up/down - plot specified points and draw sides to complete a given polygon	hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10 - recognise and write decimal equivalents of any number of tenths or hundreds - recognise and write decimal equivalents $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}$ <u>Multiplication and Division-1 week</u> - multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout <u>Addition and Subtraction-1 week</u> - add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction	- solve simple measure and money problems involving fractions and decimals to 2 decimal places <u>Geometry-shape – 2 weeks</u> - compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes - identify acute and obtuse angles and compare and order angles up to 2 right angles by size - identify lines of symmetry in 2-D shapes presented in different orientations - complete a simple symmetric figure with respect to a specific line of symmetry <u>Multiplication and Division-1 week</u> solve problems involving integer scaling problems and	plot specified points and draw sides to complete a given polygon
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	shapes presented in different orientations		where appropriate	harder correspondence problems such as n objects are connected to m objects	
<u>Vocabulary</u> Number and Calculation thousands round rounding Roman numerals to 100 'C' negative operation factor factor pairs distributive associative derive remainder Fractions hundredth(s) 'decimal equivalents decimal places proportion Measurement convert conversion rectilinear area dimensions kilometre 24-hour clock Geometry orientation degree(s) right angle perpendicular parallel horizontal vertical quadrilateral classify polygon pentagon hexagon heptagon octagon nonagon decagon polyhedron polyhedra acute obtuse isosceles scalene equilateral parallelogram rhombus trapezium protractor regular irregular reflex coordinates quadrant plot grid translate translation axis/axes scale Statistics label graph					<u>Assessment</u> PUMA 4-End of each term Ongoing teacher assessment Maths Frame assessment at the end of each half term

Times Table Plan Year 4

Autumn 1	Recall multiples of 3,4 and 8 up to $12\times$ in any order, including missing numbers and related division facts fluently. Fluently count in 6's in order up to 12×6, using multiples of 3 to support.
Autumn 2	Recall multiples of 6 in any order, including missing numbers and related division facts with growing fluency. Fluently count in 7's in order up to 12×7.
Spring 1	Recall multiples of 6 in any order, including missing numbers and related division facts fluently. Recall multiples of 7 in any order, including missing numbers and related division facts with growing fluency.
Spring 2	Recall multiples of 7 in any order, including missing numbers and related division facts fluently. Fluently count in 9's in order up to 12×9. Fluently count in 11's in order up to 12×11.
Summer 1	Recall multiples of 9 in any order, including missing numbers and related division facts with growing fluency (using $10\times$ and adjusting by 1 group to find $9\times$ as a strategy) Recall multiples of 11 in any order, including missing numbers and related division facts fluently. Fluently count in 12's in order up to 12×12.
Summer 2	Recall multiples of 9 in any order, including missing numbers and related division facts fluently. Recall multiples of 12 in any order, including missing numbers and related division facts with growing fluency (using $10\times$ and adjusting by adding 2 more groups).

Year 5

<u>Autumn 1</u>	<u>Autumn 2</u>	<u>Spring 1</u>	<u>Spring 2</u>	<u>Summer 1</u>	<u>Summer 2</u>
<u>Number and Place Value – 3 weeks</u> - read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit - count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 - interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero - round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 - solve number problems and practical problems that involve all of the above <u>Addition and Subtraction-2 weeks</u> - add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) - add and subtract numbers mentally with increasingly large numbers - use rounding to check answers to calculations and	<u>Addition and Subtraction- 1 week</u> - solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why <u>Multiplication and Division-2 weeks</u> - identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers - know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers - establish whether a number up to 100 is prime and recall prime numbers up to 19 - multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers - multiply and divide whole numbers and those	<u>Number and Place Value -1 week</u> - read Roman numerals to 1000 (M) and recognise years written in Roman numerals. <u>Geometry – Properties of shapes-2 weeks</u> - identify 3-D shapes, including cubes and other cuboids, from 2-D representations - know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles - draw given angles, and measure them in degrees (o) - identify: angles at a point and one whole turn (total 360o), angles at a point on a straight line and 2 1 a turn (total 180o), other multiples of 90o - use the properties of rectangles to deduce related facts and find missing lengths and angles - distinguish between regular and irregular polygons based on reasoning about equal sides and angles. <u>Fractions-3weeks</u>	<u>Multiplication and Division- 3weeks</u> - multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers - multiply and divide numbers mentally drawing upon known facts - divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context - solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes - solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign - solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	<u>Fractions-3weeks</u> - multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams - read and write decimal numbers as fractions [for example, 0.71 = $\frac{71}{100}$] - recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents - round decimals with two decimal places to the nearest whole number and to one decimal place - read, write, order and compare numbers with up to three decimal places - solve problems involving number up to three decimal places - recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal - solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.	<u>Adding and subtracting-1week</u> - use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why <u>Geometry-position and direction-2weeks</u> - identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. <u>Multiplication and division-2weeks</u> - solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes - solve problems involving addition, subtraction, multiplication and division

