Mathematics

Curriculum Intent, Implementation and Impact Statement

Intent

In line with the 2014 National Curriculum for Maths, our aim is that children are taught to become competent mathematicians. We strive to embed the skills and processes necessary to enable children to use and apply their Maths learning in a variety of contexts. We aim to develop children's enjoyment of maths and provide opportunities for children to build a conceptual understanding of maths before applying their knowledge to everyday problems and challenges. Mastery of maths means a deep, long-term, secure and adaptable understanding of the subject.

By the time they leave King David School, we want children to have:

- fluency (rapid and accurate recall and application of facts and concepts)
- a growing confidence to reason mathematically
- the ability to apply maths to solve problems and test hypotheses

Our approach to the teaching of mathematics develops children's ability to work both independently and collaboratively as part of a team. Through mathematical talk, children will develop the ability to articulate and discuss their thinking through reasoning and problem solving activities, ensuring a solid grounding for future learning and beyond.

Opportunities are sought throughout the curriculum of maths to support and promote the ethos of the school, living up to our motto of "Where Stars Shine", and meeting the Mission and Vision Statements through the Golden Threads.

Key Stage 1 National Curriculum Expectations

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

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 vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Key Stage 2 National Curriculum Expectations

Years 3&4

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Years 5&6

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Implementation

At King David School, we recognise that in order for pupils to progress to deeper and more complex problems, children need to be confident and fluent across each yearly objective. To ensure our pupils acquire a deeper understanding in their mathematical learning journey, we follow the White Rose Maths schemes of learning. Within these, each National Curriculum objective is broken down into fluency, reasoning and problem solving. Our teachers use the learning challenges to teach for mastery - an approach to extend and deepen the understanding of pupils within each year group. Our teachers use this document in conjunction with a range of high quality resources such as NCETM and Master the Curriculum to support, stretch and challenge all learners within the classroom.

To raise fluency standards in Maths, we use KIRFs (Key Instant Recall Facts) as a whole-school program. It is important that children know these facts thoroughly and can recall them instantly. The KIRFs are designed to be a set of facts that need to be learnt thoroughly as they build on each other year on year. When children are secure with these facts, they are then able to carry out calculations/methods without the lack of basic facts getting in the way.

As a school we also use Times Table Rockstars for the children to practise their times tables at home and at school.

Children are taught in mixed ability groups and the groups within these are flexible and can change depending on the nature of the lesson. Teachers and TAs move around the classroom and actively respond, challenge and support children with their learning. Working walls are used to display strategies that are being used and should include key vocabulary.

Our lesson structure includes:

- Chanting (times tables, number facts)
- Anchor Task (to find out what the children already know)
- Episodic teaching (teacher, children, teacher, children) where the children are actively involved in representing, calculating and discussing
- Guided practice (where the teacher can model work and assess what the children can do and who may need support in the lesson)
- Tasks incorporate a variety of question styles: What it is and What it's also (standard and non-standard), What it's not (an active argument about misconceptions and reasoning about mistakes) , Opportunities to apply understanding to familiar and unfamiliar problems (including missing number problems, Always/sometimes/Never)

