



# **Mathematics: Curriculum Intent, Implementation and Impact Statement**

## **Intent**

At Sandy Lane Primary School, children will have the opportunity to apply knowledge and understanding of number, place value and the four operations to ALL areas of the maths curriculum. It is essential that children have the experience of solving problems in a wide range of contexts which develop conceptual understanding and resilience through investigations and trial and error activities.

By adopting a Mastery approach, it is also intended that all children, regardless of their starting point, will maximise their academic achievement and leave Sandy Lane with an appreciation and enthusiasm for Maths, resulting in a lifelong positive relationship with number. The approach of concrete, pictorial and abstract in maths will ensure there is a sequential build up of maths skills, which build on previous learning.

To achieve this -

- We ensure that we deliver a high quality maths curriculum that is both challenging and engaging.
- We want children to make links across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.
- We intend for our pupils to be able to apply their mathematical knowledge to all other subjects across the curriculum.
- We want them to know that maths is essential to everyday life and that our children are confident mathematicians who are resilient and show excellence.
- Fully develop independent learners with inquisitive minds and curiosity about maths who have secure mathematical foundations and a keen interest in self-improvement.

## **Implementation**

At Sandy Lane, all children study mathematics daily following the White Rose Maths Scheme of Learning. WRM is a blocked scheme, which allows for depth and breadth of learning within each strand of mathematics. The children in KS2 use Learn by Question (LBQ) to support with their maths learning and it is the main driving tool for maths in KS2. The majority of fluency and some problem solving work takes place on this online resource. All children in KS2 will have their own Ipad in order to access LBQ. The White Rose Schemes of learning are closely linked to LBQ and run alongside LBQ well.

**Concrete, Pictorial and Abstract Learning:** Children engage with a wide and varied range of concrete (practical) , pictorial representations and abstract methods within each session. Cohesive use of CPA is a fundamental part of mastery in mathematics for all learners, not just those pupils with SEND. Concrete and pictorial references scaffold and strengthen understanding and are widely used as a teaching and learning tool from Foundation Stage to Year 6. Maths Investigation days will take place once a half term throughout school to ensure children are developing their problem solving and reasoning skills, resilience and trial and error.

**Fluency, Reasoning and Problem Solving:** Every learning session includes the opportunity to develop fluency skills, construct chains of reasoning using relevant knowledge alongside relevant terminology and solve increasingly complex problems in a systematic and coherent way. The use of open ended questioning supports with this approach to maths.

**Mathematical Vocabulary:** Sessions include explicit reference to vital mathematical vocabulary and the use of problem solving and reasoning starter sentences to support and encourage all children to communicate their ideas with mathematical precision and clarity. These sentence structures often express key conceptual ideas and provide a framework to embed conceptual knowledge and build understanding.

### **EYFS**

At Sandy Lane, we understand the importance of early experiences of maths, and have committed to the Early Years Framework within our Early Years setting. This approach places a significant emphasis on

developing a strong grounding in number – understanding that this is a necessary building block for children to excel in the subject.

The two key ELG's for mathematics are:

1. Number: Number composition, subitising, recall of bonds to 5 and 10 and doubling
2. Numerical Pattern: Verbally count beyond 20, Compare quantities, explore and represent patterns

Staff provide creative and engaging opportunities for children to ignite their curiosity and enthusiasm for the subject, while focusing on the three prime areas of: Communication and Language, Physical Development and PSED.

Activities and experiences are frequent and varied, and allow children to build on and apply understanding of Numbers to 10. Concrete approaches are a key focus within sessions, as is the use of pictorial representations including Tens Frames and Part/Whole Models. Children are actively encouraged to use mathematical terminology within their understanding, with a focus on developing positive attitudes and interest in the subject.

The following sections will go into more details of the expectations in maths across the whole school to ensure we offer a well rounded engaging maths curriculum –

### **Maths Timetabling and Daily 10**

- ✓ Maths lessons are timetabled every morning throughout the week and each lesson will last approximately one hour (see class timetables).
- ✓ A 20 minute afternoon slot will be timetabled in to complete their Daily 10/mental arithmetic session most days. This resource is used to develop the children's mental calculation strategies. If children achieve 10 out of 10 in a Daily 10 session, they will receive 5 dojos.
- ✓ Maths Daily 10 sessions will take place in the back of Maths books.

