

St Paul's CE Academy



Maths Policy

Person responsible for the policy	Maria Kiniari
Date reviewed and shared with staff	October 2020
Date to next be reviewed by staff	October 2021

Rationale

It is our aim to develop:

- A growth mindset towards the subject of Mathematics.
- A positive attitude towards Mathematics.
- Learners who are resilient and embrace challenge.
- A secure foundation of number fluency from EYFS to Year 6.
- Competence and confidence with numbers and the number system and other mathematical knowledge, concepts and skills.
- Mastery in Mathematics - learners who can reason, think logically and work systematically to solve problems, both independently and with others.
- Learners who can communicate using sophisticated mathematical language.

Intent

Our intent for Mathematics is to teach a rich, balanced and progressive curriculum using Maths to reason, problem solve and develop fluent conceptual understanding in each area.

At St Paul's, we aim to inspire all children to reach their full academic potential. In Mathematics, this means ensuring a curriculum that is fully inclusive of all children which:

- Develops children's knowledge and understanding of Mathematical concepts whilst enabling them to practice and sharpen skills and methods.
- Enables them to think critically and communicate their understanding.
- Gives them opportunities to apply learnt mathematical skills in different contexts across the curriculum.
- Provides opportunities to develop problem-solving skills useful for maths and across the curriculum.
- Our curriculum allows children to better make sense of the world around them relating the pattern between mathematics and everyday life.

This policy is set within the context of the school's vision, aims and policy on teaching and learning. As a result, of their learning in Mathematics and problem solving across the curriculum children will:

- Be prepared for applying their skills effectively in everyday life situations, in their future learning and in the work place.
- Have the building blocks in place and to provide a solid foundation to lead onto secondary, further and higher education.

Implementation

Our mastery approach to Mathematics

At St Paul's, we have adopted a bespoke mastery approach using **White Rose Maths Hub/NCETM and Maths No Problem** programme of study to support our staff with the planning, teaching and learning of Mathematics. The programme provides planning support for EYFS up to Year 6.

As well as a whole school plan for the academic year, this provides a clear, consistent plan for Maths over the year, each year group is provided with a termly overview. In addition to this whole school programme of study, teachers also use **Maths No Problem**, which is a programme of study intended to support with maths tasks. It is understood that, within a unit of work, the time spent on teaching a specific learning objective or set of learning objectives depends on the needs of the children in the class.

The structure of maths lessons may vary, depending on the nature of the topic and the activity planned.

Teachers pre-empt misconceptions that many children will have - eg a rectangle has four lines of symmetry (diagonals). Teachers also plan which vocabulary they will use and which models, images and concrete resources they will use to aid learning.

Maths lessons consist of:

- A daily **counting** session- using the counting stick.
- A review of learning.
- An **"In Focus" Problem**- where a problem or question is posed for the children to solve.
- **'Ping -Pong** learning- consists of questions and answer sessions.
- **Guided practice**- Children solve a 'guided' problem before moving onto an **independent task**.

Maths planning proforma



MATHS PLANNING
PROFORMA.docx

We ensure that across each term children are given a range of experiences in Mathematics lessons eg practical activities, investigations and mathematical games, problem solving activities, individual, group and whole class discussion activities, open and closed tasks.

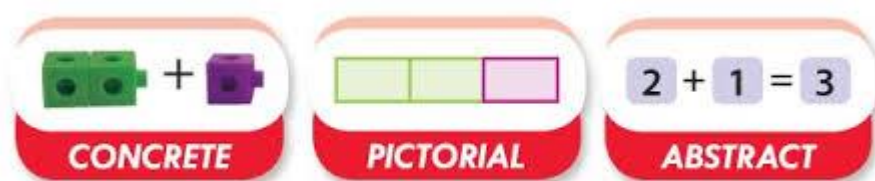
A detailed **Calculation Policy**, based on our collaborative Hastings Maths Alliance programme of study, will be used throughout the school to ensure continual and gradual progression of number and calculation skills. We use **White Rose Maths Hubs/ Maths No Problem and NCTEM** materials to plan and deliver high-quality Mathematics lessons to our children. We are dedicated to enabling our children to achieve academic mastery in Mathematics and we do so through the use of a **Concrete - Pictorial - Abstract** approach to learning mathematics.

