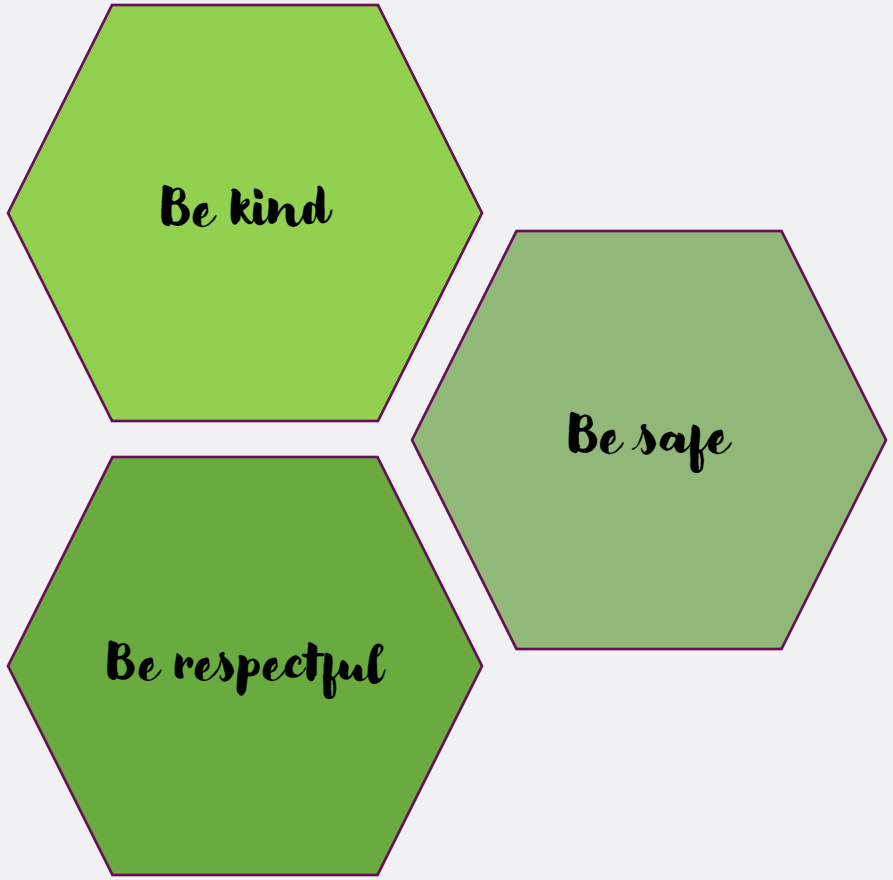
Strathmore Infants and Nursery

Maths

Our Vision and Values



Our Curriculum Intent

- At Strathmore we believe that a high quality Maths curriculum should develop the children's ability to reason mathematically, problem solve and develop fluency and conceptual understanding of each strand of the curriculum.
- At Strathmore our intent is to develop our pupil’s maths ability and confidence. To achieve our intent, we provide a rich, balanced and progressive curriculum which caters for the needs of all pupils.
- At the core of our curriculum is the concrete, pictorial and abstract approach to maths. They are taught and encouraged to explain their choice of methods and develop their mathematical reasoning skills. We encourage resilience and conceptual variation and an acceptance that struggle is often a necessary step in learning.
- We believe that all children should be flexible in their understanding of Maths and be able to select effective methods to solve mathematical and real life problems.
- These aims are embedded across our Maths lessons and the children have opportunities to practise skills within the wider curriculum. Rigorous assessment and review will ensure that we are able to provide targeted support so that all children experience success in Maths.

Core concepts

EYFS

Children work on developing strong grounding in number, they should be able to count confidently and have a deep understanding of numbers to 10. We do this by providing varied opportunities to build and apply mathematical understanding. Children also have opportunities to develop their spatial reasoning skills across all areas of mathematics including shape, space and measure.

KS1

Fluency, reasoning and problem solving help children master the maths curriculum.

Fluency - involves knowing key mathematical facts and being able to recall them quickly and accurately.

- Fluency enables children to make links and connections that leads to mastering the curriculum.
- Children learn to become accurate when recording.
- It allows children to become flexible with their approach to problems.

Reasoning -process of applying logical thinking to a situation

- Teaches children to follow a line of enquiry
- Allows children to use prior knowledge and inference skills to solve a problem.
- Allows children to develop an argument or opinion using mathematical language.

Problem solving -finding a way to apply knowledge and skills to answer unfamiliar types of problems.

