

## INTENT

Vision		Mission
<ul style="list-style-type: none"> <li>*An inspirational, stimulating and well-resourced environment</li> <li>*A safe and secure school at the heart of the community</li> <li>*Inquiry, independence and enthusiasm for learning</li> </ul>		<ul style="list-style-type: none"> <li>*Preparing all children for life</li> <li>*A high quality professional team</li> <li>*Taking pride in all our achievements</li> <li>*High standards of behaviour</li> </ul> <p><b>Where every child counts</b></p>
<p><b>Excellent teaching gives children the life chances they deserve...Enjoyment is the birthright of every child. The most powerful mix is the one that brings the two together. Children learn better when they are excited and engaged – but what excites and engages them best is truly excellent teaching. Education is for all, not the few. All children have the right to be the best they can be. We foster a love of learning and the development of the well-rounded child.</b></p>		
<p><b>Preparing Children for Life</b></p> <p>We believe that we are preparing children for 21<sup>st</sup> Century life. We aim for them to be independent thinkers, confident learners and global citizens, equipped to live and work in and contribute to the global economy.</p>		
<p><b><u>Aims and Objectives</u></b></p> <p><u>At William Barnes Primary School, we believe that children deserve:</u></p> <ul style="list-style-type: none"> <li>• To be set appropriate and stimulating learning challenges</li> <li>• To be taught well and be given the opportunity to learn in ways that maximise the chances of success</li> <li>• To be given quality feedback which highlights successes and areas for improvement.</li> <li>• To have adults working with them to tackle the specific barriers to progress they face.</li> </ul> <p><u>It is also our aim that :</u></p> <ul style="list-style-type: none"> <li>• Children develop a lasting love of all aspects of learning which will aid and enhance their further education and life.</li> <li>• Children are given the opportunity to experience the widest variety of the written and spoken word possible - a vocabulary rich curriculum and school experience. This includes trips to pantomimes, art galleries and orchestral concerts.</li> <li>• Children develop a healthy lifestyle this is supported by Active Learning, The Daily Mile, Wake and Shake and a robust healthy eating policy.</li> </ul>		
<p><b><u>Knowledge and Skills</u></b></p> <p>As a school, we believe in the equal relationship between knowledge and skills in our curriculum.</p> <p>We believe that:</p> <ul style="list-style-type: none"> <li>• Knowledge can be declarative ( to know that ) or Procedural ( to know how ).</li> <li>• Both these forms are important and that Declarative knowledge is turned into Procedural knowledge through action and the act of applying.</li> <li>• Skills can be Procedural knowledge as a result of the application of Declarative knowledge.</li> <li>• Skills can be linked to dispositions and behaviours.</li> </ul> <p>In short, skills often procedural knowledge and are linked intrinsically to declarative knowledge.</p> <p>We prefer to see the debate laid out as:</p> <p>Knowledge → Comprehension → Application → Evaluation</p>		
<p><b><u>Global Community</u></b></p> <p>We aim to equip our children for living in, and contributing to, a secure, transformative and sustainable world.</p>		<p><b><u>Parents</u></b></p> <p>“For all children, the quality of the home learning environment is more important for intellectual and social development than parental occupation, education and income. What parents do is more important than who parents are.” (EPPE)</p>

# Mathematics Intent

## Introduction

The National Curriculum (2014) clearly states that the teaching of mathematics is an essential role of a Primary School. The programmes of study are designed to enable children to

1. become **fluent** in the **fundamentals of mathematics**
2. be able to **reason mathematically**
3. be able to **solve problems** by applying **their knowledge** of mathematics

The new Mathematics Programmes of study are organised into five domains – statistics begins in year 2 and algebra is added in year 6.

Early Learning Goals from the Early Years and Foundation Stage Profile – Specific area of learning Mathematics	
ELG11 – Number	ELG12 – Shape, space and measures
Domains of Learning within the Programmes of Study for Key Stage 1 and Key Stage 2	
<b>Number</b> <ul style="list-style-type: none"> <li>• Number and place value</li> <li>• Addition and subtraction</li> <li>• Multiplication and division</li> <li>• Fractions</li> </ul>	<b>Geometry</b> <ul style="list-style-type: none"> <li>• Properties of shapes</li> <li>• Position and direction</li> </ul>
	<b>Statistics</b> – (not in year 1)
<b>Measures</b>	<b>Algebra</b> (year 6 only)

The curriculum is divided into 4 Stages; EYFS, Year 1 and 2, Year 3 and 4, and Year 5 and 6. Although the curriculum is ‘by necessity divided into distinct domains’ pupils are expected ‘to make rich connections across mathematical ideas’ to develop fluency, reasoning and problem solving.

In Early Years Foundation Stage (EYFS) the children learn mathematics through the characteristics of effective learning – playing and exploring, active learning and creating and thinking critically. Mathematics is a specific area of learning and has two Early Learning Goals (ELGs) – ELG11 – Numbers and ELG 12 Shape, space and measures.

By the end of each Key Stage, children should have moved through the curriculum at broadly the same pace. Decisions about when to progress onto new content ‘should always be based on the security of pupils’ understanding and their readiness to progress to the next stage. More able children should be challenged through ‘rich and sophisticated problems’ whilst those lacking fluency should ‘consolidate their learning through additional practice’ before moving on.

## Why teach mathematics?

- It is enjoyable.
- It is used to analyse and communicate information.
- It transcends cultural barriers.
- It teaches children skills for life.
- It helps us to understand the world.
- It crosses curriculum boundaries being used over a range of subjects.

## The aims of mathematics at William Barnes

- To develop a positive attitude to numeracy by presenting it as an enjoyable, interesting and attractive subject.
- To develop children's confidence in their own ability to understand and tackle mathematical challenges.
- To develop their ability to think clearly and logically with independence of thought and flexibility of mind.
- To develop an understanding of mathematics through a process of enquiry and experiment.
- To make children aware of the uses of mathematics in everyday learning and in the world beyond the classroom.
- To encourage persistence through sustained learning in mathematics, that requires perseverance over a period of time.
- To encourage children to express their mathematical ideas both orally and in written form.