- ✓ The Daily 10 sessions are accessed on the Topmarks website – <https://www.topmarks.co.uk/maths-games/daily10>
- ✓ Choose an appropriate maths concept (Level 1 = Year 1 and so on) and then children will complete the mental maths challenge in the back of their maths books.



### **Non-negotiables and Expectations in Maths**

- ✓ The Non-Negotiables have been identified to ensure consistency in quality maths learning for the pupils at Sandy lane. Teaching staff MUST stick to these non-negotiables.
  - ❖ Two Morning Maths Tasks each week (8:45-9:05am).
  - ❖ Daily Multiplication and division facts practice. (10 minutes throughout the day and this is not restricted to the maths lesson).
  - ❖ Two Times Tables Rockstars sessions for each class twice a week on iPads.
  - ❖ Counting every day in every year group (see counting document).
  - ❖ Maths reasoning or problem solving activities at least twice every two weeks for all children in the class. These activities must be clearly identified in the children's maths books using the 'Prove It!' label. These activities will incorporate prior learning as well as new learning.
  - ❖ Daily 10 mental maths challenge every day for 15 minutes on an afternoon.

- ❖ Test style questions (Years 1-6) to discuss and pick apart at least once a week as a class. This could be in the form of a Weekly Maths Challenge.
  - ❖ A weekly maths challenge.
  - ❖ Lessons will include the use of practical equipment and model and images.
  - ❖ All classes must to have a labelled maths resource area that children are able to access at all times.
- ✓ **Morning Maths Tasks**
    - Morning maths tasks will take place through the week and this task is set for the children to complete as soon as they walk into class. These could include times tables practice, lists of calculations, word problems, using and applying tasks that are consolidating learning. There has to be high expectations of the children during these tasks and for them to be focused straightaway.
  - ✓ **Daily Multiplication and Division Facts Practice**
    - Throughout every day pupils must be given opportunity to practise their multiplication tables for a minimum of ten minutes. This could be done as children line up for assemblies, as the children come in after lunch or as part of a circle time. Children need to practise instant recall of multiplication facts and corresponding division facts. This could be done through quick-fire questions, games or written rehearsal. It is important children are able to recall multiplication and division facts at speed and out of order e.g.  $5 \times 9 = 45$ ,  $3 \times 8 = 24$ ,  $49 \div 7 = 7$ .
  - ✓ **Counting Everyday**
    - Throughout school children need to count every day. This could be part of your O/M starter or during registration, lining up for lunch or part of your circle. The counting document will inform you of the expectations for each year group when counting.

#### Suggested Activities:

- 1) Count on from...in ones (e.g. count on from 64 in ones...64, 65, 66, 67, 68, 69, 70, 71 etc)
- 2) Count back in ones from ... (e.g. count back in ones from 72...72, 71, 70, 69, 68, 67)
- 3) Count on or back in multiples of...from a given number
- 4) Count my claps (children could be asked to count in multiples)

- 5) What comes next? (pick a sequence of numbers children identify the next number)
- 6) How many? (show image of a group of objects-how many can you count?)
- 7) Round Robin- go around the room counting in multiples or ones
- 8) Counting sounds (close eyes count how many objects you hear dropping into the container-again could count in multiples)
- 9) Number tennis (in pairs count up to 21 you can say 1, 2 or 3 numbers the person who says 21 loses-could play in larger groups once children get the ideas)
- 10) Count and catch-give a child a small ball-how many will they manage? How many if we count in multiples of..?

✓ **Maths reasoning or problem solving lessons at least twice every two weeks**

Pupils must be given the opportunity to apply their previous or current learning through reasoning or problem solving activities. Ideas for these can be adapted or taken from past assessment papers, Test base, White Rose Maths and NCETM documents. These need to be clearly evidenced in maths books using the 'Prove It!' Label.

### **Times Tables Rock Stars**

- ✓ In order to make times tables even more high profile in school, each child will twice a week complete a 'Times Tables Rockstars' session (5-10 minutes) on the iPad. You can also use Times Table Rock Stars for your maths morning tasks. Each child will complete their Master of Multiplication test at the end of each half term in assessment week and this will be recorded on SIMs. This will increase the profile of children knowing their times tables in each year group.

