Name of policy:

Maths Policy

Date reviewed: November 2022

Date to be reviewed: November 2023

Introduction

This policy outlines the **teaching**, **organisation**, **assessment** and **management** of the mathematics taught and learnt at East Peckham Primary School. The Maths Lead coordinates the curriculum to ensure knowledge building is sequential, while class teachers are encouraged to plan using this scheme, supplemented by continual assessment, to develop interesting and engaging lessons that meet the needs of the children in their class. The implementation of this policy is the responsibility of all the teaching staff.

From October 2022, East Peckham Primary School has been using the White Rose Maths Scheme to deliver Maths across the school.

Rationale

Mathematics is a tool for everyday life. It is a whole network of concepts and relationships which provide a way of viewing and making sense of the world. It is used to analyse and communicate information and ideas and to tackle a range of practical tasks and real life problems. It also provides the materials and means for creating new imaginative worlds to explore.

The National Curriculum (2014) for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Teaching Mathematics

The school has adopted the White Rose Maths Scheme. The Scheme of Work can be found in 'Appendix i'.

Organisation in Foundation Stage:

Mathematics is taught through focused teaching inputs. In addition to these isolated teaching inputs, mathematics is taught through the environment which is skilfully created by the adults in the Foundation Stage.

In Early Years children have teacher-directed maths teaching each day and 5 minutes of daily counting. In addition, children have opportunities to apply their maths skills, indoors and outdoors, through play in both child-initiated and teacher-directed time. Teachers of the Reception children base their teaching on objectives in Development Matters; this ensures that they are working towards the mathematics early learning goals (number and numerical patterns). The teachers in the EYFS use the planning guidance from White Rose in the creation of lessons and development of their environment.

Towards the end of Reception, teachers aim to draw the elements of a daily mathematics lesson together so that by the time children move into Year 1 they are familiar with the more formal approach to maths learning.

Organisation in Key Stage 1 (KS1) and Key Stage 2 (KS2):

In KS1 and KS2 children work in flexible groups which are created according to the teacher's formative assessment throughout the lesson/sequence of lessons. There is no setting for maths as it is expected that all children will achieve age related expectations unless there is a specific special educational need preventing them from doing so.

Teachers follow the 2014 National Curriculum and Programme of Study for their relevant year group. The White Rose resources are used to support the teaching of the Primary National Curriculum. Teachers are able to adapt their teaching and planning if required, while still remaining close to the scheme so that knowledge acquisition is sequential and builds upon previous years.

Teachers use strategies to ensure that all children can achieve the age related expectations with scaffolding support and use of manipulatives. Within these lessons, there will be a good balance between whole-class work, group teaching, paired work and individual practice, as is fitting with the concept being taught.

Teaching time

An hour maths lesson is not expected daily but enough time needs to be dedicated so that children are able to master a topic thoroughly, and that the entire curriculum for that year group is taught within the year.

Teachers are trusted to teach sessions that are long enough to cover content, whilst being short enough to meet the attention and interest needs of their children. *This has been an evolution of how we assign teaching time, particularly in response to the changing needs post COVID school closure.* This may present itself as shorter sessions in Key Stage 1, with several other smaller teaching points covered throughout the day, which develops into a longer hour-long session at the top end of Key Stage 2, in readiness for secondary school.

All lessons have a clear learning objective and, where appropriate, success criteria or steps to success which are shared with, or generated by, the children in the lesson.

Daily Maths Session

Supported by:

- Spiral Curriculum from White Rose planning
- Daily fluency opportunities
- Daily reasoning and problem solving opportunities
- Ongoing formative assessment
- In-class differentiation
- Intervention sessions, where required.

At East Peckham Primary School we make use of all spare moments in the timetable, so in addition to the timetabled maths lessons, opportunities are also made for continual review of fluency and reasoning. These opportunities may arise in registration, morning work, during the changeover of lessons etc. and may be no longer than 5 minutes but they are dedicated to building fluency skills such as counting in multiples and rehearsing times tables, and should involve explicit revision of previously taught concepts. This works alongside the spiral curriculum in White Rose Planning, as well as in-school assessment for learning (which facilitates intervention groups as needed) to ensure that the daily maths sessions is well-supported to be effective. This approach ensures that Maths is not taught in isolation and therefore has a greater chance to become embedded knowledge.

Concrete, Pictorial, Abstract (CPA) approach:

The concrete-pictorial-abstract approach suggests that there are three representations necessary for pupils to develop understanding of a concept. Reinforcement is achieved by going back and forth between these representations.

Concrete representation

The enactive stage - a student is first introduced to an idea or a skill by acting it out with real objects. In division, for example, this might be done by separating apples into groups of red ones and green ones or by sharing 12 biscuits amongst 6 children. This is a 'hands on' component using real objects and it is the foundation for conceptual understanding.

Pictorial representation

The iconic stage - a student has sufficiently understood the hands-on experiences performed and can now relate them to representations, such as a diagram or picture of the problem. In the case of a division exercise this could be the action of circling objects.

Abstract representation

The symbolic stage - a student is now capable of representing problems by using mathematical notation, for example: 12 ÷ 2 = 6. This is the intended representation for all concepts taught.