This enables our children to build solid foundations in their understanding of maths, which is vital in order to master the subject. Through teaching with a Maths Mastery approach, children will learn to understand, distill and clarify information; consider what they know that will help them to solve problems, realising what they need to know next; create systems and strategies, organising information in a way that helps find patterns and ultimately solutions and to communicate and present their findings effectively.

Concrete, Pictorial, Abstract (CPA) Approach

Children learn mathematics through the '**Concrete, Pictorial, Abstract**' approach as shown in the Calculation Policy. Children will use manipulatives to represent mathematical concepts before moving to pictorial representations, and finally abstract representation (i.e. numerical symbols).

Teachers model different ways of representing solutions to a problem in order to develop children's conceptual variation and reasoning skills. Children should be encouraged to move between these and different stages (sometimes returning to concrete or pictorial) in order to fully understand a mathematical concept.



Curriculum - Programme of Study

EYFS

The programme of study for the Foundation stage is set out in the EYFS Framework. Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shape, spaces and measures.

Key Stage 1 and 2

The Programmes of Study for Mathematics are set out year by year for Key Stages 1 and 2 in the new National Curriculum (2014). The Programmes of Study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Key Stage 1

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources (e.g. concrete objects and measuring tools).

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

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

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

Lower Key Stage 2

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

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

It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage 2

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

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

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

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Impact

The impact of our Mathematics curriculum is for children to understand the relevance of what they are learning in relation to real world concepts. We have fostered an environment where Maths is fun and it is OK to be 'wrong' as we learn from our mistakes. Our children develop a growth mind-set and make measurable progression against their own targets.








Maths books show evidence of fluency, reasoning and problem solving. Our feedback and interventions are supporting children to strive to be the best mathematicians they can be, ensuring a greater proportion of children are on track to be at age related.

Children are given the opportunity to 'have a go' and choose the resources they need to help them to learn, along with the strategies they think are best suited to each

problem. Children are developing verbal fluency and are able to articulate their reasoning.

Medium Term Plans

Medium term plans are taken from the White Rose scheme of work

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
 Reception-Mastery-Term-by-Term-Overview	 Year-1-Mathematics-Term-by-Term-Overview	 Year-2-Mathematics-Term-by-Term-Overview	 Year-3-Mathematics-Term-by-Term-Overview	 Year-4-Mathematics-Term-by-Term-Overview	 Year-5-Mathematics-Term-by-Term-Overview	 Year-6-Mathematics-Term-by-Term-Overview

Schemes of Work

<https://whiterosemaths.com/schemes-of-learning/primary-sols/>

Cross curricular

Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. Nevertheless, the prime focus should be on ensuring mathematical progress delivered discretely or otherwise.

Teaching

In the Early Years Foundation Stage, maths is taught holistically through play, based upon the children's interest and class topics. The Early Years team work in two ways to ensure coverage of all areas of maths in 'Development Matters'. Firstly, taught carpet sessions focus on particular topics, with this learning continuing with a couple of children at a time or in small groups. Secondly, the team explore mathematical concepts through planning and seeking opportunities to teach maths. As the children progress through Early Years, children learn to record in a more formal way.

The children are given the opportunity to develop their understanding of number, measurement, pattern and shape and space through a combination of short, formal teaching as well as a range of planned structured play situations, where there is plenty of scope for exploration.

Children will become competent 'counters' so that their fluency with the number system provides a foundation for mathematical understanding. Maths learning builds from a concrete understanding of concepts where children are manipulating objects. When children are able to see concepts this way, they then need to understand the same

concepts represented pictorially. Children are then ready for abstract representation before being able to apply their knowledge to different situations.

Children's mental maths is of great importance, with number bonds, times tables facts and various strategies for calculation taught and practiced at school with support sought from parents through home learning activities.