Nursery

Nursery MTP Overview

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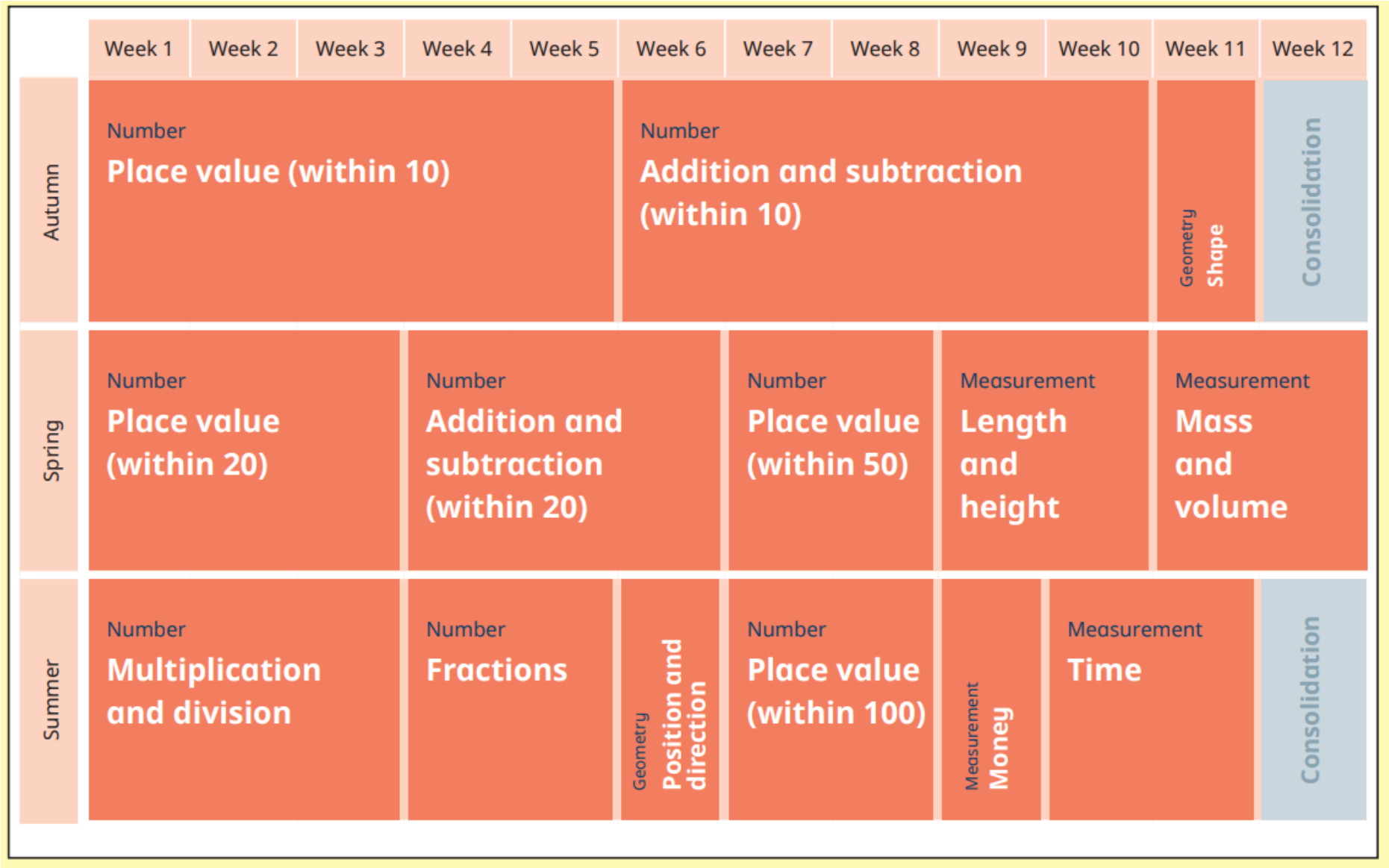
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn Starters: Number songs	Colours • Red • Blue • Yellow	Colours • Green • Purple • Mix of colours	Match • Buttons and colours • Matching towers • Matching shoes	Match • Match number shapes • Match shapes • Pattern handprints – big and small	Sort • Colour • Size • Shape	Sort • What do you notice? • Guess the rule • Guess the rule	Number 1 • Subitising • Counting • Numeral	**Number 2** Subitising-dice pattern Subitising-random pattern Subitising – different sizes	**Number 2** • Counting • Numeral • Numeral	**Pattern** • Extend AB Colour patterns • Extend AB Outdoor Patterns • AB Movement Patterns	• Fix my Pattern • Extend ABC Colour patterns • Extend ABC Outdoor Patterns	Consolidation Activities - Winter activity week
Spring Starters: Number songs	Number 3 Subitising Subitising Subitising	Number 3 3 Little pigs 1:1 counting Numerals/Triangles	Number 4 1:1 counting Numerals Squares/rectangles	Number 4 Composition of 4 Composition of 4 Composition of 4	Number 5 1:1 counting Numerals Pentagon	Number 5 Composition of 5 Composition of 5 Composition of 5	Consolidate 1 - 5	Number 6 Introduce 10 frame	Height & Length • Tall and short • Long and short • Tall/long and short	Mass Relate to books 3 little pigs goldilocks	Capacity	Consolidation
Summer Starters – subitising and revision	More than/fewer than	One more	One less	Shape – 2D Revisit pattern from Autumn	Shape – 3D Revisit pattern from Autumn	Consolidation: More than/fewer one more and one less	Number composition 1 – 5 Revision	Night and Day Order events in their day at nursery Order events in their day at nursery What happens day/night	Positional Language	Positional Language	Consolidation / Activity weeks SUMMER	Consolidation / Activity weeks