- Children will apply their mathematics to a variety of routine and non-routine problems with increasing sophistication.
- Learn how to break down problems into a series of simpler steps
- Persevere in seeking solutions.

Subject Implementation

We follow the White Rose scheme which follows the mastery approach which supports our intent as it embeds the mastery approach through a carefully structured sequence of lessons. We adapt these to our children's needs through a deep understanding of subject knowledge, providing challenge, and with individual support and intervention.

Mastering maths means pupils acquiring a deep, long-term, secure and adaptable understanding of the subject to enable them to move to more advanced material.

White Rose builds upon learning in previous year groups to ensure good coverage and consistency of teaching across the school.

At Strathmore we believe that all children are capable of achieving high standards in maths and that the majority of children progress through the curriculum content at the same pace.

Across the school we follow the CPA approach (concrete, abstract, pictorial) which allows children to use concrete objects to model problems before moving on to pictorial models which encourages children to make mental connections between physical and abstract understanding. Finally, the move to representations in an abstract way using symbols to model problems.

Key Vocabulary EYFS

Number and Place Value	Addition and subtraction	Multiplication and division	Measure	Geometry position	Geometry shape	Fractions	Problem solving
Number, number names to 20, numeral None, nothing Count, on, up to, from, back from More, less, fewer, many fewer, fewest, most Equal, the same Odd, even,	Add, more, plus, sum, total, altogether, Subtract, take away, minus, left Double, half Equal, the same as Number line	Odd, even Double, half, Share, share equally, divide Group, equal groups of,	Container, Full, half, empty, Weigh, balance, heavy, heavier, heaviest, light, lighter, lightest. Scales Time, day, month, year, days of the week names, months of the year names, seasons Morning, afternoon, evening, night, day	In, on, under, over, above, below, top, bottom, inside, outside, next to, in front, behind Up, down, middle, forwards, backwards, sideways, Close, far	Sort, group, circle, triangle, square, rectangle, hexagon, flat, corner, side, straight, curved, Cuboid, pyramid, sphere, cube, prism, cone, cylinder, face, solid Build, draw	Whole, part, half, quarter, equal,	Find, think, use, talk about, describe, explain, show me

Key Vocabulary Year 1

Number and Place Value	Addition and subtraction	Multiplication and division	Measure	Geometry position	Geometry shape	Fractions	Problem solving
Greater than, less than, Ones, tens Order Above, below	Number bonds Inverse Near doubles Difference between	Once, twice, three times, five times. Tens Forwards from, backwards from Lots of, groups of, multiple of, times, multiply, repeated addition Array, row, column, Divide by, left, left over	Midnight Hour, o'clock, half past, hands Now, soon, early, late Quick, quicker, quickly, fast, slow, slower, slowly Old, older, oldest New, newer, newest Always, never, often, sometimes, usually Once, twice First, second, third etc.	Position Around, opposite, apart, between, edge, centre, direction, journey Left, right, across, near, along Whole turn, half turn, stretch, bend	Group, hollow, point, pointed, edge	Equal parts, four equal parts, halves, quarter	Place, fit, arrange, rearrange, change Continue, repeat Choose, collect, record, trace, copy Answer, check, Number fact

Key Vocabulary Year 2

Number and Place Value	Addition and subtraction	Multiplication and division	Measure	Geometry position	Geometry shape	Fractions	Problem solving	Statistics
Numbers to 100 Hundreds Partition, recombine	Sum, three digit number, commutative	Multiplication tables, commutative, repeated addition	Quarter past/to m/km, g/kg, ml/l Temperature (degrees)	Rotation, clockwise, anticlockwise, straight line, arrange, sequence	Sort, group, circle, triangle, square, rectangle, hexagon, flat, corner, side, straight, curved, cylinder, face, solid, edges, vertices, vertex	Whole, part, half, quarter, equal,	Find, think, use, talk about, describe, explain, show me	Pictogram, tally chart, block diagram, category, sorting, totalling, comparing, horizontal, vertical

Progression of Skills

- The following tables show how the Maths skills that the children learn progress through their time at Strathmore.
- By looking at EYFS – Y3 we are able to see where the children are starting from and going to, what the expectations for learning will be when they go to their next school.