## Current Practice

- All teachers and teaching assistants follow the **National Curriculum 2014**.
- **Long term planning** takes the form of the programmes of study for each year group in National Curriculum 2014
- **Long term planning** outlines the content to be covered in **number, measures, geometry and statistics**
- In **reception long term planning** is drawn from the **EYFS Statutory framework**.
- In **reception medium term planning** is adapted from exemplars from the **Hamilton Trust** in combination with **Numicon Firm Foundations** scheme.
- In **year 1** there is no **statistics** content, and in **year 6 Algebra** is added as a further area of learning.
- **Medium term planning** divides the learning objectives in the National Curriculum 2014 between six half terms and ensures even coverage.
- The **Scholastic medium term** plans are used as a template for **medium term** planning.
- Teachers use a **mastery approach** and adapt the **medium term plans** accordingly.
- In **year 2**, planning is adapted further to taken into account the **Assessment Framework**.
- In **year 6**, **planning is condensed** to allow full coverage in good time for **national tests**.
- Weekly planning contains **learning objectives, success criteria, opportunities for all children to access the curriculum through a variety of different contexts** and **direct planning** for **Teaching Assistants**.
- **Progress in times tables learning is tracked through the 55 club**.
- **Overall progress in mathematics is assessed at least termly using Educater and annually using formal tests from year 2 onwards**.
- All teaching of **maths** is infused with the **Assessment for Learning Strategies** developed by the school.
- Teachers create a **balance** between **rapid recall of number facts**, the understanding and consolidation of **new concepts** and the **application of knowledge** in their planning and teaching.
- **Cross curricula links** between **maths** and **other subjects** are encouraged whenever possible.

## Mental Oral Starters

Mental oral starters are planned to be fun, interactive and involve the whole class. "The Bare Necessities" pack has been adopted as a template for best practice. This pack suggests a number of competitive games for pairs to help children develop their rapid recall and calculation strategies. An example of a Bare Necessities" game is "Fishy Fingers." Teachers are encouraged to be creative with their mental oral starters and to adapt and modify existing games to meet the needs of their children.

## **Rolling Numbers**

Rolling Numbers is a whole school approach to memorising times tables facts. Each times table has a series of actions and a rhyme that the children regularly practise until each rhyme is memorised. Each rhyme begins with “Will Barnes Primary, good as gold, let me see your fingers roll the ...”. The approach enables the children to make connection between successive multiples and their times tables.

## **Numicon and apparatus**

Numicon is a mathematical apparatus that aids children’s visualisation and understanding of numbers. In year R and Year 1, all children follow the Numicon programme or an adapted form of it. In the rest of the school each class has sufficient Numicon resources to use Numicon in daily maths lessons. Although staff primarily use Numicon, teachers are encouraged to use a range of apparatus and Dienes blocks, Cuisinaire rods, Unifix cubes and everyday objects are used at appropriate times to support learning.

## **Mastery and Deepening and the Keen Kite Resources**

At William Barnes, when a child fully understands a mathematical concept they are said to have mastered that concept. This is equivalent to reaching age related expectations (ARE). A child reaching ARE at the end of the academic year will have mastered all of the content for their year group. Once a child has mastered a concept, the next stage is to deepen their learning. This is achieved by providing problems and challenges that give rich opportunities for the children to use and apply their mathematical knowledge. The school has adopted a resource called Keen Kite to help teachers to deepen their children’s understanding. This approach consists of two different resources – ‘Everyday problem solving and reasoning’ and ‘Mastery with Greater Depth’. Both resources are compendiums of problems and investigations for each year group that are used to extend children once they have reached mastery. Eleven distinct reasoning strategies are introduced and developed in each year group’s resource.

<b>Whole School Reasoning Strategies supported by Keen Kite Deepening Resources</b>	
Finding all the possibilities	Finding rules and describing patterns
Logic puzzles	Real life word problems
Reasoning – true or false	Reasoning – would you rather?
Reasoning – explain how you know	Reasoning – always, sometimes, never true
Reasoning – odd one out	Reasoning – if the answer is x, what is the question?
Reasoning – what’s the same, what’s different?	

These reasoning strategies are displayed around the school and in classrooms in the form of kites with the strategies written on them.

## **Bar Methods**

At William Barnes staff are using bar methods to help children to visualise wordy problems and then help them to decide how to solve the problem. Using a RUCSAC approach (read understand calculate solve answer check) the bar method provides a way in to the understanding part of the problem. Children in years 1 to 6 use the bar method, particularly when solving wordy problems and problems involving fractions. A Bar method policy outlining progression what year group to the next is a work in progress.

## **Reception**

### **Assessment**

All children complete the baseline assessment in the first two weeks of starting reception. During the year staff make observations and gather evidence which is stored on Tapestry. At the end of Reception class the children are assessed using the Early Years Foundation Stage Profile (EYFSP). Maths is one of the five areas of learning the children must have achieved in order to be judged to be at a 'good level of development' before beginning year 1.

By Christmas a child at ARE are expected to be fluent in these objectives

Recognition of numbers 1-10 , beyond if ready.

By Easter a child at ARE is expected to be fluent in these objectives

Addition between 1-10, number bonds to 10 introduced.

By the end of reception a child at ARE is expected to be fluent in these objectives

Number bonds to 10. Counting in 10's, 2's looking at simple pairs , doubles.

Staff use a variety of approaches to help the children to reach ARE and then deepen their learning –

Reasoning with very young children is always interesting but a valuable exercise!

Comparisons e.g. of each other, for longer, shorter hair, taller , shorter etc and putting this into real life contexts.

Using role play to see if they have understood a concept! E.g the shop, using money, or a function machine to test addition/subtraction etc.

### **Planning and Teaching**

In reception, the children have three lessons each week that are very hands on and practical. The 55 club is completed each Thursday and adapted so that it is appropriate for reception children using sheets with Numicon images added.. In reception Hamilton Trust planning is dovetailed with Numicon Firm Foundations

## **Year 1 – information for this section is on its way!!**

### **Assessment**

In the first half of the Autumn term the children are assessed in a number of areas. These include number recognition, counting to 10/20 and beyond, counting out amounts with 1:1 correspondence, matching numerals 1-20 with amounts and number formation. The 55 club takes place weekly.

By Christmas a child at ARE is expected to be fluent in these objectives

Recall and use addition facts to 5.

By Easter a child at ARE is expected to be fluent in these objectives

Recall and use addition facts to 10.

By the end of year 1, a child at ARE is expected to be fluent in these objectives

Recall and use addition and subtraction facts to 20.

### **Planning and Teaching**

In the first term and a half in year 1, the children have maths mornings, with five maths mornings taking place in each two week block. In the second half of the year lessons are given daily and last between 45 to 55 minutes.

Planning is drawn from the White Rose scheme of work and Numicon folder 1. A variety of apparatus is used to support hands on learning including different objects, multi- link, numicon shapes, numicon base boards and pegs, tens frames, counters, 2D and 3D shapes, 100 square pocket chart, number lines.

## **Year 2**

### **Assessment**

All children are assessed at the end of year 1 in mathematics, and this information as well as discussions with the year 1 teacher are used to group the children within the class. The class has two lessons a week that include the 55 club.

By Christmas a child at ARE is expected to be fluent in these objectives

$\times/\div$  Count in steps of 2 and 5 from 0, and in tens from any number, forward and backwards.

55 Club 8 (count in fives before and after)

$+/ -$  Recall and use addition and subtraction facts to 20 fluently.

55 Club 8 (addition and subtraction facts 11-12)

By Easter a child at ARE is expected to be fluent in these objectives

x/÷ Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.

55 Club 12 (2, 5 and 10 multiplication facts). Further than this would be great but the time factor is a massive barrier for many children at this age and Target 12 is therefore really difficult for the vast majority of Year 2 ARE children.

