

# Little Stoke Primary School

---



## Maths Handbook

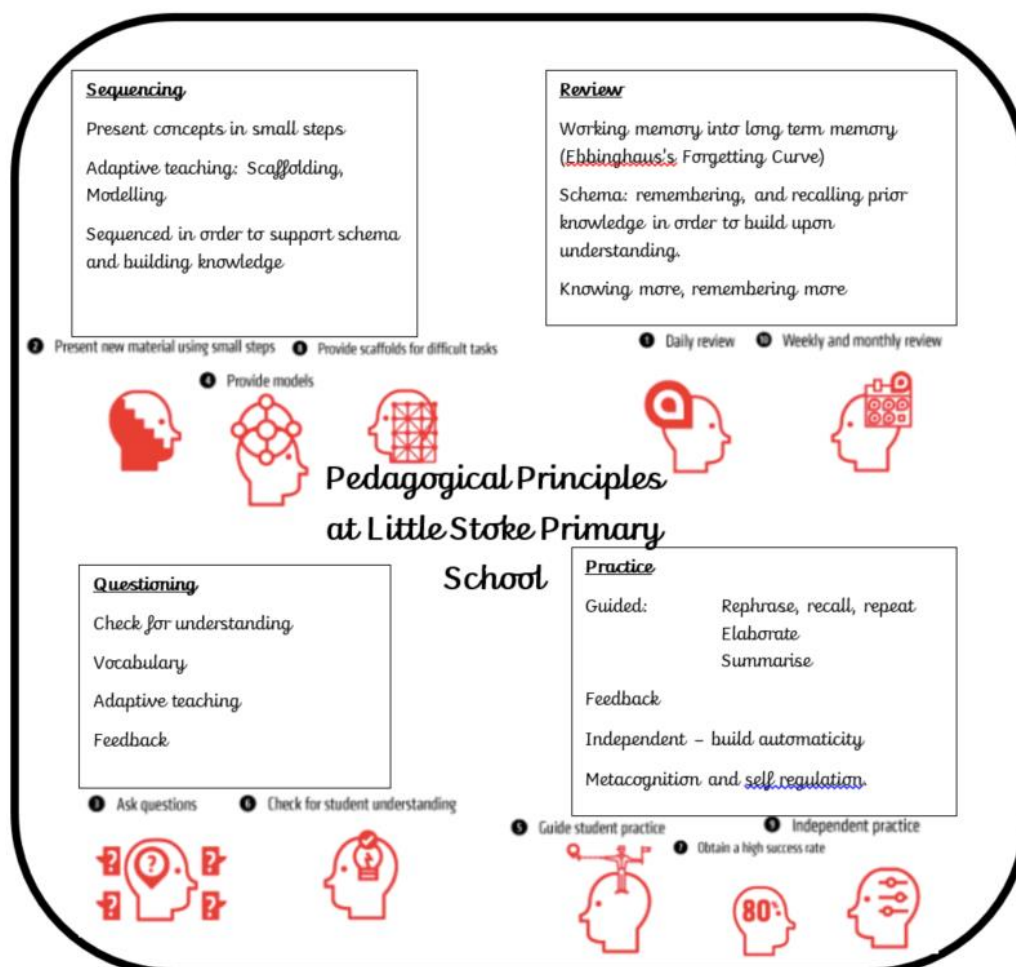
Subject Leader	Chris Jelf
Last Updated	July 2023

## Intent

The aims of mathematics teaching at Little Stoke Primary School:

- To develop a positive attitude to mathematics;
- To develop a strong understanding of number and calculation;
- To develop children’s reasoning, logical thinking and problem solving skills;
- To ensure that all children will be given the opportunities to develop their mathematics skills regardless of gender, race, ability, culture or ethnicity;
- To provide rich mathematical experiences, where children can apply their knowledge of mathematics to everyday life;
- To explore and enjoy the patterns in mathematics and to solve a wide range of puzzles and problems.

At LSPS, we have a core set of pedagogical principles through which teaching and learning is carefully planned and delivered. This principles are based on Tom Sherrington’s further work on the Rosenshine principles. Our pedagogical principles are split into four areas; sequencing, review, questioning and practice.



## **Implementation**

### **Planning**

At LSPS, we have developed a unique long-term maths curriculum which is loosely linked to the White Rose small steps. This long term plan ensures progression across the school and ensures children have the required declarative knowledge, procedural knowledge and then regular opportunities to develop their disciplinary knowledge. We have access to a range of online resources, which can be edited and used, in conjunctions with other resources, within the resources created by teachers for their daily lessons.