Fluency

Fluency in maths is about developing number sense and being able to apply the most appropriate method for the task at hand; to be able to apply a skill to multiple contexts. Most importantly, maths fluency allows learners to understand the relationship between numbers. It means that not only do they get to grips with how they answer something, but they also understand why they've reached their answer. To build fluency, children must be secure in their understanding of number and the 4 operations, therefore the day must be interspersed with opportunities to calculate. 5 minute review sessions are included in each year group to enable familiarity with number. Activities include:

- Daily counting in a variety of multiples
- Number bond familiarity games
- Discussion about approaches to a given calculation
- Times tables are taught in a range of ways e.g. pictures, counting on a number stick, as well as chanting and recital, including out of sequence
- Times table tests to monitor progress as times tables are set as homework every week

Reasoning and Solving Problems

Opportunities for reasoning and problem solving is a part of every maths lesson as part of the chosen maths scheme. This allows children to apply their problem solving skills through maths investigations and puzzles. The children should use reasoning stem sentence starters to help them explain their thinking at regular intervals, and teachers are asked to include these on their planning.

Teachers plan for children who are 'fast finishers' through questioning and additional deepening activities that are planned using higher order thinking skills. This is sometimes managed through tasks requiring children to explain, prove, story and describe.

Links between mathematics and other subjects

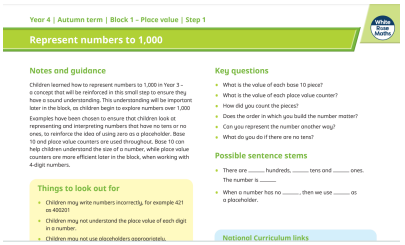
Mathematical contributions are made in many subjects within the primary curriculum and opportunities will be sought to draw mathematical experience out of a wide range of activities. This will allow children to begin to use and apply mathematics in real contexts. Our school is keen for children to use mathematics skills in a range of situations. Where appropriate, maths will be taught through other subjects for example creating graphs in Science, reading map scales in Geography, and measuring materials in Design and Technology. In addition to this, teaching of specific maths skills is linked closely to topic planning with all lessons in a real life context.

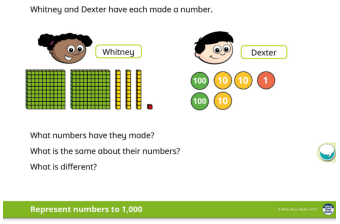
Teaching - To summarise:

Each day, in each class you will see:

In the lesson

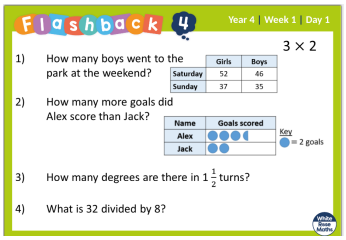
- High quality teaching of Maths utilising the White Rose Maths Resources (session timing dependent upon age). Including use of stem sentences and addressing misconceptions.
- Session supported by equipment to support the 'Concrete, Pictorial, Abstract' approach.
- In-class differentiation, but with a whole class focus.
- Extension for children who need it, looking to add breadth rather than just moving ahead a year group, via the White Rose Reasoning and Problem Solving Resource.

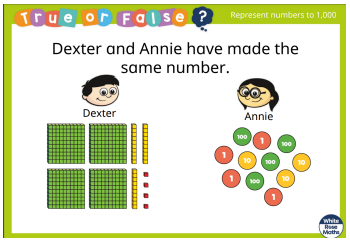




Throughout the day

- Small sessions on fluency - discussing approach to basic calculations, as well as whole-class counting/times tables opportunities.
- Small session on revisiting previous concepts - using White Rose resources of 'Flashback 4'.
- Small opportunities to problem solve - using White Rose resources of 'True or False'.
- '1-Minute Maths' resource available on the White Rose website to support speed.
- *Experienced teachers are able to use other resources so long as the concept has been covered.*





Across the term

- Spiral curriculum approach where small sessions of fluency and problem solving may refer back to previously taught concepts.

Where required

- Intervention groups taking place outside of lesson time, to support children with concepts which need further support.

School and Class Organisation

Differentiation

The expectation remains that all children will reach age related expectations unless there is a Special Education Need that may create a barrier to learning. In this case extra and additional provision will be made.

Teachers do not differentiate the content of the learning unless there is a learning need that would require this kind of provision. Teachers differentiate through the use of resources, adult support and expectation of reasoning and enquiry. The expectation is that the children move through the curriculum at broadly the same pace. However, due to the spiral nature of the White Rose Curriculum, resources from previous years may be used so long as the learning concept remains the same. For example, if teaching 'Partition Numbers to 1000' in Year 4, then resources from the Year 3 module 'Partition Numbers to 100' may be utilised, so long as all children have access to the same teaching. The use of a resource from the year below will support success in the pupil, with a view to moving on when confident.

Teaching Assistants (TAs) support all children in the classroom and teachers carefully plan to use TAs effectively in order to help children make progress. TAs may also make assessment notes during the lesson, particularly whole class input to help inform teachers' assessment. TAs are not expected to work with the same group for all lessons and they should be planned to ensure the best outcomes for all children.

Where applicable children's EHC Plans incorporate suitable maths objectives and teachers keep these objectives in mind when planning.