+/- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

55 Club 12 (addition and subtraction bonds 15-18)

By the end of year 2, a child at ARE is expected to be fluent in these objectives

x/÷ Solve problems involving multiplication and division (in 2,5,10) using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems and contexts

55 Club - 16 (45 Club 2, 5 and 10 including division)

+/- Confident with their number bonds to 20. Be able to work out number bonds to 100. They also need to be confident with the corresponding subtraction facts (for example:  $20 - 13 = 7$ ).

55 Club 14 (25 Club all addition and subtraction bonds to 18)

### Planning and Teaching

In year 2, maths lessons are taught as follows

Half term A SS teaching : Mon x 2, Tues x 2, Fri x 1 (mental maths session) – 55 club +- and x/ weekly

Half term B LG teaching : Weds x 2 Thurs x 2 Fri x 1 (mental maths session) – 55 club +-and x/ weekly

Lesson are 45-50 minutes long except for on Friday when the lesson is 50-55 minutes in length.

Staff use a variety of approaches to help the children to reach ARE and then deepen their learning –

Mastery approaches to mathematics – securing a concept before moving on to the next. Developing verbal fluency and reasoning skills at every stage, for all abilities of learners. Developing explanations of mathematical thinking.

Deepening – using NCTEM, White Rose, Keen Kite, Twinkl and other maths mastery resources.

## **Key Stage 2**

### Assessment

All children are assessed at the end of the previous year in mathematics, and this information as well as discussions with the previous class teacher are used to group the children within the class. Each class completes the 55 club weekly. As the children move through KS2 the emphasis, shifts from a balance between number bonds and times tables, to just times tables by the end of year 6.

### Teaching and Learning

Maths lessons occur daily and last one hour. A typical lesson will begin with ‘improvement time’ where children have a chance to make corrections from the previous day’s learning, followed by a mental/oral starter, a teaching input, a differentiated activity and then a plenary.

### Year 3

By the end of year 3, a child at ARE is expected to be fluent in these objectives

Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables as well as the 2,5 and 10 multiplication times tables learnt in KS1. Recall and use number bonds to 18 corresponding to target 18 in the 55 club.

### Year 4

By the end of year 4, a child at ARE is expected to be fluent in these objectives

Recall multiplication and division facts for multiplication tables up to  $12 \times 12$ . This broadly equivalent to target 30 in the 55 club. Recall and use number bonds to 18 corresponding to target 18 in the 55 club.

### Year 5

By the end of year 5, a child at ARE is expected to be fluent in these objectives

Recall multiplication and division facts for multiplication tables up to  $12 \times 12$ . This broadly equivalent to target 30 in the 55 club. Children continue to progress towards target 40 of the 55 club. Recall and use number bonds to 18 corresponding to target 18 in the 55 club.

### Year 6

By the end of year 6, a child at ARE is expected to be fluent in these objectives

Recall multiplication and division facts for multiplication tables up to  $12 \times 12$ . This broadly equivalent to target 30 in the 55 club. Children continue to progress towards target 40 of the 55 club. Recall and use number bonds to 18 corresponding to target 18 in the 55 club.

## **Planning**

- Long term and medium term planning is in line with Curriculum 2014 and is used as part of the connected curriculum.
- Each term a class will be taught a mixture of number, calculation, statistics, measures, shapes and reasoning strategies as well as activities to promote fluency.
- Weekly planning follows an agreed proforma and generic principles.
- Broad Learning Intentions from Curriculum 2014 are broken down in the smaller, appropriate Learning Intentions. Success Criteria, required exposition and linked differentiated activities are also included.

## **OVERVIEW**

The content of the mathematics curriculum at William Barnes is taken from the 2014 National Curriculum programmes of study in years 1 to 6. In EYFS the requirements of the Early Years Foundation Stage Profile (EYFSP) are combined with the Numicon cards and resources to produce a program appropriate for the reception children. Staff in KS2 begin their medium term planning using a set of medium term plans created by Scholastic. However, these are adapted by teachers to create a mastery approach. These adapted plans outline which parts of the programmes of study are taught in each week of each half term. The plans are not carved in stones and teachers can choose to spend longer or shorter periods of time on each learning objective depending on the needs of the children in their class, which change from one year to the next.

All the medium term plans are stored on the school server in the Mathematics folders. The plans are quite extensive and only plans from year 1 and year 6 are included for brevity.

## Medium Term Planning Year 1 Autumn 1

W	Topic	Curriculum Objective
1	Counting (numbers to 10) Ordering Matching Counting with 1:1 correspondence	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>Count read and write numbers to 100 in numerals</li> <li>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 and least.</li> </ul>
2	Counting (numbers to 10) Counting Ordering Comparing	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>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 and least.</li> <li>Count read and write numbers to 20 in numerals and words</li> <li>When given a number, identify one more and one less</li> </ul>
3	Counting Addition and subtraction(to 10) Understand + Understand = Whole part part model	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>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 and least.</li> <li>Count read and write numbers to 20 in numerals and words</li> <li>When given a number, identify one more and one less</li> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> </ul>
4	Addition and subtraction (to 10) Fact families Number bonds to 10	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Represent and use number bonds and related subtraction facts within 20</li> <li>Count read a write numbers to 20 in numerals and words</li> </ul>
5	Addition and subtraction (to 10) Subtraction as taking away, how many left, crossing out Understand - sign	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>solve simple one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \_ - 9</math></li> </ul>
6	Shape	<ul style="list-style-type: none"> <li>To recognise and name some common 2D and 3D shapes, including:</li> <li>2D shapes (rectangles (including squares), circles and triangles)</li> <li>3D shapes (cuboids (including cubes), pyramids and spheres)</li> </ul>
Assess and Review		

## Autumn 2

W	Topic	Curriculum Objective
1	Addition and subtraction Subtraction within 10 Finding a part Breaking apart Fact families	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Represent and use number bonds and related subtraction facts within 20</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>solve simple one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \_ - 9</math></li> </ul>
2	Addition and subtraction ( within 10) Subtraction counting back Subtraction finding the difference Comparing statements	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>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 and least.</li> <li>solve simple one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \_ - 9</math></li> </ul>
3	Counting (11-20) Understanding teens numbers	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>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 and least.</li> <li>Count read and write numbers to 20 in numerals and words</li> <li>When given a number, identify one more and one less</li> </ul>
4	Counting (11-20) More and less Comparing and ordering	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>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 and least.</li> <li>Count read and write numbers to 20 in numerals and words</li> <li>When given a number, identify one more and one less</li> </ul>
5	Measures money/time	<ul style="list-style-type: none"> <li>To recognise and know the value of different denominations of coins and notes</li> <li>Sequence events in chronological order using language (before, after, next, first, today, yesterday, tomorrow, morning, afternoon, evening).</li> <li>Recognises and use language relating to dates: including days of the week, weeks, months and years.</li> </ul>
6	Measures	<ul style="list-style-type: none"> <li>To compare, describe and solve practical problems for :</li> </ul>