It is vital that teachers are checking the understanding of their pupils so that they know exactly where the children are and can gauge whether or not they may need to revisit/revise some of the previous year's objectives before moving on to the current objectives. The long term overview and White Rose small steps guidance provides support for this.

Planning is minimal – as we do not want to duplicate the work that teachers will produce for the slides they will use in the lesson. However, there is an expectation that a basic plan is produced that also contains the daily evaluation; an integral part in the sequence of lessons. This plan will vary in depth dependent upon the teacher's preference but will contain several key details; the objective being taught, the STS to be used, examples that will be modelled, key vocabulary that will be used and a brief overview/example of each activity. Each plan will cover roughly two days.

Slides produced for the lessons form part of the teachers planning. There are many supportive documents where questions/resources can be taken from to form part of the sequence of learning. However, care should be taken to ensure the questions match the specific objective and provide the chance for children to develop fluency in the skill they are learning. Many of these are saved on the shared drive (J:Curriculum/Maths/Resources) while some are accessed through paid subscriptions.

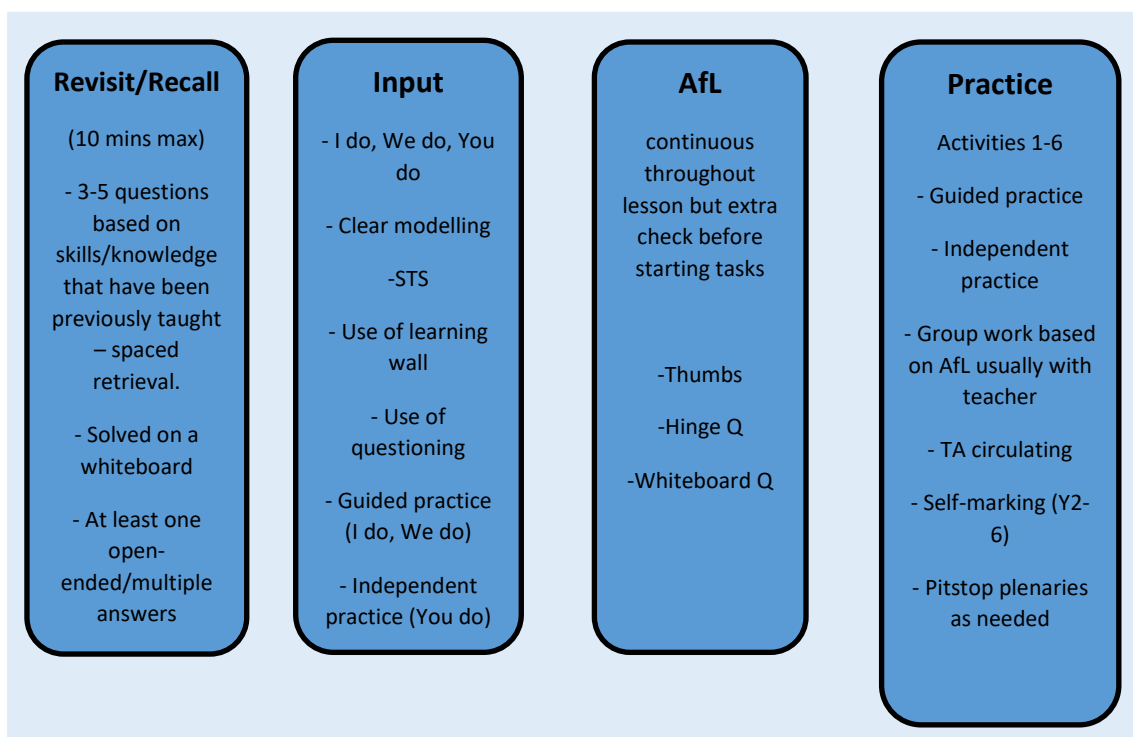
Some objectives, mainly statistics, will be taught through our wider curriculum to allow the children to develop the links between maths and other curriculum areas. There are also other areas identified for areas taught within the maths curriculum to be revisited.

### **Maths Lesson Structure**

The lesson structures below will provide a basis for most of our maths lessons from Year 2 onwards to be built around. There will be slight deviations for some lessons depending on multiple factors such as children's previous knowledge, AfL, length of unit, difficulty of unit etc. but this structure will form the basis of most lessons. Generally, maths objectives will be completed over a minimum of 2 lessons. This will allow for clear modelling to take place, the children to learn and demonstrate the basic skill, apply it in a range of different ways through varied fluency and then begin to reason about it. The structure incorporates our pedagogical principles.