### **Master of Multiplication (MOM)**

- ✓ In order to make times tables more high profile throughout school, children will complete a short times tables test (Master of Multiplication) at the end of each half term in assessment week, which is pitched at ARE for each year group. This will be recorded by class teachers half termly on Sims.
- ✓ Children will have a multiplication and division target, which is specific to the year group they are working on although it is

important children are pushed towards age related expectations as quickly as possible. Children will receive daily practice of multiplication and division facts. When learners feel they are ready to take the 'Master of Multiplication' test, they will be tested by their maths teacher. The test consists of 20 questions and they have to get every question correct to achieve their target. Children, who are successful in their 'Master of Multiplication' test, will receive a certificate and this is celebrated on the Twitter and in assembly on a Friday. Please keep a record of the children in your class, who have achieved their MOM and pass on certificates to Mr Hitchen (Maths Leader) to present in assembly on a Friday.

- ✓ Tests, posters and certificates can be assessed from the Master of Multiplication file.
- **Year 1** - Count in multiples of 2, 5 and 10
- **Year 2** - Facts for the 2, 5, and 10 times tables along with the corresponding division facts and counting in multiples of 3
- **Year 3** - Facts for the 2, 3, 4, 5, 8 and 10 times tables and the corresponding division facts
- **Year 4, 5 and 6** - Facts up to 12x12 and the corresponding division facts.
- ✓ An age related 'Master of Multiplication' poster should be displayed in all classrooms. This will enable children to know their master of multiplication target and to keep it high profile throughout school.


## Planning

### Flashback 4

- ✓ This resource can be found on the White Rose website. Flashback 4 will take place at the beginning of most maths lessons and the children will have 5 minutes to complete the four questions. These questions will be answered in the front of maths books.

**Flashback 4** Year 2 | Week 1 | Day 1

1) What is  $2 \times 8$ ? **16**

2) There are 5 flowers in each vase.  
How many flowers altogether?  
 **20 flowers**

3) Complete the sequence. 2, 4, 6, 8, 10

4) Find the sum of 3, 4 and 7 **14**

White Rose Maths

## Long Term Plans

- ✓ All Teaching staff will follow the Sandy Lane year group long term overviews for the year group they are teaching in. This will enable full coverage of the curriculum and year group expectations over the course of the academic year (see long term plans). Long term plans will need to be highlighted throughout the year by class teachers to track the coverage of maths skills.

### Years 1 – 6

- ✓ All year groups will follow the White Rose Schemes of learning throughout the school year. Each area of maths will outline the skills taught and the suggested teaching sequence. Teachers adapt their teacher input sessions and group work to suit the needs of their class e.g. use of whiteboards, jotters, practical resources, split inputs etc.
- ✓ The long term plans are split into the different areas of maths over the course of the year and how long to spend on each concept. See example below -

Children should have the opportunity to apply knowledge and understanding of number, place value and the four operations to ALL areas of the maths curriculum. It is essential that children have the experience of solving problems in a wide range of contexts which develop conceptual understanding and resilience through investigations and trial and error activities.



### Year 2 LTP Maths Curriculum Coverage 2021/22

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value		Number: Addition and Subtraction					Measurement: Money		Number: Multiplication and Division	Consolidation	
Spring	Number: Multiplication and Division			Statistics		Geometry: Properties of Shape		Number: Fractions				
Summer	Measurement: Length and Height	Geometry: Position and Direction		Consolidation and problem solving		Measurement: Time	Measurement: Mass, Capacity and Temperature			Consolidation		



## LBQ (Learn By Questions)

- ✓ LBQ is an online resource that will be used regularly in class by children from Year 2- 6. The children will access their LBQ tasks set by the teacher on an Ipad. LBQ will be used for independent and small group work. The LBQ tasks will be linked to the main teaching in the lesson and follow the maths long term plans in school. The data used from LBQ will support children's progress in maths and any interventions that need to take place to support progress.
- ✓ Jottings and workings out during LBQ tasks will be carried out in the back of children's maths books with the date.

<https://www.lbq.org/Login>

The screenshot shows the LBQ website interface. At the top, there is a navigation bar with 'My LbQ' and 'Log out' options. Below this is a search bar with the text 'keyword search' and a note 'minimum 3 characters'. To the right of the search bar are filters for years (Y1 to Y11) and an 'Adaptations' button. The main content area is divided into two columns. The left column is a 'Topic' menu with 'Addition and Subtraction' selected. The right column is 'Question Sets' for 'Addition and Subtraction', showing a list of tasks with 'Y3' tags. A red arrow points to a 'Select a Question Set' button on the right side of the page.