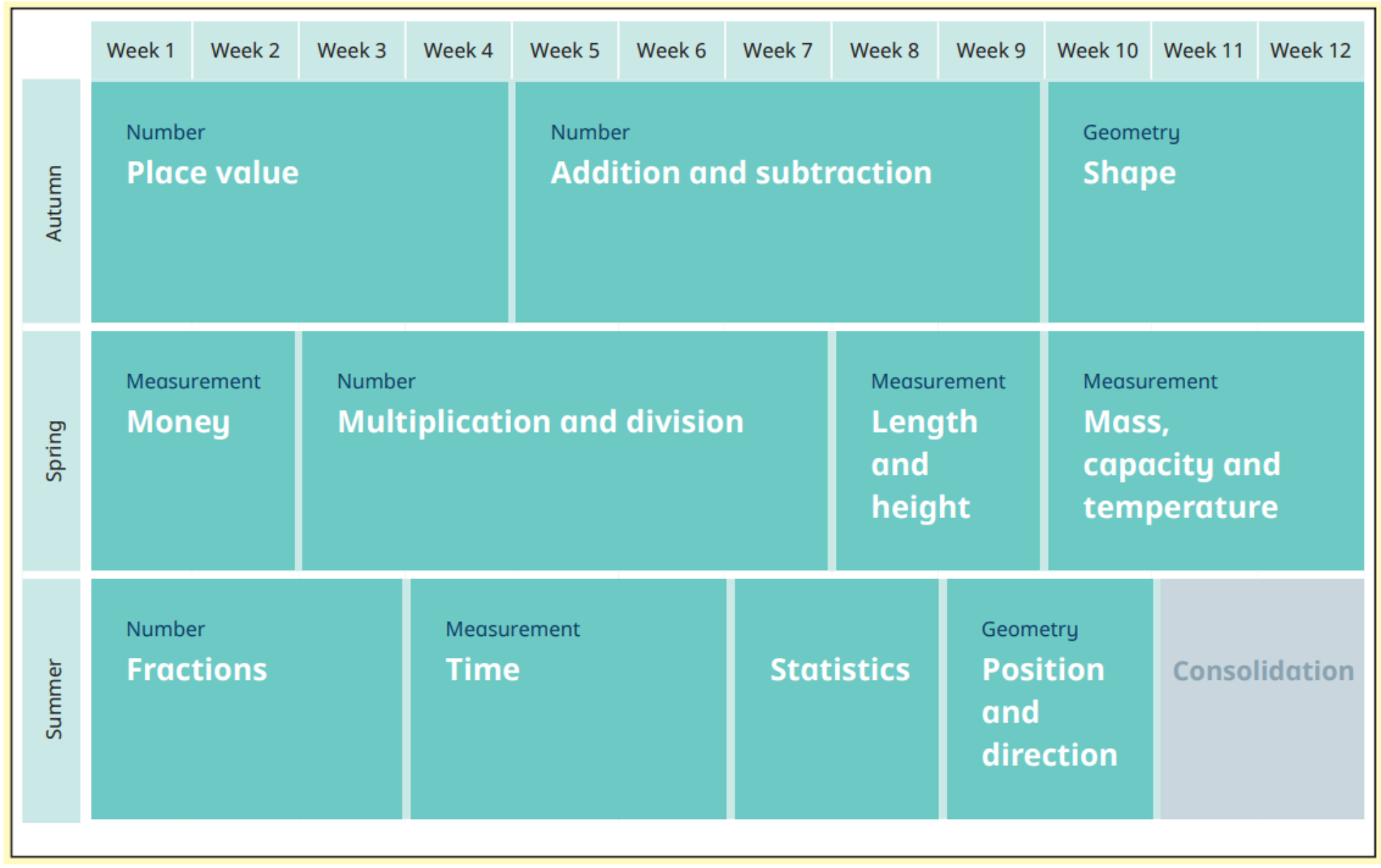
Reception

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	Getting to Know You			Just Like Me!			It's Me 1 2 3!			Light and Dark			Consolidation	
Spring	Alive in 5!			Growing 6, 7, 8			Building 9 and 10			Consolidation				
Summer	To 20 and Beyond			First Then Now			Find My Pattern			On The Move				

Year One


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn
Number
Place value (within 10)
Number
Addition and subtraction (within 10)
Geometry
Shape
Consolidation
Spring
Number
Place value (within 20)
Number
Addition and subtraction (within 20)
Number
Place value (within 50)
Measurement
Length and height
Measurement
Mass and volume
Summer
Number
Multiplication and division
Number
Fractions
Geometry
Position and direction
Number
Place value (within 100)
Measurement
Money
Measurement
Time
Consolidation