		<ul style="list-style-type: none"> <li>Lengths and heights(long/short, longer/shorter, tall/short, double/half</li> <li>Mass or weight (heavy/light , heavier than, lighter than</li> <li>Capacity/volume ( full/empty, morethan, less than, quarter,</li> </ul>
Assess and Review		

## Medium Term Planning Year 1 Spring 1

W	Topic	Curriculum Objective
1	Addition and subtraction within 20 Add by counting on Find and make number bonds Add by making 10	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Represent and use number bonds and related subtraction facts within 20</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>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 and least.</li> </ul>
2	Addition and subtraction within 20 Add by making 10 Subtraction not crossing ten Problem solving	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>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 and least. solve simple one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \_ - 9</math></li> <li>Represent and use number bonds and related subtraction facts within 20</li> </ul>
3	Number and place value within 50 (counting in 2s 5s and 10s)	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>Count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens</li> </ul>
4	Multiplication and Division	<ul style="list-style-type: none"> <li>To solve one- step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</li> </ul>
5	Multiplication and Division	<ul style="list-style-type: none"> <li>Count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens</li> <li>To solve one- step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</li> </ul>
6	Multiplication and Division	<ul style="list-style-type: none"> <li>Count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens</li> <li>To solve one- step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</li> </ul>
Assess and Review		

## Spring 2

W	Topic	Curriculum Objective
1	Fractions	<ul style="list-style-type: none"> <li>Recognise find and name a half as one of two equal parts of an object, shape or quantity</li> </ul>
2	Fractions	<ul style="list-style-type: none"> <li>Recognise find and name a quarter as one of four equal parts of an object, shape or quantity</li> </ul>
3	Addition and subtraction Subtraction crossing 10 Related facts	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>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 and least.</li> <li>Represent and use number bonds and related subtraction facts within 20</li> </ul>
4	Addition and subtraction Number bonds to 20 Missing numbers	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>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 and least.</li> <li>solve simple one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \_ - 9</math></li> <li>Represent and use number bonds and related subtraction facts within 20</li> </ul>
5	Number and place value within 50 Tens and ones More and less	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>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 and least.</li> <li>Count read and write numbers to 20 in numerals and words</li> <li>When given a number, identify one more and one less</li> </ul>

6	Number and place value within 50 Comparing and ordering numbers to 50	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>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 and least.</li> <li>Count read and write numbers to 20 in numerals and words</li> <li>When given a number, identify one more and one less</li> </ul>
Assess and Review		

## Medium Term Planning Year 1 Summer 1

W	Topic	Curriculum Objective
1	Number and place value to 100 Counting to 100 Partitioning numbers Comparing numbers	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>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 and least.</li> <li>Count read and write numbers to 20 in numerals and words</li> <li>When given a number, identify one more and one less</li> </ul>
2	Measures Money Time	<ul style="list-style-type: none"> <li>recognise and know the value of different denominations of coins and notes</li> <li>Count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens</li> <li>measure and being to record time (hours, minutes, seconds)</li> <li>recognise and use language relating to dates, including days of the week, weeks, months and years</li> </ul>
3	Time	<ul style="list-style-type: none"> <li>tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</li> </ul>
4	Measures height/length	<ul style="list-style-type: none"> <li>To compare, describe and solve practical problems for :</li> <li>Lengths and heights(long/short, longer/shorter, tall/short, double/half</li> <li>Mass or weight (heavy/light , heavier than, lighter than</li> <li>Capacity/volume ( full/empty, morethan, less than, quarter,</li> <li>Measure and begin to record the following</li> <li>Lengths and heights</li> </ul>
5	Measures weight/volume	<ul style="list-style-type: none"> <li>To compare, describe and solve practical problems for :</li> <li>Lengths and heights(long/short, longer/shorter, tall/short, double/half</li> <li>Mass or weight (heavy/light , heavier than, lighter than</li> <li>Capacity/volume ( full/empty, morethan, less than, quarter,</li> <li>Measure and begin to record the following</li> <li>Mass/weight capacity/volume</li> </ul>
6	Addition and subtraction Consolidation	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>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 and least.</li> <li>solve simple one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \_ - 9</math></li> <li>Represent and use number bonds and related subtraction facts within 20</li> </ul>
Assess and Review		

## Summer 2

W	Topic	Curriculum Objective
1	Number and place value to 100 Ordering numbers One more and one less Missing numbers	<ul style="list-style-type: none"> <li>Count to and across 100 forwards and backwards, beginning with 0 or 1 or from any given number</li> <li>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 and least.</li> <li>Count read and write numbers to 20 in numerals and words</li> <li>When given a number, identify one more and one less</li> <li></li> </ul>

2	2D and 3D shape	<ul style="list-style-type: none"> <li>To recognise and name some common 2D and 3D shapes, including:</li> <li>2D shapes (rectangles (including squares), circles and triangles)</li> <li>3D shapes (cuboids (including cubes), pyramids and spheres)</li> </ul>
3	2D and 3D shape	<ul style="list-style-type: none"> <li>To recognise and name some common 2D and 3D shapes, including:</li> <li>2D shapes (rectangles (including squares), circles and triangles)</li> <li>3D shapes (cuboids (including cubes), pyramids and spheres)</li> </ul>
4	Position and Direction	<ul style="list-style-type: none"> <li>Describe position, directions and movements including half, quarter and three quarter turns</li> </ul>
5	Addition and subtraction/number Consolidation	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>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 and least.</li> <li>solve simple one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \_ - 9</math></li> <li>Represent and use number bonds and related subtraction facts within 20</li> </ul>
6	Addition and subtraction/number Consolidation	<ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Count read a write numbers to 20 in numerals and words</li> <li>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 and least.</li> <li>solve simple one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \_ - 9</math></li> <li>Represent and use number bonds and related subtraction facts within 20</li> </ul>
Assess and Review		

## Medium-term planning Autumn 1 - adapted

W	Title	Curriculum objective
1	Place value and rounding off	To round any whole number to a required degree of accuracy. To perform mental calculations, including with mixed operations and large numbers. To read, write, order and compare numbers at least to 10,000,000 and determine the value of each digit. To solve number problems and practical problems that involve all of the above.
2	Mental and written addition and subtraction of large numbers	To perform mental calculations, including with mixed operations and large numbers. To use negative numbers in context. To perform mental calculations, including with mixed operations and large numbers.
3	Negative Numbers	To understand negative numbers in context. To add and subtract negative numbers and work out the difference between them. To solve problems using negative numbers. To perform mental calculations, including with mixed operations and large numbers.
4	Written methods for addition and subtraction. Written methods for multiplication and division: HTU $\times$ TU and HTU $\times$ U	To add and subtract large numbers and decimals using a column method. To solve missing digit problems. To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. To perform mental calculations, including with mixed operations and large numbers.
5	Multiples, factors and prime numbers	To identify common factors, common multiples and prime numbers. To perform mental calculations, including with mixed operations and large numbers.