A progression towards efficient written calculations should be developed and applied consistently in each year-group. The school **Calculation Policy** should be followed. Class targets should be used to ensure areas where the majority of the class have not grasped a concept can be revisited and mastered.

When teaching problem solving skills across the curriculum -time (and sometimes whole lessons) should be given to each aspect of problem solving ensuring children get thorough practice at: 'preparing for problem solving', 'thinking through problems to establish what they know and don't know so far'; actually 'doing the problem solving' effectively AND 'communicating the answer effectively'. They should evaluate the process too. Over time children will improve at each aspect.

Children should:

- Respond to any questioning, in complete full sentences and any workings out on whiteboards are written in full number sentences;
- Count backwards and forwards in different sized steps as well as from different starting and ending points is essential;
- Be encouraged, at all times, to communicate their understanding of maths so that it clarifies their thoughts;
- Write their place value above formal written methods (see Calculation Policy);
- Capital letters for integers H, T $\text{\textcircled{O}}$
 - Fractions for decimal place $\frac{1}{10}$, $\frac{1}{100}$ etc
- Chant complete mathematical statements ex
 - Year 1 - There are ___ groups. There are ___ in each group.
 - Year 4- 4 or below round down, 5 or above round up!
 -
- **Snap**-Which is a clap when the children have two different procedural variations.
- **Place hands on head**- during in focus and ping pong when they are ready;
- Use the appropriate **mathematical language**, at all times.

Year 1 - Where possible, there is a daily Maths lesson of about 60 minutes of Maths per day, including all opportunities, during the day, for number work.

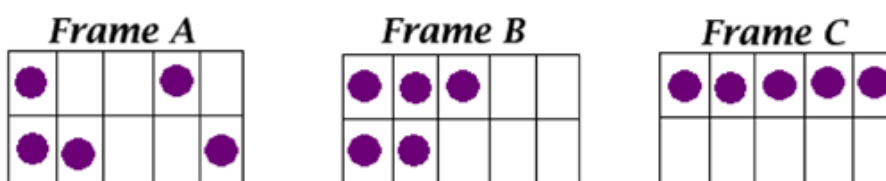
Each class in **KS2** organises a daily maths lesson of about 60 minutes as well as opportunities, cross-curricular, to use and applying maths knowledge and times tables

- '5 in 5' for Years 3 and 4,
- '10 in 10' in Years 5 and 6.
- Children answer 5 questions in 5 minutes or 10 questions in 10 minutes; this keeps mathematical skills at the forefront.

1. 45% of 360
2. Convert $\frac{3}{8}$ to a decimal
3. $1\frac{2}{5} \times \frac{1}{4}$
4. Sam mixes 1 tin of blue paint with every 4 tins of white paint. He used 15 tins altogether. How many tins of blue paint does he use?
5. $4x + 10 = 30$ What is the value of x ?

- 1) $35.62 + 2.78 =$
- 2) $56.71 - 8.23 =$
- 3) $\frac{3}{5} \times \frac{6}{1}$
- 4) $2\frac{1}{2} \times \frac{4}{1}$
- 5) $45 \times 17 =$
- 6) How many quarters in 3 and a half
- 7) Explain what a prime number is and give examples
- 8) $\underline{\hspace{1cm}} \times 12 = 72$
- 9) $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = 120$
- 10) Write twenty nine thousand, three hundred and sixty seven in digits

1. Tens Frames



NRich

Frame A:

There are five counters; perhaps seen as sub-groups of three and two, either by looking at the clusters at either end of the frame, or by looking at the number in the top and bottom rows.

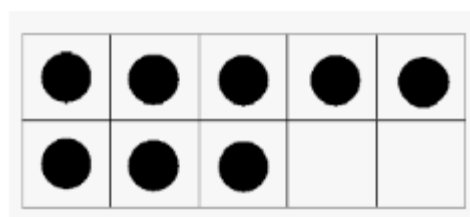
Frame B:

Again there are five counters; perhaps seen as three in the top row and two in the bottom, or as four and one, or two and two and one. It is also noticeable that there are five empty boxes remaining, in a similar shape to the full boxes. This prompts the awareness that 'five and five make ten'.