Interventions

Maths interventions, which usually take the guise of pre and post maths teaching take place at other points in the school day for those who are not making appropriate progress. These are agreed with the SENCo, the Maths Leader and senior leaders and taken by TAs or the class teacher. Maths resources are available for all children to use during these intervention times as they are in lesson times.

Equal Opportunities

All groups of children have equal access to the maths curriculum in line with the equality objective statement. Teaching materials are chosen to reflect the cultural and ethnic diversity of our society and we try to avoid stereotyping by gender or race. Care is taken to ensure that teaching does not disadvantage any gender, cultural or ability group. Class teachers, along with the SLT monitor pupils' progress termly to ensure that no group is disadvantaged and that appropriate actions are put into place.

Recording learning

The majority of the recording will occur in the children's exercise books. There are occasions when it is not necessary to record mathematics in a permanent form, but there are also occasions when the children need to carry out written calculations (see school calculation policy for appropriate progression). It is also important to record aspects of mathematical reasoning and problem solving.

Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording, where appropriate.

In their maths exercise books, children will always write the date and learning objective at the start of their work. Children in EYFS may not have an explicit learning objective in their learning; this will depend on the learning experience. Children in Key Stage 1, or children who require support in Key Stage 2, may have the learning objective and date stuck in their books until they are ready to write it themselves.

All children are encouraged to work tidily and neatly when recording their actual answers but jottings may take any form and are important evidence for the teacher. Please see 'Appendix ii' for presentation guidelines which are displayed in classrooms in KS1 and KS2.

Feedback

Please refer to the Feedback Policy. Teachers are not required to set next step tasks in marking as the next lesson is the next step.

Homework

Times tables and number bonds are the only maths homework that is set weekly. Year 6 may set additional SATs practice homework. Teachers may also send home additional homework for children to complete but this is in collaboration and agreement with the parents.

Times Table Rock Stars is a website which has times table challenges for all KS2 children. This can be used at home and at school.

Assessment

Assessment is used to inform teaching in a continuous cycle of planning, teaching and assessment. Assessment is a part of every lesson and will take place through open questioning, observation and marking.

Each section of White Rose includes an 'End of Block Assessment', which the children complete first with a pencil to assess prior knowledge. This is then completed again at the end, on the same document and using a purple pen to assess what the children have learnt. The purpose of using the same document means that the children can see their progress for themselves. For children who complete the starting assessment with a high degree of accuracy there is a second version available with more challenging questions.

Children's learning is tracked daily using the 'Marking on One Page' document as part of our Feedback policy. Arbor is used to collect summative data 3 times a year. Teachers use their daily assessment and formal testing in KS1 and KS2 to identify gaps in learning which informs interventions and planning. Arbor is also used to record children's attainment and monitor progress and Pupil Progress Meetings take place termly.

Self-Assessment

Children are encouraged to self-assess using the school's learning principles of BCC (building, challenging and creating) criteria for the lesson. Children may mark their own learning in their mark books to help inform their self-assessment when they self-assess using BCC. (Please refer to the Feedback Policy)

Other forms of summative assessment include:

- EYFS Profile for the areas of number and shape, space and measure
- Optional SATs
- End of KS1 (Year 2) and End KS2 (Year 6) SATS
- Multiplication check for year 4
- Regular testing in KS1 and KS2

These summative assessments help to inform overall teacher assessment which is sent to parents at the end of the academic year.

Targets

Summative assessment maths targets are set for each year group with the expectation that each pupil will achieve these by the end of the year. Ongoing targets may be acknowledged through verbal feedback.

Management

Role of the class teacher

- To follow the scheme as instructed.
- To follow the policy as instructed.
- To keep their knowledge and understanding of the subject matter at a high standard in order to provide high quality lessons.
- To attend Pupil Progress Meetings to ensure SLT are aware of progress within the class.

Role of the subject leader

- Share good practice, working alongside colleagues to support improvement
- Monitor the implementation of the maths scheme
- Lead and organise staff development
- Ensure teachers are familiar with the calculation policies and other relevant documents to support the teaching of mathematics
- Ensure continuity and progression through monitoring of planning, books, lessons
- Conduct learning walks and observations of maths teaching, identifying areas where further support is needed
- Support the development of record keeping, assessment and target setting systems in mathematics
- Monitor, order and organise maths resources
- Keep up to date with developments in maths

- Work cooperatively with the Headteacher, SENCo and SLT, informing them of progress towards targets and issues affecting mathematics within the school
- Support parents with any concerns and issues

Role of the SLT

- To support the subject lead to fulfil their obligations above.
- To facilitate release time for the subject lead to complete their duties.