<b>6</b>	Written methods for division  Circles and angles	To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. To illustrate and name parts of circles, including radius, diameter and circumference. To perform mental calculations, including with mixed operations and large numbers.
<b>7</b>	Circle and Angles	To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. To perform mental calculations, including with mixed operations and large numbers.
<b>Friday lesson weekly</b>	Mental and written addition, subtraction, multiplication, division of large numbers, fractions, negative numbers and decimals	To perform mental calculations, including with mixed operations and large numbers. To complete addition and subtraction calculations using efficient written methods including decimals To perform mental calculations, including with mixed operation and large numbers. To use their knowledge of the order of operations to carry out calculations involving the four operations. To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
<b>Assess and review</b>		• To assess and review the half-term's work.

## Medium-term planning Autumn 2 adapted

W	Title	Curriculum objective
<b>1</b>	2D and 3D shapes	<ul style="list-style-type: none"> <li>• To draw 2D shapes using given dimensions and angles.</li> <li>• To compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.</li> <li>• To recognise, describe and build simple 3D shapes, including making nets.</li> </ul>
<b>1</b>	Reflections and translations on coordinate axes	<ul style="list-style-type: none"> <li>• To describe positions on the full co-ordinate grid (all four quadrants).</li> </ul>
<b>2</b>	Multiplying decimals by 10, 100 and 1000	<ul style="list-style-type: none"> <li>• To identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100, 1000 where the answers are up to three decimal places.</li> <li>• To solve problems which require answers to be rounded to specified degrees of accuracy.</li> </ul>
<b>2</b>	Reasoning strategies	<ul style="list-style-type: none"> <li>• To solve finding all the possibility problems and finding patterns using reasoning strategies and working systematically•</li> </ul>
<b>3</b>	Comparing, ordering and simplifying fractions	<ul style="list-style-type: none"> <li>• To compare and order fractions, including fractions <math>&gt;1</math>.</li> <li>• To use common factors to simplify fractions; use common multiples to express fractions in the same denomination.</li> </ul>

<b>4</b>	Calculating with fractions	<ul style="list-style-type: none"> <li>To add and subtract fractions with different denominators, using the concept of equivalent fractions.</li> <li>To associate a fraction with division to calculate decimal fraction equivalents (0.375) for a simple fraction (<math>\frac{3}{8}</math>).</li> </ul>
<b>5</b>	Calculating with fractions	<p>To multiply simple pairs of proper fractions, writing the answer in its simplest form (<math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math>).</p> <ul style="list-style-type: none"> <li>To divide proper fractions by whole numbers (<math>\frac{1}{3} \div 2 = \frac{1}{6}</math>).</li> </ul>
<b>6</b>	Percentages, decimals and fractions	<ul style="list-style-type: none"> <li>To solve problems involving the calculation of percentages of whole numbers or measures and the use of percentages for comparison.</li> <li>To recall and use equivalences between simple fractions, decimals and percentages, including different contexts.</li> </ul>
<b>7</b>	2D and 3D shapes	<ul style="list-style-type: none"> <li>To draw 2D shapes using given dimensions and angles.</li> <li>To recognise, describe and build simple 3D shapes, including making nets.</li> <li>To draw and translate simple shapes on the co-ordinate plane, and reflect them in the axes.</li> </ul>
<b>Friday lesson weekly</b>	Mental and written addition, subtraction, multiplication, division of large numbers, fractions, negative numbers and decimals	<p>To perform mental calculations, including with mixed operations and large numbers.</p> <p>To complete addition and subtraction calculations using efficient written methods including decimals</p> <p>To perform mental calculations, including with mixed operation and large numbers.</p> <p>To use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>
	<b>Assess and review</b>	<ul style="list-style-type: none"> <li>To assess and review the half-term's work.</li> </ul>

## Medium-term planning Spring 1 adapted

<b>W</b>	<b>Title</b>	<b>Curriculum objective</b>
<b>1</b>	Line graphs	<ul style="list-style-type: none"> <li>To interpret and construct pie charts and line graphs and use these to solve problems.</li> <li>To convert between miles and kilometres.</li> </ul>
<b>2</b>	Pie charts Using data	<ul style="list-style-type: none"> <li>To interpret and construct pie charts and line graphs and use these to solve problems.</li> <li>To calculate and interpret the mean as an average.</li> </ul>
<b>3</b>	Units of measure	<ul style="list-style-type: none"> <li>To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate.</li> <li>To use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa using decimal notation to three decimal places.</li> </ul>
<b>3</b>	Perimeter Area and volume	<ul style="list-style-type: none"> <li>To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places, where appropriate.</li> <li>To use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit and vice versa, using decimal notation to three decimal places.</li> <li>To calculate the area of parallelograms and triangles.</li> <li>To recognise when it is necessary to use the formulae for area and volume of shapes.</li> </ul>

<b>4</b>	Simple formulae	<ul style="list-style-type: none"> <li>To express missing number problems algebraically.</li> <li>To use simple formulae expressed in words.</li> </ul>
<b>5</b>	Solving problems and puzzles involving all four operations and different units of measure	<p>To use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <ul style="list-style-type: none"> <li>To solve problems involving addition, subtraction, multiplication and division.</li> </ul> <p>To solve problems using inverses and algebra</p> <p>To solve problems that require the conversion of units of measure, perimeter, area and volume.</p>
<b>6</b>	Solving problems and puzzles involving all four operations and different units of measure	<p>To use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <ul style="list-style-type: none"> <li>To solve problems involving addition, subtraction, multiplication and division.</li> </ul> <p>To solve problems using inverses</p> <p>To solve problems that require the conversion of units of measure, perimeter, area and volume.</p>
<b>Friday lesson weekly</b>	Mental and written addition, subtraction, multiplication, division of large numbers, fractions, negative numbers and decimals	<p>To perform mental calculations, including with mixed operations and large numbers.</p> <p>To complete addition and subtraction calculations using efficient written methods including decimals</p> <p>To perform mental calculations, including with mixed operation and large numbers.</p> <p>To use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>
<b>Assess and review</b>		<ul style="list-style-type: none"> <li>To assess and review the half-term's work.</li> </ul>

## Medium-term planning Spring 2 adapted

<b>W</b>	<b>Title</b>	<b>Curriculum objective</b>
<b>1</b>	Bar methods Problems involving percentages, fractions and decimals	<ul style="list-style-type: none"> <li>To solve problems involving the calculation of percentages of whole numbers or measures and the use of percentages for comparison.</li> <li>To recall and use equivalences between simple fractions, decimals and percentages including in different contexts.</li> </ul>
<b>2</b>	Solving problems with Bar methods Ratio and proportion	<ul style="list-style-type: none"> <li>To solve problems involving the relative size of two quantities where missing values can be found by using integer multiplication and division facts.</li> <li>To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</li> <li>To solve problems involving similar shapes where the scale factor is known or can be found such as recipes, maps and shape enlargements</li> </ul>