## Short Term Planning

- ✓ The weekly planning proforma is used as a basis to plan daily sessions in more detail (see short term planning proforma). Skills for each year group are outlined in the White Rose Schemes of Learning alongside the use of the National Curriculum. Children working below ARE should be taught the skills from the appropriate year group that they are working within but making sure that these children are still taught the National Curriculum for their year group if they are working just below ARE.

## Prove It! Activities

- ✓ Prove It! activities to be carried out at least twice over two weeks. These activities/tasks will enable children to produce high quality work and showcase children's ability to problem solve and reason. The resources to be used to plan these activities/tasks are the NCETM mastery booklets, White Rose Maths, progression in reasoning documents, NRich, White Rose progress checks and Testbase.

These activities should only include the children applying the following skills-

- Noticing
  - Wondering – conjecture
  - Rules, relationships and reasons
  - Making choices
  - Justifying decisions
- 
- ✓ When the children carry out a Prove It activity, it will need to be clearly labelled using the 'Prove It!' label. These activities **must** take place at least twice every two weeks. These activities will be regularly monitored by SLT to check they are happening regularly as it is important children have regular experiences to problem solve in a variety of different ways.



**prove it**

## Problem Solving and Reasoning

The following questions and strategies should be used on a daily basis to promote reasoning, independent thinking and use of key maths vocabulary in written and verbal explanations –

Strategies include:

- Spot the mistake / Which is correct?
- True or false?
- What comes next?
- Do, then explain
- Make up an example / Write more statements / Create a question / Another and another
- Possible answers / Other possibilities
- What do you notice?
- Continue the pattern
- Missing numbers / Missing symbols / Missing information/Connected calculations
- Working backwards / Use the inverse / Undoing / Unpicking
- Hard and easy questions
- What else do you know? / Use a fact
- Fact families
- Convince me / Prove it / Generalising / Explain thinking
- Make an estimate / Size of an answer
- Always, sometimes, never
- Making links / Application
- Can you find?
- What's the same, what's different?
- Odd one out
- Complete the pattern / Continue the pattern
- Another and another
- Ordering
- Testing conditions
- The answer is...
- Visualising

## Maths Working Wall

Reasoning sentence starters need to be displayed and referred to regularly. This will encourage the children to use them in their written and verbal explanations.

The learning focus will be displayed at the beginning of a sequence of learning.

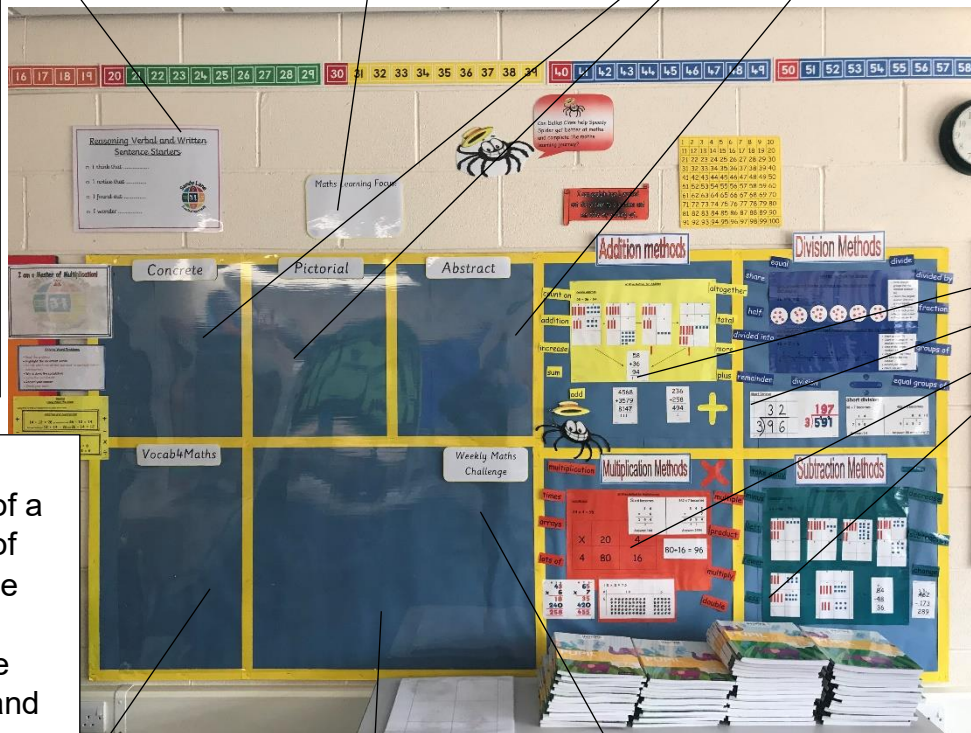
This will be the children's learning journey and it will incorporate the 3 main aims of the maths curriculum. Examples of children's work throughout the sequence of learning can be used here with speech bubbles from the children.