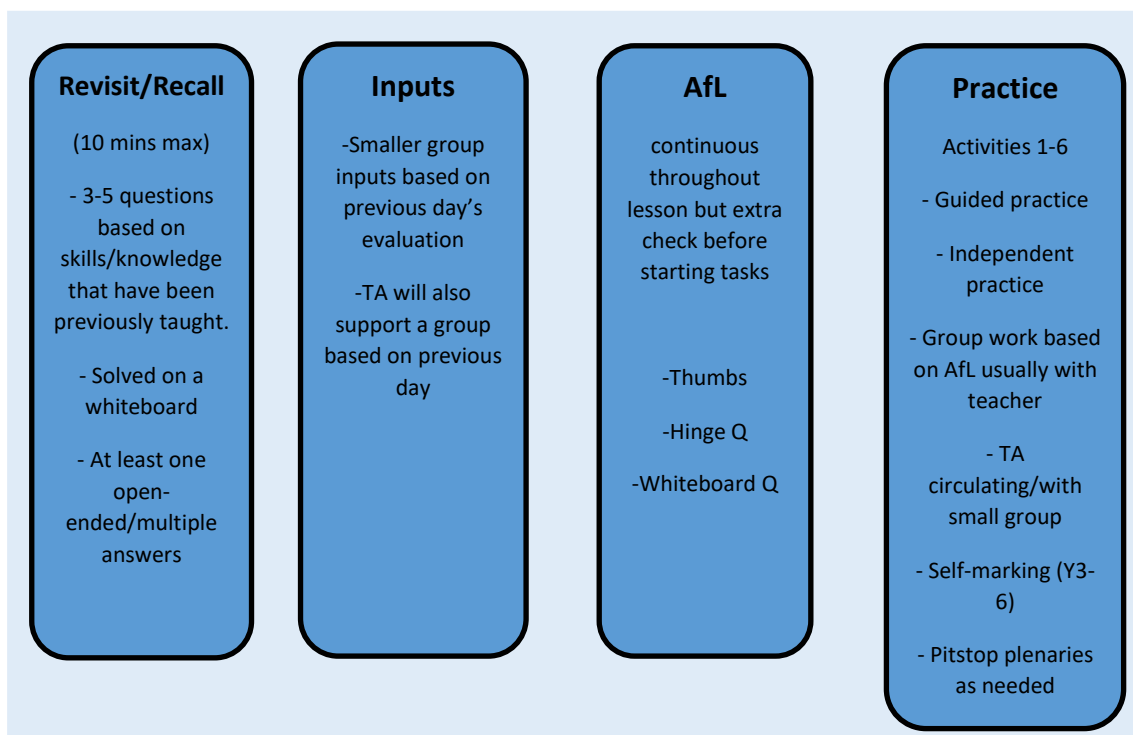
At the end of each unit, there will be a week dedicated to the teaching of reasoning and problem solving. This will be based on knowledge they have previously encountered to reduce cognitive load and allow the children to focus on the reasoning and problem solving knowledge. This will also allow all children to be taught these vital aspects as maths.

## Lesson 1



## Lesson 2 (and beyond)

For lesson 2, the input for all children will not necessarily come at the beginning of the session. This will depend on the previous day's evaluation and the teacher AfL.



## Revisit/Recall or Declarative knowledge input

**Four from before** - this will form the first 5-10 minutes of the session. It will be completed on whiteboards and can be up on the IWB ready for when the children come in from break. It will consist of 4 questions on skills/knowledge that the children will have already covered – this will support spaced retrieval.

These questions could be;

- from previous units just completed to consolidate learning
- from previous year groups,
- basic addition/subtraction/multiplication/division questions to embed key skills
- a mixture of mental methods and written methods

There should be one question at least that has multiple answers/ways of solving so the children cannot 'finish' it.

The answers can then be shared with the children and self-marked for instant feedback.

**Declarative Knowledge input** – carefully identified facts that the children need to know for the current or next maths unit. This learning will help to develop the children knowledge of these facts to free up cognitive load in subsequent lessons.

## Input

This will form the main teaching aspect of the lesson. The following list of tools/techniques will be used to support delivery.