Counting Progression

EYFS	Year 1	Year 2	Year 3
Know number names, initially to five, then ten. (Nursery) Know number names, initially to ten, and extending to larger numbers, including crossing boundaries 19/20 and 29/30. (Reception) Counting back to zero. Count things in irregular arrangements Count things that cannot be seen, touched or moved e.g. sounds. Children need the opportunity to count out a number of things from a larger group. Subitising identify regular arrangements of small quantities Recognise small amounts (up to five) when they are not in the 'regular' arrangement, e.g. small handfuls of objects. Match a number and amounts Recognise amounts that have been rearranged and to generalise that, if nothing has been added or taken away, the amount stays the same.	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count numbers to 100 in numerals; count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward	count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number Count in multiples of 6, 7, 9, 25 and 1000 Count backwards through zero to include negative numbers

Progression of Skills Place Value

EYFS	Year One	Year 2	Year 3
Children need opportunities to see small numbers within a larger collection - Part Whole, identifying smaller numbers within a number. Children need opportunities to partition a number of things into two groups, and to recognise that those groups can be recombined to make the same total. Children need opportunities to explore a range of ways to partition a whole number - identifying the pairs of numbers that make a total. Children need opportunities to explore the different ways that numbers can be partitioned, i.e. into more than two groups.	Add and subtract one-digit and two digit numbers to 20, including zero Identify and represent numbers using objects and pictorial representations Read and write numbers to 100 in numerals Read and write numbers from 1 to 20 in numerals and words	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and ones •a two-digit number and tens • two two-digit numbers • adding three one digit numbers Read and write numbers to at least 100 in numerals and in words Identify, represent and estimate numbers using different representations, including the number line use place value and number facts to solve problems	add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction read and write numbers to at least 100 in numerals and in words Identify, represent and estimate numbers using different representations, including the number line solve number problems and practical problems involving these ideas

Progression of Skills Addition and Subtraction

EYFS	Year One	Year 2	Year 3
Look at small numbers within a larger collection - Part Whole, identifying smaller numbers within a number. Partition a number of things into two groups, and to recognise that those groups can be recombined to make the same total. Explore a range of ways to partition a whole number - identifying the pairs of numbers that make a total. Explore different ways that numbers can be partitioned, i.e. into more than two groups.	add and subtract one-digit and two digit numbers to 20, including zero solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9.	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: using two digit and one digit numbers. solve problems with addition and subtraction: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods	add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Progression of Skills Multiplication and Division

EYFS	Year One	Year 2	Year 3
Doubling and halving Sharing	Odd and even numbers	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

Progression of Knowledge

- The following tables show how the Maths skills that the children learn progress through their time at Strathmore.

- By looking at EYFS – Y3 we are able to see where the children are starting from and going to, what the expectations for learning will be when they go to their next school.

Progression of Knowledge EYFS

Nursery

Have a deep understanding of number to 5, including the composition of each number. Subitise (recognise quantities without counting) up to 3. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 3.