determine, in the context of a problem, levels of accuracy <u>Fractions -1 week</u> - compare and order fractions whose denominators are all multiples of the same number - add and subtract fractions with the same denominator and denominators that are multiples of the same number	involving decimals by 10, 100 and 1000 <u>Measurement-2 weeks</u> - convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) - understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints - measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres - calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes <u>Fractions -1 week</u> - identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths - recognise mixed numbers and improper fractions and convert from one form to	- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams - read and write decimal numbers as fractions [for example, 0.71 = $\frac{71}{100}$] - recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents - round decimals with two decimal places to the nearest whole number and to one decimal place - read, write, order and compare numbers with up to three decimal places - solve problems involving number up to three decimal places - recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal - solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.	<u>Geometry-position and direction-1week</u> - identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. <u>Statistics -2weeks</u> - solve comparison, sum and difference problems using information presented in a line graph complete, read and interpret information in tables, including timetables.	<u>Measurement-3weeks</u> - calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes - estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water] - solve problems involving converting between units of time use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	and a combination of these, including understanding the meaning of the equals sign - solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. <u>Multiplication and Division-1week</u> - identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers - know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19
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	the other and write mathematical statements > 1 as a mixed number [for example, $5\frac{2}{5} + 5\frac{4}{5} = 5\frac{6}{5} = 1\frac{1}{5}$]				
<u>Vocabulary</u> Number and Calculation million(s) Roman numerals to 1000 'M' linear sequence power(s) prime complement composite prime factor square(d)2 cube(d)3 equivalence Fractions mixed number(s) thousandths percent percentage(s) Measurement composite metric imperial inch foot yard mile pound (lb) pint cm ² cm ³ m ² m ³ Geometry orientation degree(s) right angle perpendicular parallel diagonal horizontal vertical quadrilateral polygon polyhedron polyhedra acute obtuse reflex point reflection 180o 360o X-axis Y-axis Statistics interpret data category(ies) scale					<u>Assessment</u> PUMA 5-End of each term Ongoing teacher assessment

The National Curriculum expectation is that by the end of Year 4, children are able to recall all 12 tables up to 12x12.

To secure this, we recommended that the first term of Year 5 be used to consolidate by continuing your practice.

If you find that your children are working below the structure outlined in this document, we recommend tracking back to where your children are.

**Autumn
Term**

Recall multiples of 12 in any order, including missing numbers and related division facts fluently.

Recall multiples of all times tables up to 12x12 in any order, including missing numbers and related division facts with growing fluency.

Greater Depth

What is Mastery?

A child's ability to skilfully **apply** their learning in more in-depth ways is called **Mastery**. Mastery is not just knowing a fact, but it is using that fact in increasingly more complex situations to extend their learning. Mastery also enables children to work in ways which show a deeper understanding of a given task.

What is Mastery in Maths?

Underpinning principles

- Mathematics teaching for mastery assumes everyone can learn and enjoy mathematics.
- Mathematical learning behaviours are developed such that pupils focus and engage fully as learners who reason and seek to make connections.
- Teachers continually develop their specialist knowledge for teaching mathematics, working collaboratively to refine and improve their teaching.
- Curriculum design ensures a coherent and detailed sequence of essential content to support sustained progression over time.

Lesson design

- Lesson design links to prior learning to ensure all can access the new learning and identifies carefully sequenced steps in progression to build secure understanding.
- Examples, representations and models are carefully selected to expose the structure of mathematical concepts and emphasise connections, enabling pupils to develop a deep knowledge of mathematics.
- Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.
- It is recognised that practice is a vital part of learning, but the practice must be designed to both reinforce pupils' procedural fluency and develop their conceptual understanding.

In the classroom

- Pupils are taught through whole-class interactive teaching, enabling all to master the concepts necessary for the next part of the curriculum sequence.
- In a typical lesson, the teacher leads back and forth interaction, including questioning, short tasks, explanation, demonstration, and discussion, enabling pupils to think, reason and apply their knowledge to solve problems.
- Use of precise mathematical language enables all pupils to communicate their reasoning and thinking effectively.
- If a pupil fails to grasp a concept or procedure, this is identified quickly, and gaps in understanding are addressed systematically to prevent them falling behind.
- Significant time is spent developing deep understanding of the key ideas that are needed to underpin future learning.
- Key number facts are learnt to automaticity, and other key mathematical facts are learned deeply and practised regularly, to avoid cognitive overload in working memory and enable pupils to focus on new learning.

Examples of Cultural Capital in Maths:

- Theme days to explore concepts more widely
- Cross-curricular learning
- Use of the outdoor learning environment
- Use of resources to provide 'hands on' learning
- Opportunities to ask questions and research and explore answers
- Problem solving is taught weekly to allow children chance to apply learning
- Become naturally curious about the world around them
- Develop the skills of enquiry and investigation
- Promote enjoyment and enthusiasm for learning about the world around them from an early age – Business week, real life examples
- Learn and use more mathematical vocabulary as this is explicitly taught.
- Develop excitement and interest during Theme Days and Cross curricular lessons

E

Examples of how Maths skills are relevant for future jobs:

Please use this list to suggest to children how these skills can be used. Suggest that this format is used to display with the learning objective:

- Consultant.
- STEM (or other) Education Consultant.
- Maths teacher
- University lecturer
- Financial manager.
- Financial trader.
- Insurance
- Investment banker
- Market Researcher.
- Banker
- Accountant
- Shop worker
- Self-employed business (tax return)