Frame C:

This arrangement strongly illustrates the idea that 'five and five make ten'. It also suggests the idea that half of ten is five. This type of thinking would not occur if the five counters were presented without the context of the ten-frame.

Plenty of activities with ten-frames will enable children to think automatically of numbers less than ten in terms of their relationship to ten, and to build a sound knowledge of the basic addition/subtraction facts for ten which are an integral part of mental calculation. For example, a six-year-old child, when shown the following ten-frame, immediately said, "There's eight because two are missing."



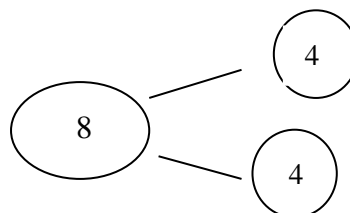
2. Part-Part Whole

Part-part-whole thinking refers to how numbers can be split into parts. It allows children to see the relationship between a number and its component parts. As a result, children generalise the connections between addition and subtraction.

Part-part-whole reasoning is a critical underpinning concept required for flexible and efficient computation. It also assists students' attempts to visualise, interpret and solve word problems.

$$8 = 4 + 4$$

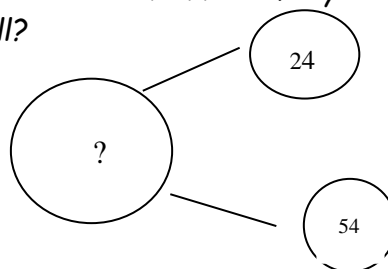
8	
4	4



Word problems

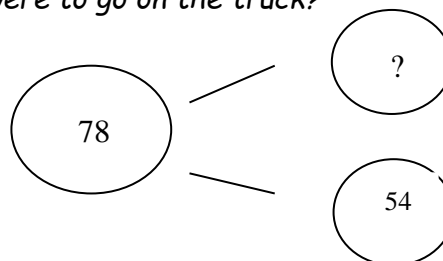
24 sheep were in the paddock. 54 sheep were on the truck. How many sheep were there in all?

?	
24	54



78 sheep were to be transported on the truck. 54 had already been loaded. How many more sheep were to go on the truck?

78	
?	54



Bar modelling

Bar modelling is an essential maths mastery strategy. It allows children to draw and visualise mathematical concepts to solve problems.

Whole Unknown

5 Children go to the cinema. They each pay £12 each. How much did they spend together?

?				
£12	£12	£12	£12	£12

Size of Groups Unknown

5 Children go to the cinema. They pay £60 altogether. How much do they spend each?

£60				
?	?	?	?	?

Number of Groups Unknown

*Tickets to the cinema cost £12. Some children buy tickets which cost £60.
How many children bought tickets?*

£60	
£12	?
1 child	?

Ratio

https://www.mathplayground.com/ThinkingBlocks/thinking_blocks_ratios_2.html

*Tim and Sally share marbles in the ratio of 2:3
If Sally has 36 marbles, how many are there altogether?*



Differentiation

All staff have high expectations for all children, irrespective of ability, and encourage them to be successful and achieve their full potential. Our aim is to ensure challenge for all.

Children are encouraged to have a growth mind set about their ability to do mathematics.

We create a climate for children to 'have a go' and that it is 'ok' to make mistakes as we all learn from our mistakes. In some lessons, children 'self- differentiate' and choose the level of challenge right for them. In other lessons, teachers direct children to the correct level of challenge based on their assessments in the initial phases of lessons.

NCETM's Developing Mastery in Mathematics

- An expectation that all pupils can and will achieve.
- The large majority of pupils progress through the curriculum content at the same pace. Differentiation emphasises deep knowledge and individual support/intervention.

- Teaching is underpinned by methodical curriculum design, with units of work that focus in depth on key topics. Lessons and resources are crafted carefully to foster deep conceptual and procedural knowledge.
- Practice and consolidation play a central role. Well-designed variation builds proficiency and understanding of underlying Mathematical concepts in tandem.
- Teachers use precise questioning to check conceptual and procedural knowledge.
- They assess in lessons to identify who requires intervention so that all pupils keep up.