This is the permanent half of the Maths WW. This will need to include scaffolds and key information linked to the four operations, which the children will need on a consistent basis.

At the beginning of a sequence of learning, the vocabulary needs to be displayed and referred to throughout to encourage the children to understand the vocab and to use it regularly in their explanations and maths work. This can also be added to.

This will be used as a Teacher Whiteboard to model for the class during lessons.

The Maths Challenge will be displayed here and solved as a class. Children will be encouraged throughout a topic to think about what the answer might be.



## Assessment

- ✓ All classes will complete a termly summative assessment and **ONLY** (apart from Year 1) this assessment score will be used to decide whether a child is working at emerging, developing, age related or above. The assessments will also identify gaps in learning which will impact on teacher's maths planning for their class. It is important that teachers are

Autumn – Years 3, 4 and 5 LBQ Assessments  
Years 2 and 6 2018 Maths SATs papers

Spring – Years 3, 4 and 5 LBQ Assessments  
Years 2 and 6 2019 Maths SATs papers

Summer – Years 3, 4 and 5 LBQ Assessments  
Years 2 and 6 2022 Maths SATs papers

### Year 1

The children in Year 1 will complete the PAM assessment at the end of each term. Also, they will take part in small group assessment activities linked to specific KPIs from the Year 1 maths curriculum to support assessment judgements.

- ✓ The teaching of maths is monitored in the following ways:
  - Book looks
  - Moderating judgments
  - Observations
  - Learning environment walks
  - Pupil Interviews
  - Summative assessments
  - LBQ data
  - Trackers and assessment data

## Resources in class



- ✓ Practical resources must be available to be used by all classes to support learning such as base 10, cubes, bead strings, weighing scales, clocks, sorting rings, number fans, bundling straws, arrow cards, number lines, 100 squares and dice.
- ✓ Your maths resource area must be clearly labelled, easily accessible and situated by the Maths Learning Wall. It is important that practical resources are used at some point in every single lesson.
- ✓ Speaking and listening resources such as iPads can be used to develop speaking and listening skills when explaining their working out or how they solved a problem (reasoning skills). This will allow learners to develop their use of key maths vocabulary. Photographs can be taken to provide evidence of learners working practically on a concept with annotations.

## **RM Easimaths**

- ✓ Children will have their own RM Easi Maths log in, which they can access from home. Their log in details will need to be stuck in their Reading Journals. The RM Easi Maths online resources will also be used for interventions in school.

## **Completion of work in Maths**

- ✓ Pupils should put individual digits into separate squares in their maths books.
- ✓ Rulers should always be used for drawing **all** lines.
- ✓ Pupils should be encouraged to show their working out / jottings / number lines in their maths books.
- ✓ Pupils should not deface their books in any way. If a child does deface their book or work, they should be sent to Mr Hitchen (Maths Leader) or a member of staff from SLT.

## **Impact**

At Sandy Lane School, our pupils will have -

- Become fluent, competent and efficient mathematicians.
- To have a systematic approach to all areas of maths.
- To be able to recall facts and procedures, including the recollection of times tables.
- To be able to recognise relationships and make connections in maths.
- To be able to clearly explain their reasoning and justify their thought processes.
- To have the flexibility to move between different contexts and representations of maths.

By the end of Year 6 and transitioning to secondary school, we aspire that a Sandy Lane mathematician will have developed a bank of efficient and accurate skills that can be used to calculate effectively. These will have been underpinned by the concrete, pictorial, abstract approach so children understand rather than just do, which ultimately will allow children to identify when answers do not make mathematical sense. Children will be able to apply these calculation skills and understanding of other areas to become confident and resilient problem-solvers with the ability to reason and articulate their ideas mathematically. The embedding of fact families, mental calculation skills and maths vocabulary, children will have the language to be able to justify, reason and explain their answers confidently.