<b>3</b>	Solving problems involving money	<ul style="list-style-type: none"> <li>To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication.</li> <li>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.</li> <li>To perform mental calculations, including with mixed operations and large numbers.</li> <li>To use their knowledge of the order of operations to carry out calculations involving the four operations.</li> <li>To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> <li>To solve problems involving addition, subtraction, multiplication and division.</li> <li>To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</li> </ul>
<b>4</b>	Algebra	<ul style="list-style-type: none"> <li>To simplify algebra</li> <li>To generate and describe linear number sequences.</li> <li>To use simple formulae expressed in words.</li> <li>To find pairs of numbers that satisfy number sentences involving two unknowns.</li> <li>To enumerate all possibilities of combinations of two variables.</li> <li>To solve problems by conversion to algebra and then solve the equation</li> </ul>
<b>5</b>	Algebra	<ul style="list-style-type: none"> <li>To enumerate all possibilities of combinations of two variables.</li> <li>To solve problems by conversion to algebra and then solve the equation</li> <li>To substitute values into formulas</li> <li>To create wordy formulas from problems e.g. money spent = number of tickets x £3.50 + booking fee</li> </ul>
<b>6</b>	Mock SATs Test	<ul style="list-style-type: none"> <li>To practice SATs test and identify areas of weakness and gaps for first half of Summer term.</li> </ul>
<b>Friday lesson weekly</b>	Mental and written addition, subtraction, multiplication, division of large numbers, fractions, negative numbers and decimals	<p>To perform mental calculations, including with mixed operations and large numbers.</p> <p>To complete addition and subtraction calculations using efficient written methods including decimals</p> <p>To perform mental calculations, including with mixed operation and large numbers.</p> <p>To use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>
<b>Assess and review</b>		<ul style="list-style-type: none"> <li>To assess and review the half-term's work.</li> </ul>

## Medium-term planning Summer 1 adapted

<b>W</b>	<b>Title</b>	<b>Curriculum objective</b>
<b>1</b>	Reflections and translations on coordinate axes	<ul style="list-style-type: none"> <li>To describe positions on the full co-ordinate grid (all four quadrants).</li> <li>To draw and translate simple shapes on the co-ordinate plane, and reflect them in the axes.</li> </ul>
<b>2</b>	2D and 3D shapes	<ul style="list-style-type: none"> <li>To draw 2D shapes using given dimensions and angles.</li> <li>To compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.</li> <li>To recognise, describe and build simple 3D shapes, including making nets.</li> </ul>

<b>3</b>	Solving Problems with Units of measure	<ul style="list-style-type: none"> <li>To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate.</li> <li>To use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa using decimal notation to three decimal places.</li> <li>To convert between miles and kilometres.</li> </ul>
	Circles and angles	<ul style="list-style-type: none"> <li>To illustrate and name parts of circles, including radius, diameter and circumference.</li> <li>To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</li> </ul>
<b>4</b>	Problems involving percentages, fractions and decimals, large numbers, negative numbers and multiple steps	<ul style="list-style-type: none"> <li>To solve problems involving the calculation of percentages of whole numbers or measures and the use of percentages for comparison.</li> <li>To recall and use equivalences between simple fractions, decimals and percentages including in different contexts.</li> </ul> <p>To solve problems with three steps involving all operations and all areas of mathematics.</p>
<b>5</b>	SATs week	
<b>6</b>	Number puzzles	<ul style="list-style-type: none"> <li>To express missing number problems algebraically.</li> <li>To use simple formulae expressed in words.</li> <li>To generate and describe linear number sequences.</li> <li>To find pairs of numbers that satisfy number sentences involving two unknowns.</li> <li>To enumerate all possibilities of combinations of two variables.</li> </ul>
<b>Friday lesson weekly</b>	Mental and written addition, subtraction, multiplication, division of large numbers, fractions, negative numbers and decimals	<p>To perform mental calculations, including with mixed operations and large numbers.</p> <p>To complete addition and subtraction calculations using efficient written methods including decimals</p> <p>To perform mental calculations, including with mixed operation and large numbers.</p> <p>To use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>
<b>Assess and review</b>		<ul style="list-style-type: none"> <li>To assess and review the half-term's work.</li> </ul>

## Medium-term planning Summer 2 adapted

<b>W</b>	<b>Title</b>	<b>Curriculum objective</b>
<b>1</b>	Extended Number puzzles and investigations	<ul style="list-style-type: none"> <li>To express missing number problems algebraically.</li> <li>To use simple formulae expressed in words.</li> <li>To generate and describe linear number sequences.</li> <li>To find pairs of numbers that satisfy number sentences involving two unknowns.</li> <li>To enumerate all possibilities of combinations of two variables.</li> </ul>
<b>2</b>	Extended Number puzzles and investigations	<ul style="list-style-type: none"> <li>To express missing number problems algebraically.</li> <li>To use simple formulae expressed in words.</li> <li>To generate and describe linear number sequences.</li> <li>To find pairs of numbers that satisfy number sentences involving two unknowns.</li> <li>To enumerate all possibilities of combinations of two variables.</li> </ul>



<b>3</b>	Investigations Line graphs Pie charts Using data	<ul style="list-style-type: none"> <li>To interpret and construct pie charts and line graphs and use these to solve problems.</li> <li>To calculate and interpret the mean as an average.</li> </ul>
<b>4</b>	Investigation Line graphs Pie charts Using data	<ul style="list-style-type: none"> <li>To interpret and construct pie charts and line graphs and use these to solve problems.</li> <li>To calculate and interpret the mean as an average.</li> </ul>
<b>5</b>	Investigations Line graphs Pie charts Using data	<ul style="list-style-type: none"> <li>To interpret and construct pie charts and line graphs and use these to solve</li> </ul> <p>To calculate and interpret the mean as an average.</p>
<b>6</b>	Extended Number puzzles and investigations	<ul style="list-style-type: none"> <li>To express missing number problems algebraically.</li> <li>To use simple formulae expressed in words.</li> <li>To generate and describe linear number sequences.</li> </ul>
<b>Friday lesson weekly</b>	Mental and written addition, subtraction, multiplication, division of large numbers, fractions, negative numbers and decimals	<p>To perform mental calculations, including with mixed operations and large numbers.</p> <p>To complete addition and subtraction calculations using efficient written methods including decimals</p> <p>To perform mental calculations, including with mixed operation and large numbers.</p> <p>To use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication.</p> <p>To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.</p> <p>To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>
<b>Assess and review</b>		<ul style="list-style-type: none"> <li>To assess and review the half-term's work.</li> </ul>

## IMPLEMENTATION

### How We Teach

At William Barnes Primary School, at least an hour each day is dedicated to the teaching of mathematics. Lessons typically have three parts. The first is a mental oral starter focussing on developing fluency in number facts. The second is a main teaching input followed by a differentiated activity. The final part of the lesson is a plenary where learning is drawn together and next steps decided on. Assessment for Learning Strategies are used throughout lessons to inform children and adults of progress and understanding and a clear marking policy is used to further inform.