Differentiation in teaching for mastery is about how pupils can be supported to understand and develop new concepts and techniques.

The differentiation of tasks is implemented in a variety of ways:

- **Task/activity** - different sort of tasks: visual, hands-on, auditory can all play a part in helping a learner to access the topic.
- **Outcome** - what their end product will be, e.g. a model, a picture, written explanation.
- Amount and rate of work.
- Questioning.
- **Peer support** - Maths partners.
- **Role** - offering children specific roles within group work, e.g. calculator, spokesperson, decision maker, recorder, tabulator, statistician, treasurer, banker.
- **Open ended questioning and activities** which allow more able children to offer more mathematical responses.
- **Stepped activities** which can be accessed at different steps, supporting and challenging all.
- **Recording** - allowing some children to give verbal reports and photographing their learning.
- **Grouping** - according to ability so that the groups can be given different tasks when appropriate activities are based on the same theme.

- **Expectation** - how far you expect children to go in an exploration/investigation and what you expect them to learn/conclude.
- Resource - e.g. some may use number lines, other may use mental images.
- Adult support.

Differentiated strategies work in some situations but not in others. It is not always possible or appropriate to differentiate by changing the range of numbers used in an activity, however, sometimes; this may be the appropriate step to take.

Support staff (TAs and HLTAs) are fully briefed before lessons and use the same teaching methods modelled by the teacher to support individuals or groups. In some cases, they may need to model concepts.

Special Educational Needs and Disability and More Able

Through teacher's ongoing assessment, learning is planned to match the needs of individuals with differentiation addressed in a number of ways e.g.

- By outcome.
- Different tasks.
- Differentiated tasks.
- Level of support from an INA, TA or teacher.
- Use of practical resources.
- Challenges for all.

Targets, from Provision Maps, are taken into account and reflected within teacher's plans.

SEND

Children with SEND are taught within the daily mathematics lesson. When additional staff are available to support groups or individual children or, preferred practice, for the class teacher to use this as targeted mathematical support.

Maths mastery emphasises the fact that all children can learn a mathematical concept. At St Paul's, we recognise the fact that children learn at different rates, therefore children with SEND may require differentiated activities to secure understanding.

Dyslexia/Dyscalculia

At St Paul's, we aim to identify and support all children following the guidance as laid out in the **East Sussex Dyslexia policy**. [See Principles, section 2, Roles and responsibilities, section 3].

More Able

Within the daily mathematics lesson, teachers not only provide activities to support children who find mathematics difficult, but also provide activities, which challenge the more able (eg open ended investigations and in-depth reasoning tasks).

Einstein said that clever people are those who make their mistakes fastest'.

Assessment

Assessment for learning should occur throughout the entire maths lesson, enabling teachers/teaching assistants to adapt their teaching/input to meet the children's needs. This feedback should be incisive and regular.

On a daily basis children should self-assess against the learning objective and success criteria, giving them a sense of success. Children should know when they are meeting their targets and be self-assessing against those too.

Children's work should be marked in line with the Feedback and Marking Policy and should model how corrections should be made, giving children a chance to learn from their misconceptions or incorrect methods.

Future lesson design should depend on class success evaluated through marking and observations made during the lesson.

Assessment of pupil work and progress is on-going by the class teacher and informs future planning. Teachers mark work in mathematics in line with the **school Feedback & Marking policy**. Teachers use Year group objectives to assess children's progress in mathematics, gathering evidence over the course of the year. Teachers use this information to inform planning for groups and individual pupils.

Summative assessments **Progress in Understanding Mathematics Assessment (PUMA)** are taken in line with the school's assessment, review cycle to provide further evidence of where the child is working at and to inform a more rounded judgement of their abilities.

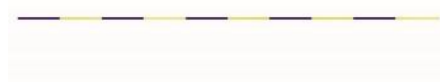
Tracking is used in order that children who are not making good progress over time can be targeted for support in one form or another. What that support will and how intensive, depends upon the child. Where further support is deemed necessary, children will access interventions.