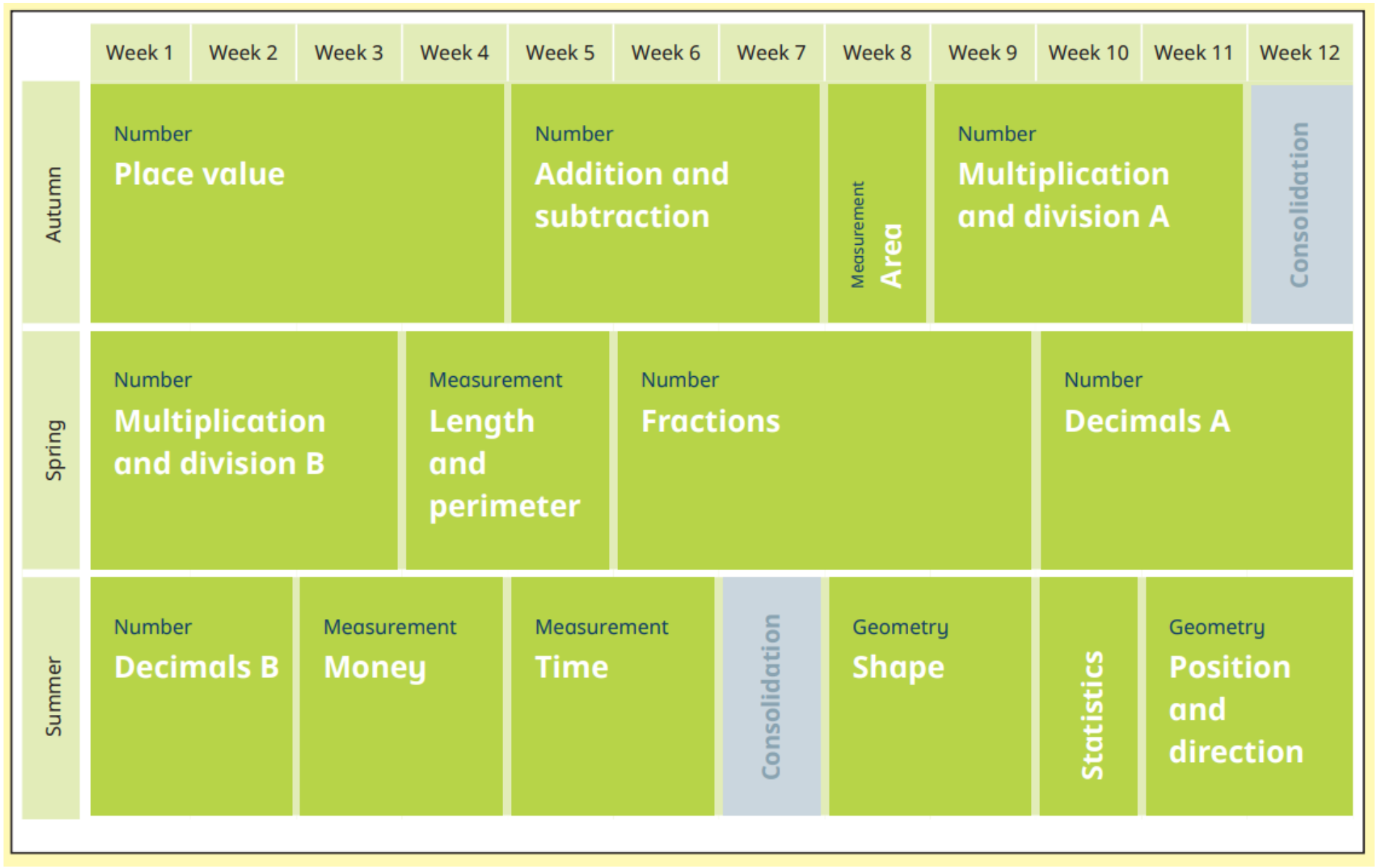
Year Two


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn
Number
Place value
Number
Addition and subtraction
Geometry
Shape
Spring
Measurement
Money
Number
Multiplication and division
Measurement
Length and height
Measurement
Mass, capacity and temperature
Summer
Number
Fractions
Measurement
Time
Statistics
Geometry
Position and direction
Consolidation