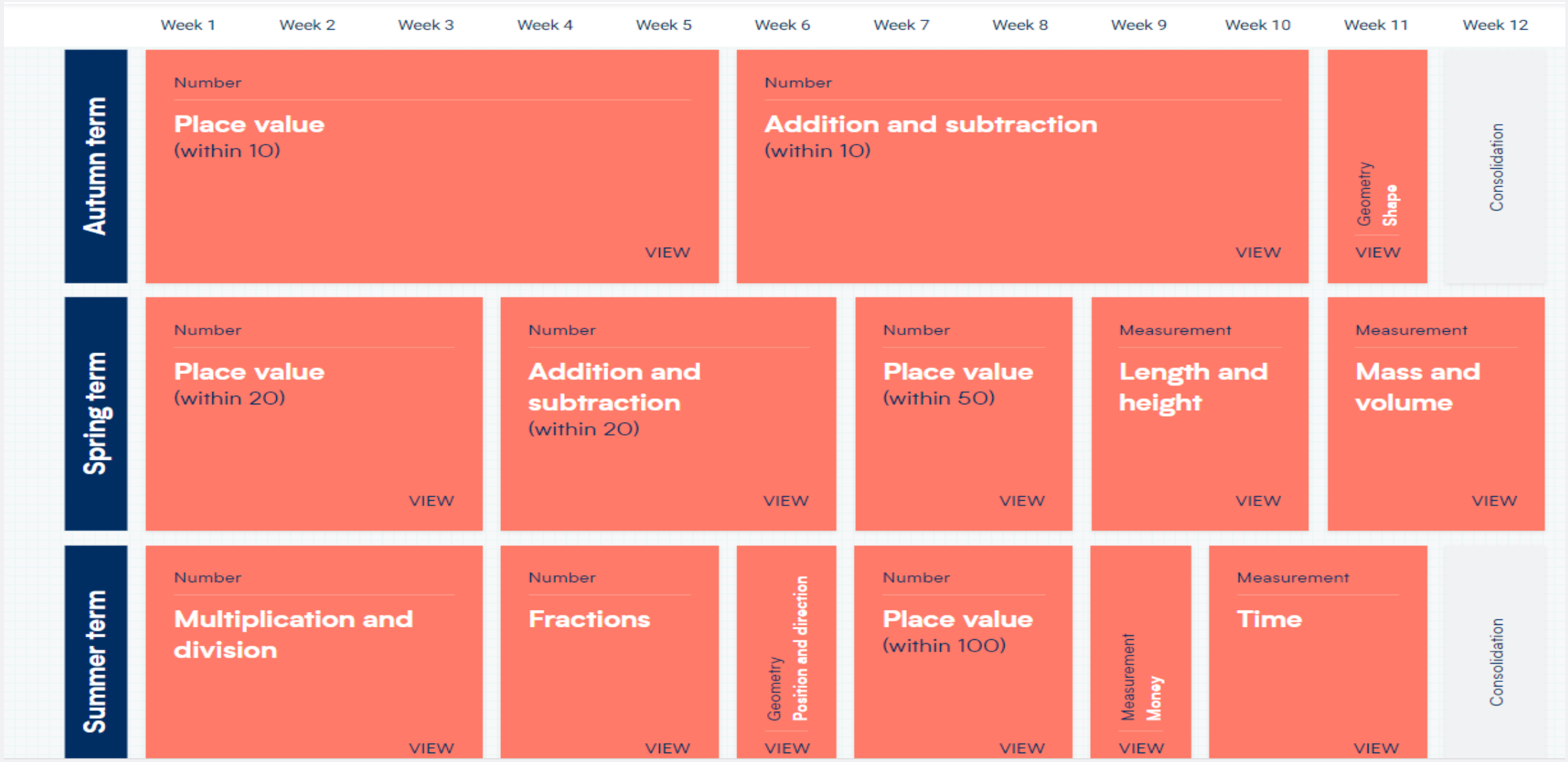
Reception

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.