Foundation Stage

Assessment is ongoing and based on the Early Learning Goals in each child's EYFS Profile/ National Curriculum Level Descriptors and the principals of Assessment for Learning.

Key Stage 1 and 2

Counting stick



Counting is an essential building block of mathematics. At St Paul's, we follow the NCETM Maths Mastery counting stick procedure, where all times tables are taught through the counting stick using a variety of strategies.

Strategies

Always:

1) **Start with 'What times table are we learning?'**

2) **We always start with 0.**

3) Count in multiples first: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24.

4) **Then 'Rewind' - count backwards -24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0.**

5) Repeat with 'What times table are we learning?'; We always start with 0 (this is continually be reinforced as the children go through different strategies of counting).

6) **Children are to use the actions below when they get to 3x, 5x, and 7x.**

7) Add multiples of the times table, **Teacher-** two add two equals- **all children respond** with two add two equals 4; **Teacher-** four add two equals -**children respond** with four add two equals six, and so on...

8) Remember to 'rewind' and subtract multiples.

9) Look at the order of teaching below as to whether your next strategy is multiplying by 10 and halving for 5x or doubling and halving strategies for 2x, 4x and 8x.

10) Children should be confident before removing multiples from the counting stick.

11) Once the children are secure with the counting stick, the times table ladder should be used to reinforce written as well as mental strategies.

	Action	
0	Always start with	
1	What times table are we learning?	
2		Double x1
3	The Key	
4		Double x2
5	Nose half of 10	
6		Double x3
7	The number I can't remember	
8		Double x4
9		Treble 3x
10		Double x5
11	Legs eleven	
12		Double x6

Counting forwards and backwards

The stick can be used simply to count forwards and backwards along the stick. Forward counting should be from left to right as the pupils are looking at it. This will be from the right hand side as the teacher holds the stick in front of him/her. You can split the stick in half to demonstrate where zero sits and then count down and up to include negative numbers. This technique is also useful for times tables and sticky notes can be placed on the stick to assist initially. They can then be removed as and when the children are comfortable with them.

Varying the pace

The teacher can change the pace at which the pupils count. If the counting task is challenging, slow counting will provide additional thinking time. The teacher can introduce a pause and continue counting or a position on the stick can be indicated by a marker (e.g. a piece of ribbon/string, elastic band, roll of sellotape) so that the pupils will know in advance where the pause or rest will happen and then count on to the end of the stick.

The Hush stick

The 'Hush' stick combines counting aloud with counting silently. At the 'hush' number pupils continue counting but don't say the hush number aloud e.g. counting in 10's.

10, 20, 30, 40, hush, 60, 70, 80, hush, 100

The 'hush' can be indicated in a number of ways:

- By using a marker to indicate the 'hush' position;
- If using the stick as a number strip then touch the section with one finger instead of grabbing the whole section;
- If using the stick as a number line then indicate a 'hush' position by touching the underside of the stick.

The Boomerang stick

Put a marker at a position along the stick. Count up to the marker and back to the start again. This is useful when beginning to work on counting backwards.

The Hiccup Stick

The 'Hiccup Stick' combines counting forward and backwards. Counting takes place as usual until a 'hiccup' sound is heard. On the hiccup you count back to the previous number and then count on e.g. counting in 2's - 2, 4, 6, 8, 10, hiccup, 8, 10, 12, etc.

Times table Strategy Ladder

The times table ladder is to be taught alongside the counting stick.