### Reading/Vocabulary/Oracy

We believe reading to be the very bedrock for learning. Reading development is considered at every learning opportunity and opportunities for developing the reading practice of children and parents are constantly being updated. We are constantly evaluating new and existing strategies for encouraging home reading. Time is given to vocabulary development within all subjects and children are encouraged to question new vocabulary at any opportunity. As stated before, we run our own Oracy Project, which supports the catch up process for young children with a vocabulary gap.

## **Lesson Organisation**

Children are in mixed ability single year classes. Typically, there will be three to four groups working on a learning intention with differentiation. The learning intention for the mental oral activity and key teaching activity are displayed and shared with the children. The vocabulary that the children will be using is displayed and shared with the class. The lesson starts with a ten-minute oral/mental starter. Then the main teaching activity is introduced and children work on this for approximately 20-40 minutes. The session is concluded with a plenary. During this time, the teacher may revise key points, iron out any misconceptions, children may talk about their work, play a game to extend their learning, discuss homework activities etc. Teacher may also display a success criteria to scaffold the children's learning if this is appropriate.

## **Teaching Assistants**

The planning for the week is shared with Teaching Assistants during Monday assembly time and their roles identified. Teaching assistants are be used to support the learning of children throughout the whole of the maths session. During the oral/mental starter they can either support a group of children or make observe and make notes on children during the session. In the main teaching activity, they should support either a group or individual child. Teaching assistants need to be given the opportunity to work with different ability groups not just the least able.

## **Interventions - Personalised Learning**

Although the school has used small group interventions for mathematics such as Numicon or First Class at Number, this is now rarely the case. These interventions are seen to be an inefficient use of the teaching assistant's time because often the learning is irrelevant to the majority of the children in the group. Instead, children who have not understand a concept in a lesson are withdrawn from class in the afternoons, during assemblies or registration and given a short input, often 1:1 with a teaching assistant to ensure that the gap in their understanding is remedied quickly. Teaching assistants keep records of these sessions and sometimes children are given further follow-ups if they have not immediately understood. This approach is also used for children who are absent from school. In year 4, in preparation for the national on line times tables assessments, children lacking fluency have a small group intervention weekly to address this. As well as interventions, some children are given pre-learning in advance of tackling of a topic in a lesson to give them confidence and a head start.

## **Classrooms and Display**

To reinforce mathematical concepts and the value of mathematics, all classrooms have an interactive mathematics display called a "learning wall" as well as other useful resources such as number lines or number square appropriate for the age and ability of the pupils. Displays are changed regularly to reflect the learning happening in the classroom. The 55 club targets are displayed either on the mathematics display or elsewhere in the classroom and indicate a child's progress either with their name or a photograph next to their current target.

## **Resources**

Maths resources are stored both centrally in the resources room and occasionally in teachers' classrooms. A folder called 'Mathematics' is also kept up to date on the school's server and contains spreadsheets, interactive teaching programs and electronics versions of the school's mathematics resources where they are available in that format.

## **Numicon and apparatus**

Numicon is a mathematical apparatus that aids children's visualisation and understanding of numbers. In year R and Year 1, all children follow the Numicon programme or an adapted form of it. In the rest of the school each class has sufficient Numicon resources to use Numicon in daily maths lessons. Although staff primarily use Numicon, teachers are encouraged to use a range of apparatus and Dienes blocks, Cuisinaire rods, Unifix cubes and everyday objects are used at appropriate times to support learning. Numicon also provides schemes of work for Reception (Firm Foundations), Year 1 and Year 2, and an intervention programme for children struggling to visualise number.

## **First Class@Number**

First Class@Number is a series of intervention programmes developed by Edge Hill University to help children at different levels in the pre-2014 national curriculum to catch up. Although the school used this approach for a number of years, recently it has been superseded by personalised learning. However, the resources and activities from First Class@Number are still available and in use.

## **Mathletics**

Mathletics is a subscription based on-line learning resource that supports children in their learning of maths. In Key Stage 1, children tend to access the site during curriculum time. In Key Stage 2, children increasingly use the site at home as a weekly homework activity. Gold, bronze and silver certificates for Mathletics are given out during Friday's achievement assemblies.

## **Times Tables Rock Stars**

Like Mathletics, this is a subscription based on line learning resource. Its focus is developing rapid recall of times tables and is geared towards preparation of children for the year 4 national times tables assessment. In year 4, teachers primarily use Times Tables Rock Stars rather than Mathletics for their on line learning homework. However, children across the school have Times Tables Rock Stars accounts.

## **Talk It Solve It**

To encourage mathematical reasoning, the use of key vocabulary and mathematical oracy, a whole school resource called 'Talk it Solve it' has been adopted by staff. This resource is used mostly as an alternative mental oral starter although whole lessons can be dedicated to oracy particularly when introducing this approach.

## **Teaching Styles**

Teachers plan lessons according to the age, ability and the learning intentions to be covered. However, certain practices have been adopted by the whole school as part of the AfL policy including the use of success criteria, thinking time, lollipop stick questioning and learning partners.

## **Support**

Professional support for staff in maths takes on many forms:

- The maths leader has access to County Briefings on a termly basis.
- All teachers in Year 2 attend Assessment Briefings and Moderation Meetings to support the Teacher Assessment of mathematics.
- Year 6 and Year 2 teachers also connect with Pyramid colleagues for more moderation of mathematics.
- There are regular staff meetings for maths updates and regular moderation sessions where decisions are made on standards and progress.
- SENSS support staff and children with diagnosis of English based Learning Difficulties.

- As a staff with much experience, there is constant support from within – be it ad hoc, or as part of our Paired Teaching Programme, where teachers choose a shared focus (eg. Guided Reading) and observe one another.
- One-off courses are chosen with care, and only when focussed on an aspect of the School Development Plan for mathematics.
- Standards in mathematics and the quality of marking are monitored by the SLT through at least termly scrutinies of work
- The efficacy of personalised learning is monitored by the SLT termly through scrutiny of personalised learning folders each term.
- The quality of planning in mathematics monitored termly by the SLT
- Each year the mathematics leader observes teachers and gives feedback. Staff are given a foci for their lessons which are linked to the mathematics development plan. Examples of recent foci are Rolling Numbers, bar methods, calculation and deepening learning.

## **Parental Involvement**

At William Barnes Primary School, we believe that parents and teachers working together is highly beneficial to long-term quality learning.