- Clear modelling – verbalise thinking process - I do, We do, You do

Modelling is key to support children's learning. The 'I do', is where the teacher models the concept on the learning wall/IWB and verbalises the thought process that they are going through to make it explicit to the children. No child input during this stage.

The 'We do' is a similar process but supports guided practice as an example is completed together – getting the children to share the steps as they go and again modelling this.

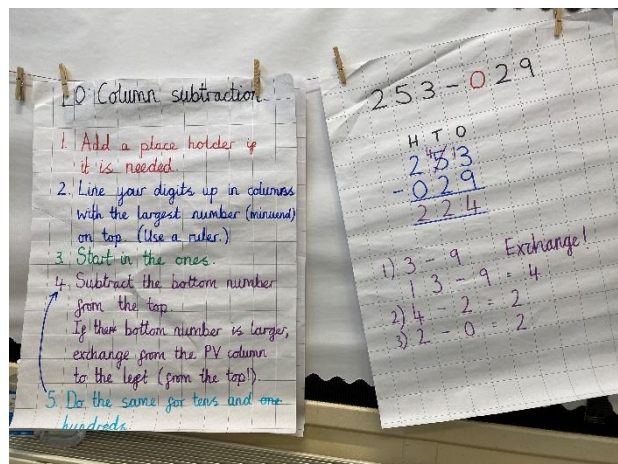
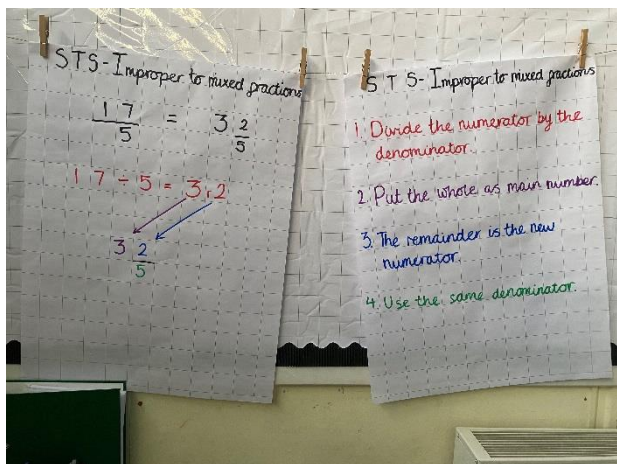
The 'You do' can either be children having a go on whiteboards independently (or in a small, supported group) to then share with the teacher before independent practice can take place. For some children, in some sessions the you do may be the beginning of the independent work in their books.

- Use of learning wall

Modelling of all recent steps should be clear on the learning wall and have been produced with the children. This will also contain vocabulary that is discussed during the unit and referred to during lessons.

## Steps to Success (STS)

During the initial input the STS are built with the children. This provides a guide for them to refer to during the lesson and subsequent lessons if they are struggling. This should be colour coded to link with a modelled example to provide further support. Children should be referred back to the STS if they are struggling or if they get a question wrong when marked. The STS for the current lesson should always be at the front of the classroom.



### - Use of questioning

The teacher will use a no hands up approach to asking questions so that all children need to be focused on the learning as they can be asked at any time. This means it is vital that regular partner talk is used to allow the children to discuss an answer with their partner and share their knowledge. Teachers will also probe deeper through carefully planned questions to extend pupils understanding.

### - Guided practice (I do, We do) & Independent practice (You do)

The vast majority of the children in the class will be engaged in the teacher's input. Guided and independent practice during this time can be completed on whiteboards before then moving into books when ready. Children may work in a group for longer with an adult if it is felt they need more guided practice before moving to independent practice.

## **AfL (Assessment for Learning)**

AfL is a key aspect of the teaching and learning process across all subjects. This will form part of all aspects of the lesson and teachers will continually be assessing the pitch of the learning and how children are accessing the work. Before setting the children off on activities, it is important to have ascertained whether children are ready to begin their independent activities or whether they need some additional support before then completing the independent activities.

## **Practice**

The children will work on completing the different activities. These will help the children to develop a broad range of skills and help to ensure fluency, problem solving and reasoning skills. Most of the children will complete these independently, checking their answers regularly at the Answer Stations within the room.

The teacher will support children, based on AfL, while the TA will generally circulate and support the other children in the class. Additional support and scaffolding may be required to allow some of the children to access the activity and succeed in the lesson.