Order of teaching		Multiple	Strategy
	0x		Always start with 0x
1	1x	8	Times table we are learning
2	2x	16	Double 1x
7	3x	24	1x add 2x
3	4x	32	Double 2x
6	5x	40	Half of 10x / ÷ 2
8	6x	48	Double 3 x
11	7x	56	Add 3x and 4x
4	8x	64	Double 4x
9	9x	72	Triple 3X
5	10x	80	10x bigger
12	11x	88	10 x plus 1x
10	12x	96	Double 6x



Or

Order of teaching		Multiple	Strategy
1	0x		Always start with 0x
2	1x	8	Times table we are learning
5	2x	16	Double 1x
9	3x	24	1x add 2x
6	4x	32	Double 2x
4	5x	40	Half of 10x / ÷ 2
10	6x	48	Double 3 x
8	7x	56	Add 3x and 4x
7	8x	64	Double 4x
11	9x	72	Triple 3X
3	10x	80	10x bigger
12	11x	88	10 x plus 1x
13	12x	96	Double 6x

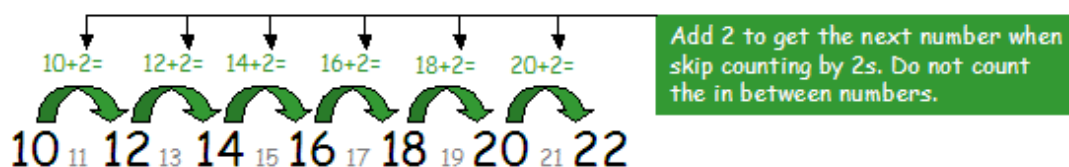
Skip Counting

Skip counting is often called counting by 2s or by 5s or by 10s or by 100s. Skip counting helps with addition, subtraction, multiplication, and division. It is also used for counting objects - counting pairs of gloves, groups of five, money, boxes with 100 cans in each box - the list goes on!

To skip count you add the same number over and over. You can start at any number.

Counting by twos

The example shows how to count forward by twos starting from 10



Time tables

Tables will be taught, including related division facts, and tested regularly.

- Year 1 Count in multiples of 2, 5 and 10. Recall and use all doubles to 10 and corresponding halves.
- Year 2 Recall and use multiplication and division facts for the 2, 3, 5 and 10 multiplication tables, including recognising odd and even numbers.
- Year 3 Recall and use multiplication and division facts for the 4 and 8 multiplication tables, including previous years times tables.
- Year 4 Recall and use multiplication and division facts for

Year 5 - 6 multiplication tables up to 12x12.
Revision of all times tables and division facts up to 12x12.

Where possible number patterns will be shown as this supports learning. If it has been clearly demonstrated that children have complete understanding of the tables above both with \times and \div and through problem solving, the class teacher can teach additional tables where appropriate.

The tables will be learnt through counting on and back in steps of, for example, 2 e.g. 2, 4, 6, 8, 10 etc. as well as 1 times 2 equals 2, 2 times 2 equals 4 etc. Counting can also cross the tens and hundreds boundaries where appropriate.

In years, 3 and 4, to support the new DfE Year 4 times table check, weekly times table lessons take place at the beginning of the week. *'The multiplication tables check is designed to help ensure children in primary school know their times tables up to 12 off by heart. As well as being critical for everyday life, knowledge of multiplication tables helps children to solve problems quickly and flexibly, and allows them to tackle more complex mathematics later on in school'.*

Lessons involve:

- Children being put into ability classes so they are taught at their own level, from Term 2.
- Weekly assessments are completed to identify children's gaps and inform planning;
- Teaching strategies relate to the Counting Stick including doubling, halving and using facts that are already known.
- Tables and division facts are taught with variation and in different contexts. Children being encouraged to look for patterns and connections between different times tables.
- Children not moving on to the next table until they have mastered the previous.
- Children given opportunities to practise their times tables both verbally and through written work.

Assessment for Learning

Assessment is a continuous, integral part of teaching and learning and is embedded in the planning process. It is the responsibility of the class teacher to assess all pupils in their class. At St Paul's we are continually assessing our pupils, recording and tracking their progress. We follow the principles of Assessment for Learning and use Target Tracker to secure accurate judgments of a pupil's attainment.

Formal Assessment

Rising Stars **Progress in Understanding Mathematics Assessment (PUMA)** has been adopted to enable the teaching staff to gain a more detailed and accurate picture of

each child's current level of attainment. Each child will complete three tests – one at the end of Term 2; the second at the end of Term 4 and the third at the end of Term 6 these will provide evidence to show the progress of each child throughout the academic year. This information will inform pupil progress meetings and planning.