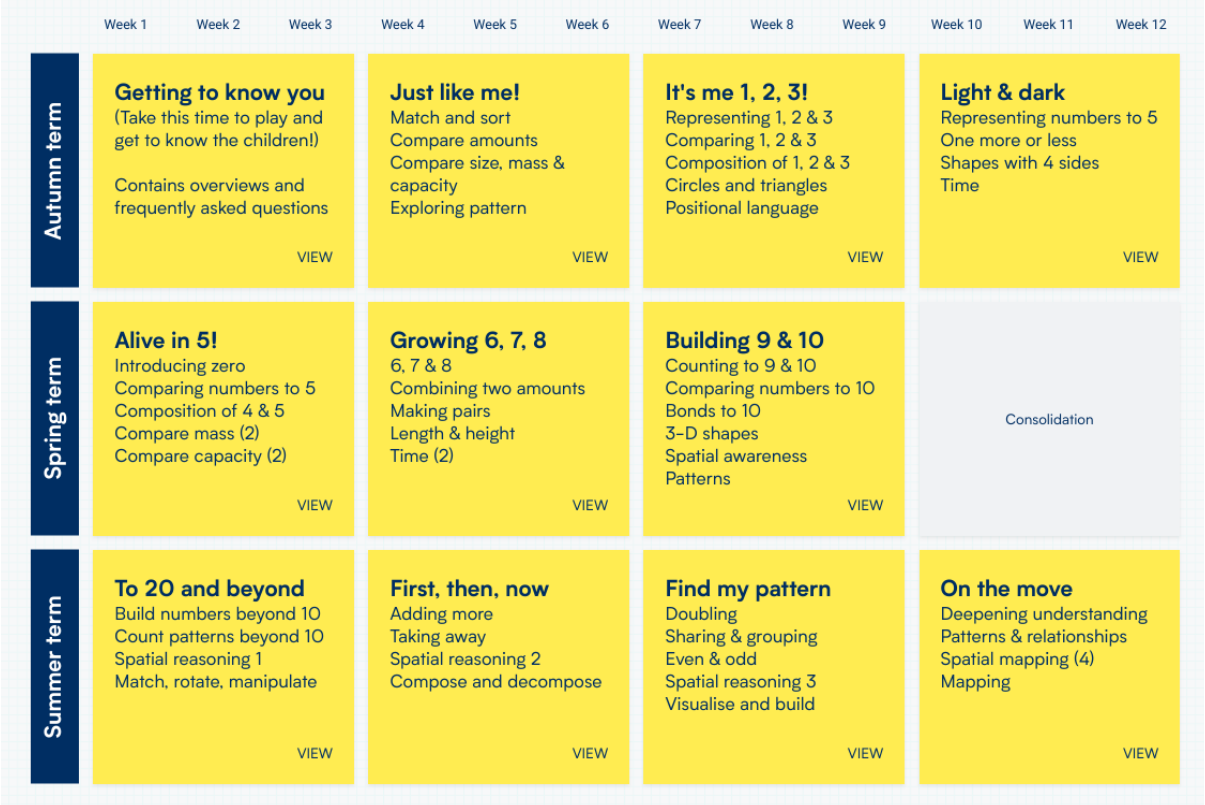
Role of the parent

- To support the children with home learning.
- To attend parent consultations to receive information about their child's progress in maths.

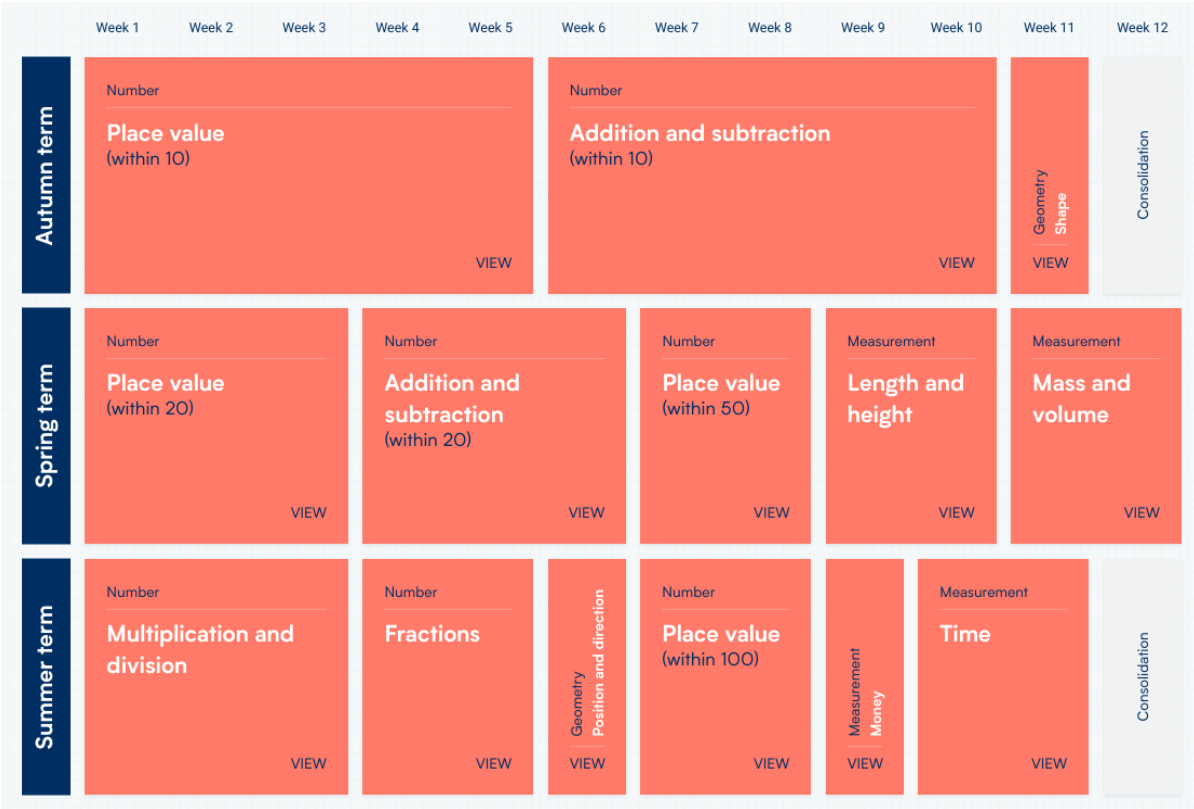
Appendix i - Scheme of Work

These are the overviews - more detailed information can be found in [Maths]