Activity 1 - 5-6 questions to practise the basic skill and begin to develop fluency

Activities 2-4 - 4-6 questions per activity based on application of the skill  
- will focus on varied fluency

Activities 5-6 - Reasoning/problem solving based tasks to develop mastery/show a deep understanding of the skills

As the teachers continually assess the children, there will be regular occasions where the lesson the following day is changed/adapted/repeated based on what has happened in a lesson. It is important that almost all children have understood the learning objective and are confident in the skill before moving on to the next objective.

## **Concrete, Pictorial and Abstract (CPA)**

Manipulatives should be used throughout the school across all year groups and can also be used throughout the activities process as they can allow children to develop a deeper understanding of a concept. This links in to the concrete – pictorial – abstract approach that we know supports children's learning. The resources used are mapped out within our calculation policy.

## **SEND**

The teacher should ensure they are working with all children across the week, including children with SEND. Almost all children should be accessing the main input of the lesson but those who cannot access should be accessing a similar objective with the view to bridging the gap and potentially then completing some of the resources from the main session. Resources can be adapted and scaffolding provided to support the children accessing the work. The children should be able to independently be able to access some of their learning.

## **Answer Stations**

For the majority of the maths questions the children will be able to self-mark their own answers. This provides the children with instant feedback on how they are doing and means they will not embed misconceptions by doing a whole page of questions incorrectly. Children will need to be trained how to use the Answer Stations correctly. A small, neat tick for a correct answer and a small dot for an incorrect answer. They should mark their answers in green pen and then make any corrections in purple pen before re-checking.

The children then use the STS and Learning walls to support them correcting their mistakes if they have made any.

## **Marking**

The children self-mark the majority of their questions, which frees up time for the teacher to swiftly check their understanding following a lesson and then make the relevant adjustments to subsequent lessons. A brief evaluation is completed at the end of each lesson to provide focus for the following lesson. The next steps for the children are addressed in the following lesson rather than being written in their books. Any marking that teachers need to do should also be done in green pen. Teachers will highlight the LO in green, orange or pink to show whether they think the child has met the LO; this will allow teachers to know where support is needed for the following session.

## Learning Wall

Laminated squared display paper is used to model mathematical recording on display walls. Displays are broken down into sections:

- Key vocabulary – specific to each unit, shared and explored with the children early on and then referred to throughout the unit;
- Prior learning ('Yesterday's Learning) – clear visual demonstration of what children can already achieve;
- Today's Learning – the daily model. This moves across the wall each day; likewise, so does the prior learning.

These displays are pivotal in recording the learning journey throughout each unit, they are created with the children during the lessons so are relevant and purposeful. In addition to this, models and STS should be displayed on squared flipchart paper for reference.

## Basic Facts/Times tables

At LSPS, we recognise the importance of children knowing their basic number facts and times tables as it will help them greatly in other areas of maths. There will regularly be an additional 10-15 minute session focussed either on basic facts (EYFS/KS1) or times tables (KS2).

This will be through the Numbersense Maths programme – a fully resources scheme with a phonics like approach. The facts are mapped into the long term overview. In EYFS, this will form the main teaching activity for the day which will then be supplemented through provision. For KS2 this will be through a range of activities to focus on times table knowledge. Almost all children in the class will be working on the same times table. A non-exhaustive list of ideas to practise times tables are listed below.

TT Rockstars

Times table bingo

Chanting times tables

Times table songs

Using a counting stick <https://www.youtube.com/watch?v=yXdHGBfoqfw>

Multiple mazes

Quick-fire questions

## Presentation

The children and teachers should have high expectations of their work and how it is presented in books. There will be a presentation poster stuck into the front cover of their maths book that can then be referred to if needed. The date and LO should be neatly written every day. The relevant activity headings should also be written neatly the start of each activity to show which piece of maths the child is working on. Numbers should then be used 1 digit per square with appropriate space left between questions.

If sheets need to be stuck in, for example with representations or fractions or numberlines then children are taught to use the squares/lines in their books to do this neatly.

## Monitoring

At LSPS maths is regularly monitored through triangulations of lesson visits, book looks and pupil voice. This monitoring then feeds into the CPD that is needed to ensure our maths curriculum and teaching approaches are supporting the children as best we can.



## **Formative Assessment**

Three times during the year, approximately 12 weeks apart, the children take the NFER maths assessment papers (or previous SATS papers in Year 2 and 6). These are used alongside teacher judgements. The assessments are also used by teachers to see where there may be gaps in individual, group or class knowledge based on what has been taught recently. This allows the knowledge to be re-visited if needed.