Teachers use Target Tracker and National Curriculum statements to assess against. Mock tests, using exemplars, to be sat at the end of Term 3 for Year 6 in term 4 for Year 2. All children working below the expected standard to sit the end of Key Stage National Curriculum Tests.

Recording

Children are encouraged to explore various methods of recording their work in an appropriate manner. The recording of practical work and the practising of computational skills might be done linguistically [oral or written], visually through pictures, graphs, diagrams, symbolically or through models. Written work will be recorded in workbooks or exercise books. A folder containing: working, photocopies of work completed on whiteboards and results recorded on paper can also be kept. Children will use one side of their book to record their findings, the opposite page will be used to assess and for response marking.

*Children are encouraged to use mental strategies before resorting to a written algorithm. Please refer to the **Full Calculations Policy**'.*

Tracking and Intervention:

We aim to provide children, who are not making good progress, with extra support through interventions. Interventions in Mathematics should be based on developing key number skills that are appropriate for the children involved.

Intervention provided to boost children's progression in maths, should be tightly planned, with success criteria set and assessments made frequently to ensure progress is being made. Interventions may be carried out by Teaching Assistants, however, what is being taught and how it is delivered is the class teacher's responsibility and communication is essential. Teacher meetings with TAs are planned for weekly.

We identify from tracking any issues that exist and plan initiatives that would address these as part of teacher performance review meetings where children's performance is evaluated on an individual basis with class teachers.

We also examine the progress of low, mid and high attainers; those with English as an additional language, those entitled to the Pupil Premium and those with a Special Educational Need. Where data indicates a whole school issue, it will form part of the Academy Development Plan.

Monitoring

Monitoring of children's progress begins with performance review meetings which then continues with the subject leader evaluating further evidence to ensure children are making progress. Monitoring happens through book looks, pupil voice, analysis of assessment results and the assessments used, and through other means depending on what information needs to be ascertained.

Following monitoring activities, feedback is given to staff about how they can strengthen their practice and CPD (professional development) opportunities built in where it would be deemed valuable. These might take the shape of inputs during staff meetings or by a variety of other means.

Where specific initiatives have been put in place through action planning for academy development, these are monitored by the subject leader in order to evaluate their impact.

Display and Resources

- In the classrooms there should be, either on display or easily accessible to children, level appropriate resources, particularly concrete and pictorial apparatus to support children to grasp concepts.
- Mathematical vocabulary should be displayed so that children use this in the communication of their understanding.
- Daily use of counting stick- with visuals - to support learning of times tables and strategies.
- There should be maths working walls displaying weekly maths concepts and children's work.
- A challenge table should be set up for children to apply their skills and apply their reasoning to investigations.

Exercise Books for Recording

It is school policy that the following pattern is used:

- *Foundation Stage* *use of whiteboards/plain paper as appropriate moving onto 2cm squared books*
- *Year 1* *2 cm squared exercise books; moving onto 1cm*

- Years 2 to 6 1 cm squared exercise books

All children are encouraged to work tidily and neatly when recording their work. When using squares one square should be used for each digit.

Staffing, Resources and Classroom management

Teaching Assistants, Individual Needs Assistants and parents can be encouraged to work, under the guidance of the teacher, with individuals and groups of children.

Basic equipment such as:

- Tens Frames;
- Numicon;
- Cuisenaire;
- Base 10 counters,
- Numberlines;
- Number squares;

Clocks, rulers, protractors, 2D & 3D shapes, construction equipment and computers should be readily available within each classroom and easily accessible by the children.

Resources which are not required regularly are stored centrally in the Maths cupboard.

Review

This Mathematics policy will be reflected in our practice. The policy will be reviewed annually.

Other Relevant Policies

Please also refer to school policies on:

- Teaching & Learning.
- Written Calculations.
- Oral & Written Feedback
- Inclusions
- Equal Opportunities.
- Home Learning.

Review Framework

This policy will be reviewed annually (or sooner, in the event of revised legislation or guidance).