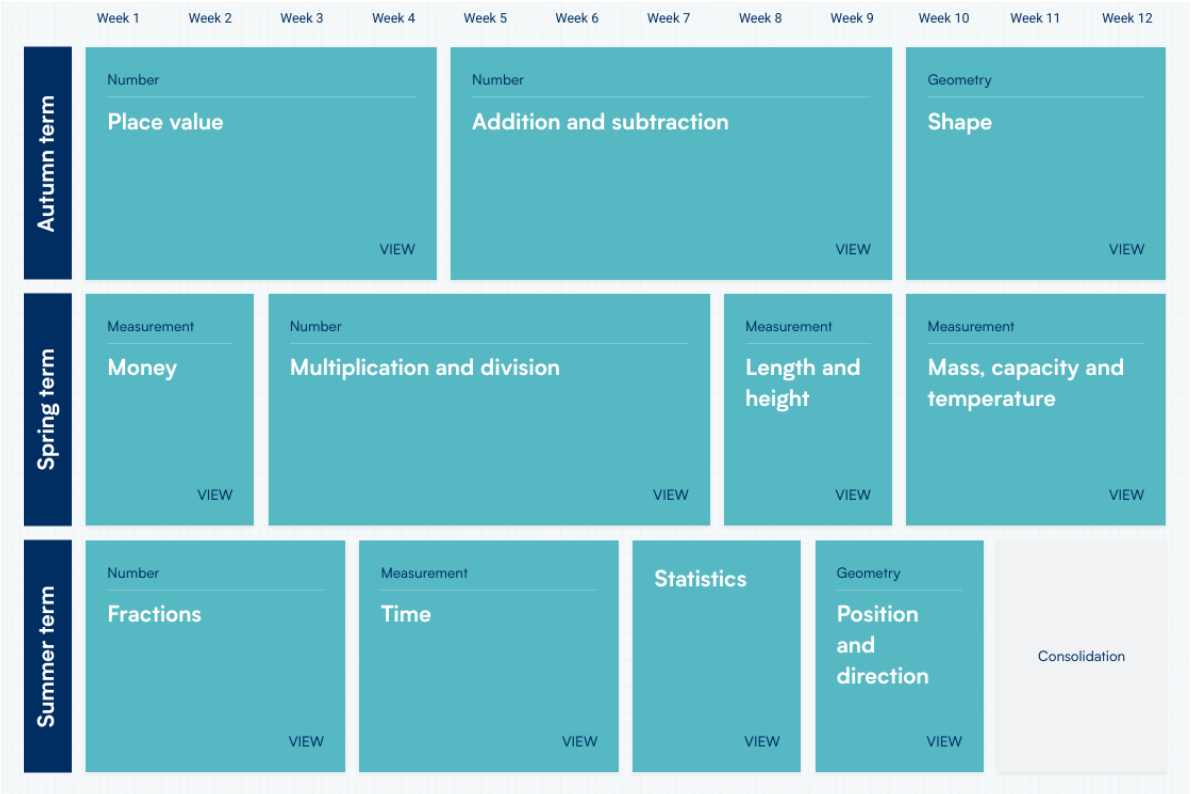
Reception



Year 1



Year 2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Week 7
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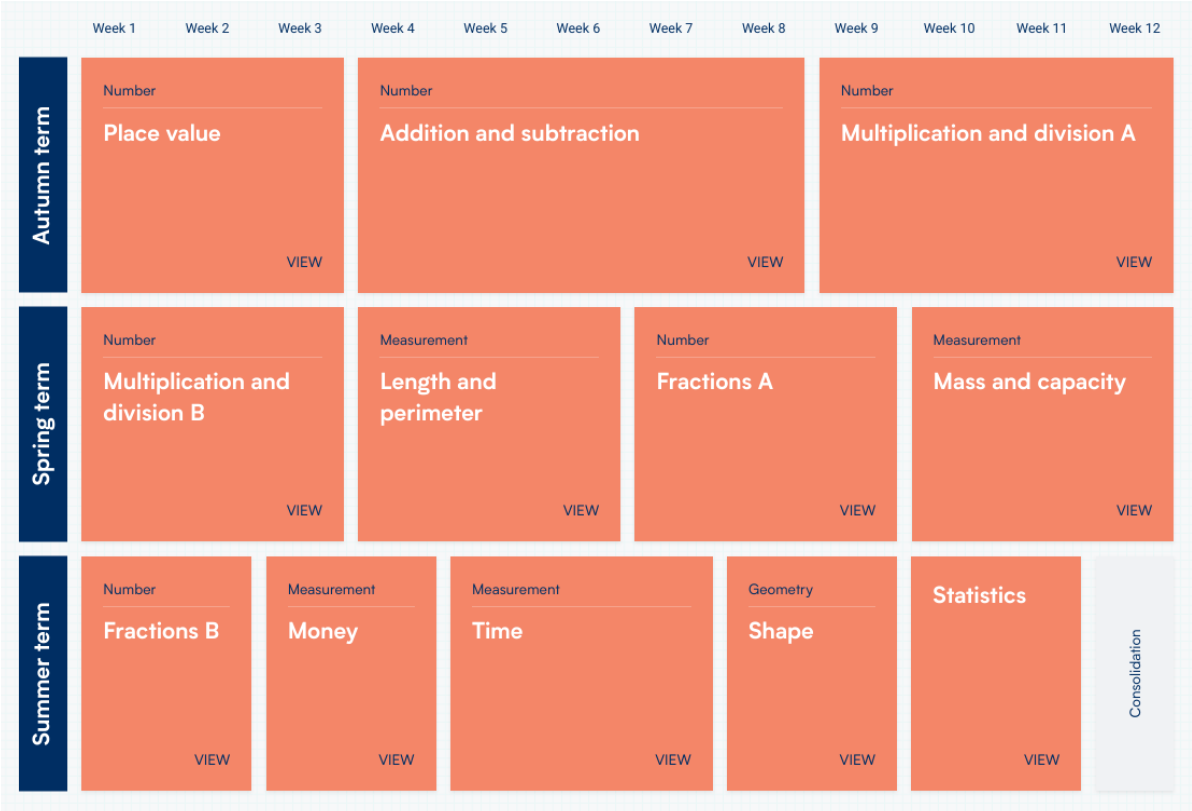
Week 9
Week 10
Week 11
Week 12
Autumn term
Number
Place value
VIEW
Number
Addition and subtraction
VIEW
Geometry
Shape
VIEW
Spring term
Measurement
Money
VIEW
Number
Multiplication and division
VIEW
Measurement
Length and height
VIEW
Measurement
Mass, capacity and temperature
VIEW
Summer term
Number
Fractions
VIEW
Measurement
Time
VIEW
Statistics
VIEW
Geometry
Position and direction
VIEW
Consolidation