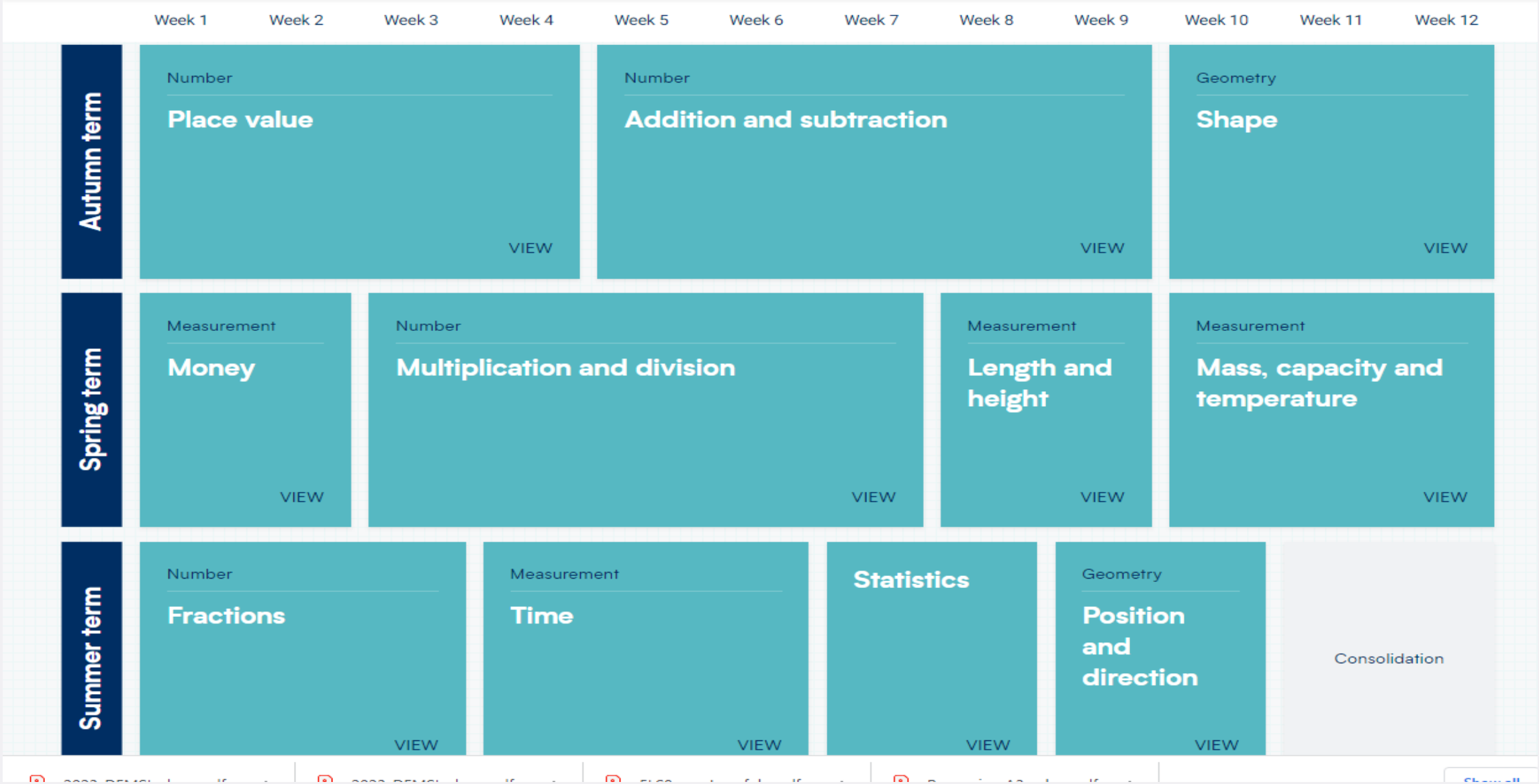
PRACTICAL EYFS ACTIVITIES

11/3/2023

Progression of Knowledge Year 1



Progression of Knowledge Year 2



Inclusive Learning

Our lessons use a range of teaching strategies including whole carpet teaching, group work, independent work and practical investigation giving time for the children to investigate themselves.

By providing a variety of lessons we hope to support a range of learning styles which will allow children of all abilities to access learning.

Depending on children's needs we also make more specific learning adaptations if necessary. Here our some key changes we make for children with SEND.

Hearing Impairment

- Written/visual instructions.
- Signing training for staff

ADHD

- Sufficient quiet space
- Visual instruction
- Worked examples

Dyspraxia (fine/ gross motor)

- Alternative aways to record
- Adapted equipment

Memory/ processing

- Written/visual instructions
- Clear worked examples
- Audio instructions

ASC

- Own set of equipment
- Sufficient quiet space
- Visual instruction
- Worked examples

Visual Impairment

- Enlarged resources
- Adapted equipment
- Larger squares in books
- Audio instructions

Cognition

- Word/definition bank
- Sufficient quiet space
- Visual instruction
- Worked examples

Assessment

- In EYFS we assess maths against a school assessment tool we have created using information from the Early Years curriculum and development matters, with Reception using the Early Learning Goals for their final assessments at the end of the academic year.
- In Year 1 progress and attainment is informed using pre and post unit assessments provided by the White Rose scheme.
- In Year 2 progress and attainment is assessed using the pre and post unit assessments from White Rose and also termly end of block assessments.

Diversity within the Curriculum

After learning more about the Maths curriculum this academic year. I am hoping to hold a Maths week next year focussing on diversity in maths.

Katherine Johnson

Benjamin Banneker

Alan Turin

Subject Impact

"Children are really enjoying the Mastering Number programme. You can see them returning to activities during child led learning time to practise the new skills they are learning."
Reception teacher

"Number Blocks can help me with my counting." **Nursery child.**

Year 2
'I love using the fluency programme. It helps me to understand how to add and subtract.'
Y2 Child

Year 1
"The children are making good progress in their reasoning skills as White Rose has daily opportunities for practise with reasoning and explanations."
Year 1 teacher

Enrichment opportunities

- Our curriculum allows for a range of opportunities for the children to develop their maths skills in a practical way.
- On Decorations Day the nursery children had a paper chain making competition and compared the length of the chains they made.
- In Reception they held a Beach Day and the children used coins to pay for their ice lollies.
- In Forest school, in Year 1, they used natural resources to create patterns.
- In STEM week Year Two took part in a bridge making workshop where they used measurement and number skills to create their bridges.

Future Opportunities

- This academic year we have joined the Mastering Number Project provided by the NCTEM (National Centre for Excellence in the Teaching of Mathematics.) The Mastering Number Project aims to develop the children's number sense, fluency and flexibility with number facts.
- Our hope is that we will be able to take the knowledge and skills we learn through this project to impact our children in years to come creating confident mathematicians.
- The Mastering Number Project is also providing high quality professional development for our teachers which they are sharing across the school.
- We will now show you how the Rekenrek's should be used for mastering number.