We ask parents to be as involved as possible in the following areas of the Mathematics Curriculum:

- Supporting children with their online Mathletics and Times Tables Rock Stars learning
- Supporting children with learning their Rolling Numbers
- Supporting children with their 55 club
- Whole school events such as sponsored times tables learning
- Supporting with homework
- Parents' Meetings for information on subjects such as Calculation policy and the national year 4 times tables test

We also involve parents with maths learning by offering:

- Open lessons, where parents may come and join in/support
- Family Learning Week activities

## **IMPACT**

## **Assessment**

Summative assessment

- **Foundation Stage** children are assessed throughout the Reception year leading to the **Mathematics** element of the **Foundation Stage Profile** through **Early Learning Goals 11 (ELG11) – Number** and **Early Learning Goal 12 (ELG12) – Shape Space and Measures**
- All children in R to Y6 are tracked with Tracking Points, using **Educater** in mathematics.

- **Aspirational targets** are set at the beginning of each year based on a mixture of **summative assessment, teacher assessment, and transition discussions** between teachers and teaching assistants.
- Children are assessed throughout the year and **summatively** at the **end of each half term**. Educater is be used to record these judgements. Children are judged to be... On track /Not on track to achieve their target and age related expectations. Reviews are written for children who are not on track, explaining the issue and action to be taken.
- Deepening of learning is recorded using a # system. #1 indicates a child finds it difficult to apply new learning, #2 shows that a child is working at ARE and has the expected ability to use apply new learning. #3 and #4 are used for children who have mastered curriculum content and are able to deepen their understanding through reasoning and problem solving.

## **Equal Opportunities**

Mathematics is taught within the framework of the school's equal opportunities policy.

Special educational needs (SEN):

- a. Children with AEN, SEN and Higher Achieving Children will have activities differentiated to their individual needs.
- b. Children with SEN should have an IEP detailing targeted support.
- c. Weekly planning should be sufficiently differentiated to cover their needs.
- d. Practical resources may need to be available especially in Reception and Key Stage 1.
- e. All teaching staff must ensure that they support these children during the week for numeracy.
- f. Specific skills for numeracy will be on the IEP and additional time needs to be available for the teaching of these.
- g. It is important to note that a child who finds numbers difficult may not struggle in all areas of the mathematical curriculum.

## **SEND**

Children with SEN in mathematics are identified by the class teacher with the support of the SENDCo. Sometimes children are referred to the Special Educational Needs Support Service (SENS) for an assessment of their specific learning difficulties. These children are supported in lessons either 1:1 or as part of a small group with a TA. Children can also be withdrawn from assemblies and lessons to receive interventions which can be adapted versions of Numicon, First Class@Number or bespoke interventions devised by the class teacher. SEND children are also supported through personalised learning when gaps in their understanding are uncovered during lessons.

## **Tracking Progress**

Children are set challenging National Curriculum targets according to critical pathways that expect all learners to achieve age related expectations at the end of year 6. Children's progress is tracked during the term using Educater and the golden code assessment approach.

All children are assessed at the end of each half term; teacher's judgements are moderated by the whole staff and with teacher's from the cluster at regular intervals.

Each half term a review is completed identifying those children not on track and a meeting is held with the head teacher to discuss what strategies and interventions need to be put into place.

## **Progression and Continuity**

By following the national curriculum and tracking children using Educater class teachers are aware of the work children have covered previously and are be able to develop work further at the appropriate level.

## **Marking**

Marking in Mathematics follows the school's marking and AfL policies. Teachers mark correct answers in pink pen or highlighter. Errors are marked or highlighted in green (crosses are not used). Children can mark their own work, but teachers need to check children's work daily so that misconceptions can be identified for personalised learning, and to ensure that the children have been working as hard as they can. Children are given the opportunity to respond to marking during a subsequent lesson, and often show their improvements in purple pen.

## **Testing**

Annually in the Summer term, children in years 2 to 6 complete a mathematics test. In year 2 and year 6, these take the form of the national SATs tests. In years 3,4 and 5 the school uses optional SATs test supplied by Testbase. When the tests are completed, the scripts are analysed for strengths and weaknesses. With the optional tests, spreadsheets are completed and sent to Testbase who conduct an analysis of the school's performance compared to other school's who use the optional tests. A similar analysis is conducted by the government on the national SATs tests. In the Autumn term, a staff meeting is allocated to share questions which the children found difficult, and if there is a common theme across year groups this can be used inform development planning.

Children in year 2 are also given a CAT4 test (cognitive ability test). The results are used to see if any children have hidden underlying ability in spatial and quantitative reasoning that has not manifested in their learning during reception and year 1.

## **Moderation**

At least each term, teachers bring examples of children's work to a staff meeting. Prior to the meeting, teachers decide whether the child is working at below age related expectations (ARE), at ARE or exceeding ARE. In small groups, each teacher gives a commentary on their child's work, whilst the objectives covered are highlighted by the rest of the teachers. Teachers then decide whether they agree with judgement for that child and then discuss areas for development. Moderation meetings can be based upon a particular focus such as fractions or calculations and normally focus on either more able, ARE or less able children. The school also attends moderation meetings arranged by the Local Authority. These follow the same format and occur annually. From time to time, moderation is also arranged for schools in the local cluster.

## **Scrutiny of Books and Planning**

Termly, the Senior Leadership Team (SLT) collect books from each year group for work or planning scrutiny. Teachers supply books for different abilities and children who are pupil premium. Using a criteria, the SLT then look through the books in turn ensuring that school policy and good developments are in place. Notes are taken by the head teacher. General feedback is given at the next staff meeting, whilst issues with particular year groups are dealt with 1:1 by the mathematics leader.

## **Record Keeping – Reporting**

Teachers keep detailed tracking sheet stored electronically using Educater. Teachers also keep their own records, such as the marks scored in times tables tests and Mathletics scores, in order to help them to see which children need extra support. Children's targets are shared with parents at parent's meetings and in termly reports. Parents receive a written report of their child's progress each term. At the end of the year parents receive a detailed written report.

## **School Development Planning and the Governors**

In September, the mathematics leader writes a school development plan that details the improvements in mathematics provision to be made during the following school year. There is a member of the Governing Body with overall responsibility for mathematics. Whole school attainment data is shared with the Governing body. Governors are kept up to date at Governing Body meetings on any developments in mathematics. Reports are given by the mathematics leader at Curriculum Governors meetings termly. The maths leader also completes at least one written report for the governors each year.

## **Future Developments**

- Staff share successes with Bar methods
- Whole school policy for Bar methods used
- Review of Mathletics? Are there better platforms available?
- Review use of iPads in school for supporting Mathletics
- Audit Numicon resources and reorganise
- Staff training on Numicon
- Exploration of the integration of White Rose Scheme of Work and resources into current practice

**Richard Hull**

**May 2020**

<b>Adopted date:</b>	<i>27th June 2022</i>
<b>Signature of Headteacher:</b>	<i>Karen Wrixon</i>
<b>Signature of Governing body:</b>	<i>Chris Jones</i>
<b>Next review date</b>	<i>Summer 2023</i>