Year 3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Week 12
Autumn term
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Place value
VIEW
Number
Addition and subtraction
VIEW
Number
Multiplication and division A
VIEW
Spring term
Number
Multiplication and division B
VIEW
Measurement
Length and perimeter
VIEW
Number
Fractions A
VIEW
Measurement
Mass and capacity
VIEW
Summer term
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Fractions B
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Measurement
Money
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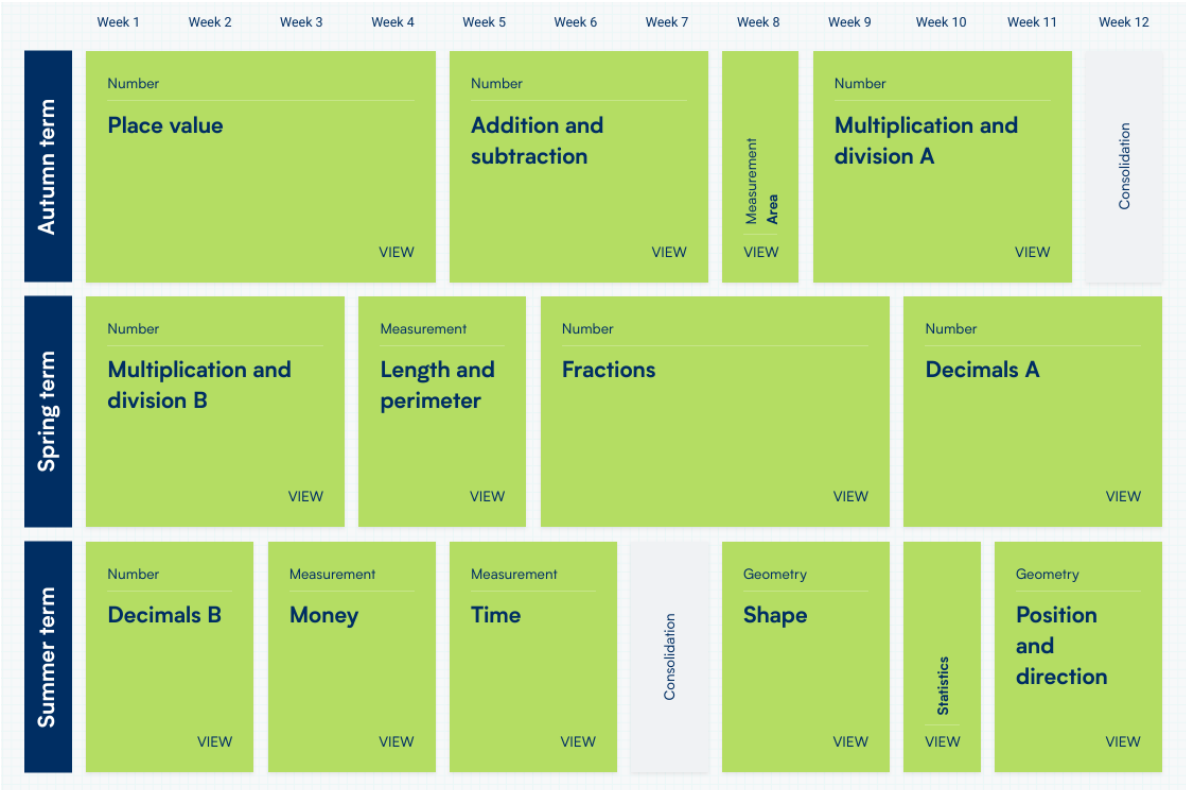
Measurement
Time
VIEW
Geometry
Shape
VIEW
Statistics
VIEW
Consolidation