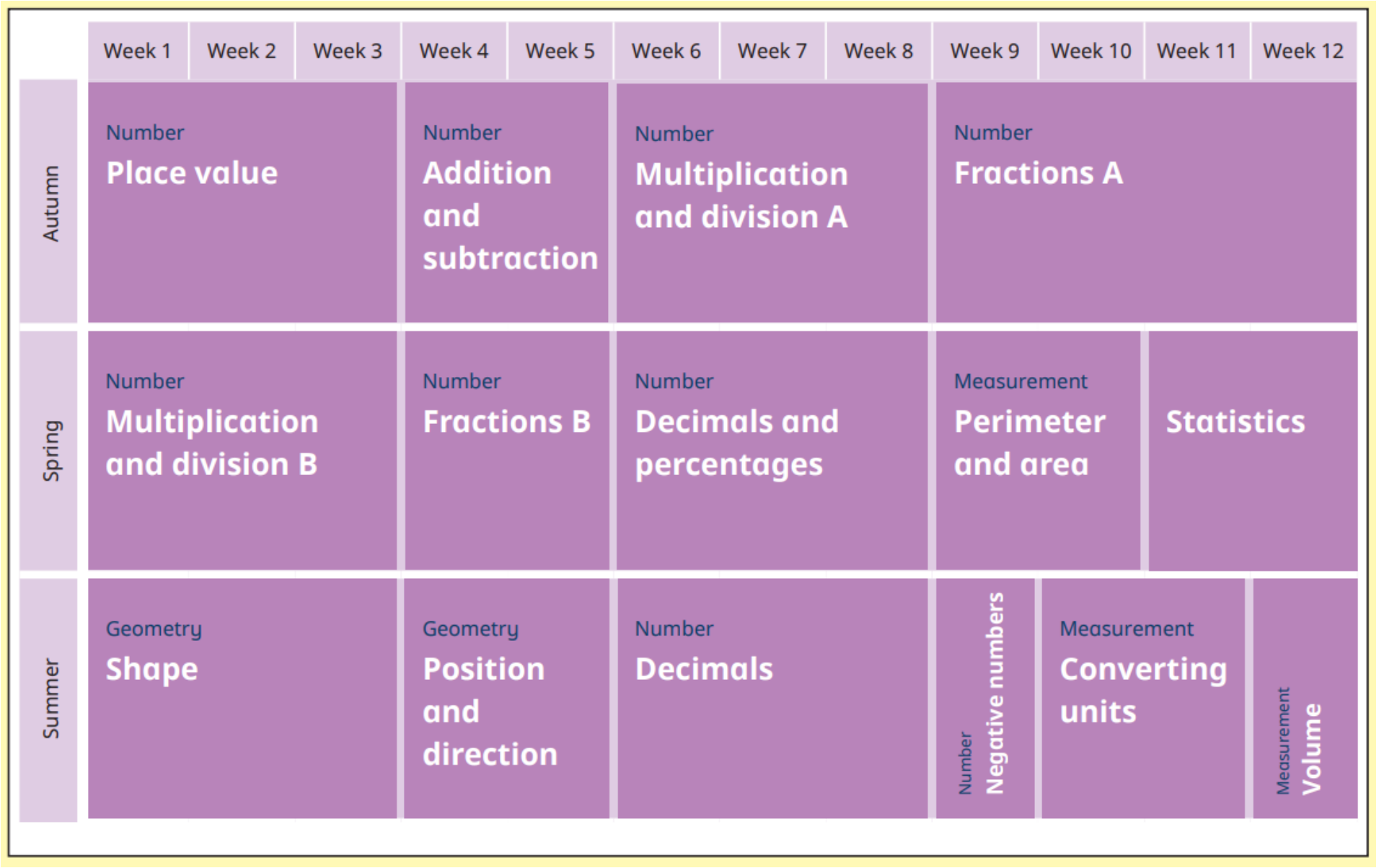
Year Three


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn
Number
Place value
Number
Addition and subtraction
Number
Multiplication and division A
Spring
Number
Multiplication and division B
Measurement
Length and perimeter
Number
Fractions A
Measurement
Mass and capacity
Summer
Number
Fractions B
Measurement
Money
Measurement
Time
Geometry
Shape
Statistics
Consolidation