Year 4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Week 11
Week 12
Autumn term
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Place value
VIEW
Number
Addition and subtraction
VIEW
Measurement
Area
VIEW
Number
Multiplication and division A
VIEW
Consolidation
Spring term
Number
Multiplication and division B
VIEW
Measurement
Length and perimeter
VIEW
Number
Fractions
VIEW
Number
Decimals A
VIEW
Summer term
Number
Decimals B
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Measurement
Money
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Measurement
Time
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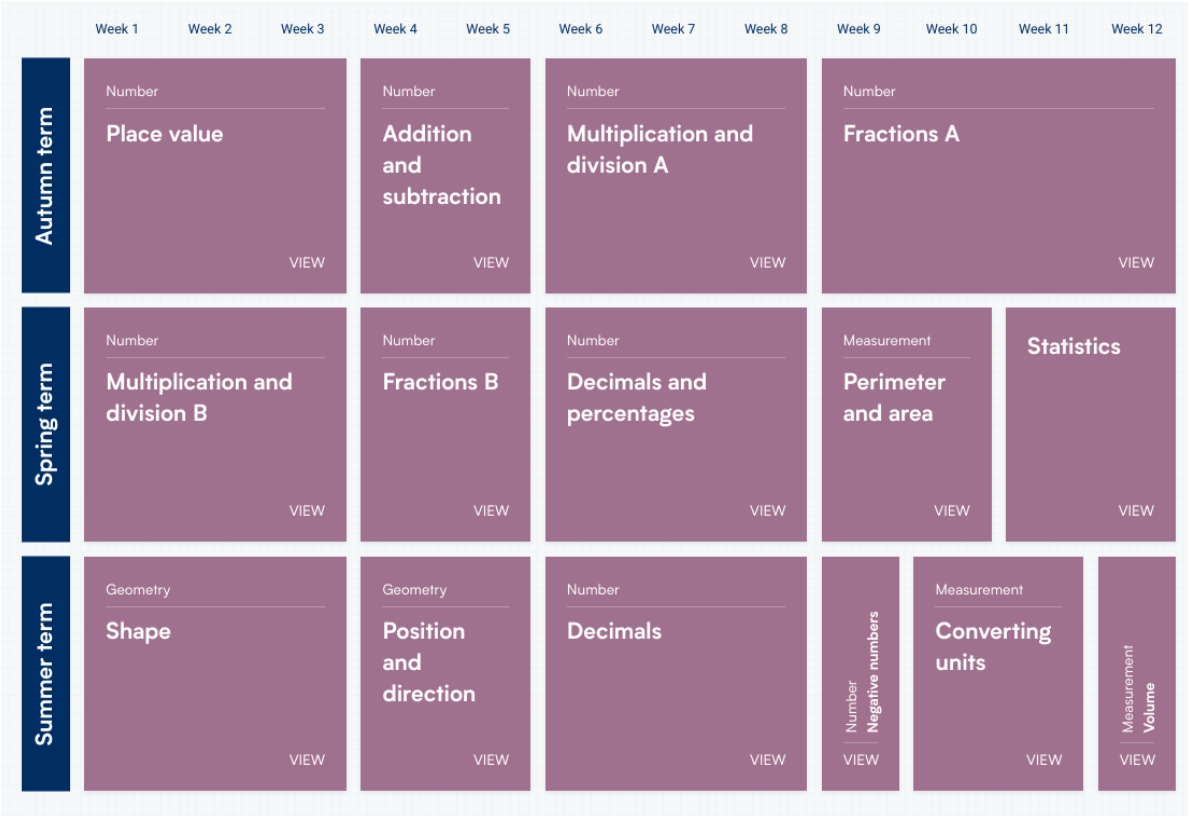
Consolidation
Geometry
Shape
VIEW
Statistics
VIEW
Geometry
Position and direction
VIEW

Year 5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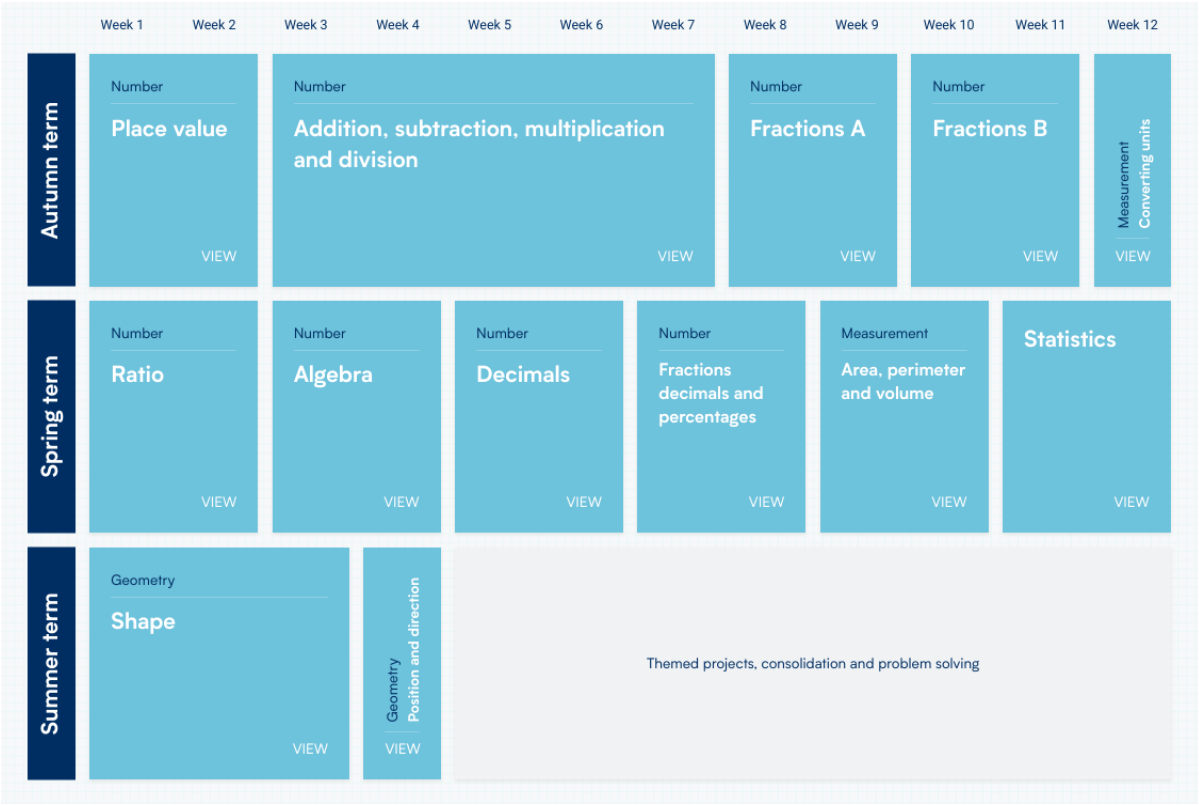
Week 11
Week 12
Autumn term
Number
Place value
VIEW
Number
Addition and subtraction
VIEW
Number
Multiplication and division A
VIEW
Number
Fractions A
VIEW
Spring term
Number
Multiplication and division B
VIEW
Number
Fractions B
VIEW
Number
Decimals and percentages
VIEW
Measurement
Perimeter and area
VIEW
Statistics
VIEW
Summer term
Geometry
Shape
VIEW
Geometry
Position and direction
VIEW
Number
Decimals
VIEW
Number
Negative numbers
VIEW
Measurement
Converting units
VIEW
Measurement
Volume
VIEW

Year 6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Week 10
Week 11
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Autumn term
Number
Place value
VIEW
Number
Addition, subtraction, multiplication and division
VIEW
Number
Fractions A
VIEW
Number
Fractions B
VIEW
Measurement
Converting units
VIEW
Spring term
Number
Ratio
VIEW
Number
Algebra
VIEW
Number
Decimals
VIEW
Number
Fractions decimals and percentages
VIEW
Measurement
Area, perimeter and volume
VIEW
Statistics
VIEW
Summer term
Geometry
Shape
VIEW
Geometry
Position and direction
VIEW
Themed projects, consolidation and problem solving

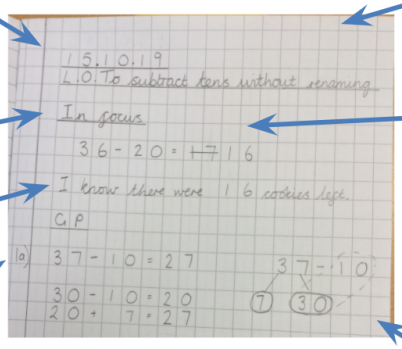
Appendix ii – Maths presentation

Presentation WAGOLL - KS1

Maths

I draw a margin that is at least 1 square wide with a ruler

My date and LO are underlined with a ruler



In Focus and GP are underlined with a ruler

My mistakes are crossed out with a pencil and a ruler or rubbed out completely

My handwriting is neat and joined

My question number is written in the margin

One digit in each square

I respond to my feedback in my purple pen

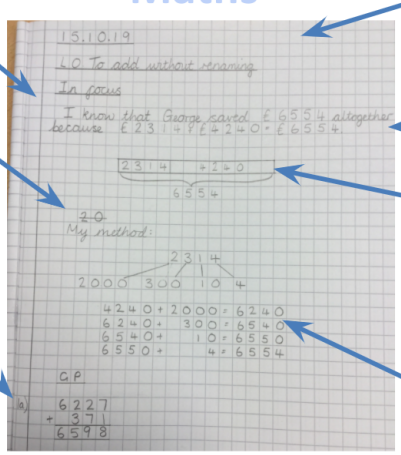
NO SCRIBBLING

Presentation WAGOLL – KS2

Maths

I draw a margin 1 full square wide with a ruler

My date and LO underlined with a ruler



My mistakes are crossed out with a pencil and a ruler

My handwriting is neat and joined

Any bars models and maths drawings are drawn with a ruler

My question number is written in the margin

One number in each square

NO SCRIBBLING

I respond to my feedback in my purple pen