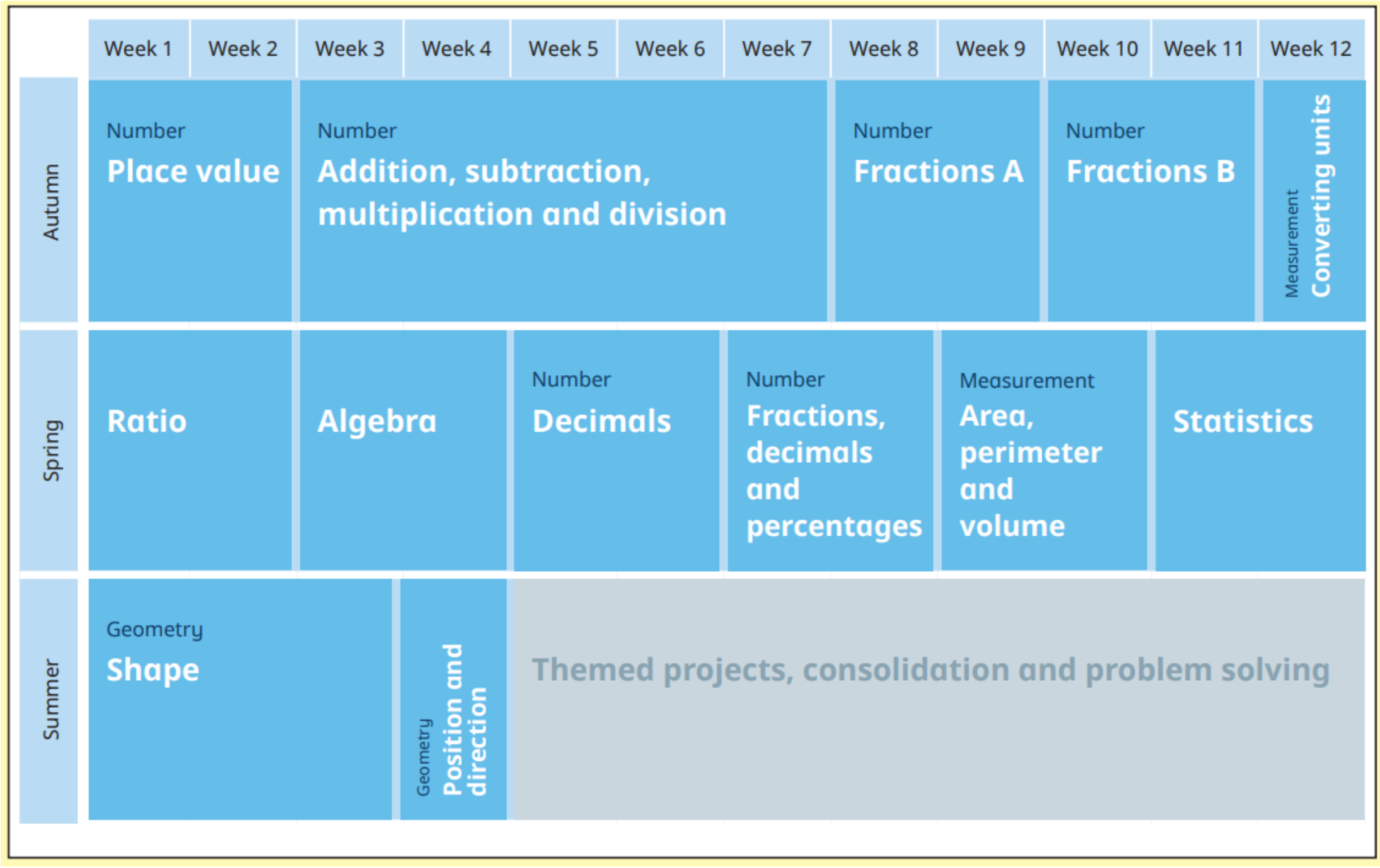
Year Four


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn
Number
Place value
Number
Addition and subtraction
Measurement
Area
Number
Multiplication and division A
Consolidation
Spring
Number
Multiplication and division B
Measurement
Length and perimeter
Number
Fractions
Number
Decimals A
Summer
Number
Decimals B
Measurement
Money
Measurement
Time
Consolidation
Geometry
Shape
Statistics
Geometry
Position and direction

Year Five


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn
Number
Place value
Number
Addition and subtraction
Number
Multiplication and division A
Number
Fractions A
Spring
Number
Multiplication and division B
Number
Fractions B
Number
Decimals and percentages
Measurement
Perimeter and area
Statistics
Summer
Geometry
Shape
Geometry
Position and direction
Number
Decimals
Number
Negative numbers
Measurement
Converting units
Measurement
Volume

Year Six


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn
Number
Place value
Number
Addition, subtraction, multiplication and division
Number
Fractions A
Number
Fractions B
Measurement
Converting units
Spring
Ratio
Algebra
Number
Decimals
Number
Fractions, decimals and percentages
Measurement
Area, perimeter and volume
Statistics
Summer
Geometry
Shape
Geometry
Position and direction
Themed projects, consolidation and problem solving

Impact

Summative assessment takes place at the end of each term using the White Rose termly assessments. End of block assessments take place following the final lesson of the unit of teaching. The information from these is then used to inform future teaching. Formative assessment takes place on a daily basis and teachers adjust planning accordingly to meet the needs of their class. The teaching of mathematics is monitored by leaders through lesson observations, learning walks, book scrutinies, saved work and displays. We are moving towards enhancing measuring the impact of the curriculum through the inclusion of further outcomes: pupil voice and discussions with teaching staff and parents. Pupils' achievement is recorded in line with the National Curriculum objectives and a summative grade given at the end of the academic year, which is shared with the parents in pupil reports. Comparisons are made between a cohort's progress in the subject over time and also between different cohorts' achievement against the National Curriculum objectives, and this is used to inform planning and the provision of resources.

Our Maths Lead has undertaken training with the NCETM GLOW Maths Hub which has been disseminated to staff via staff meetings and training sessions.