

Singapore Maths – Principles and Practice

From September 2017, all children in Years 1 to 6, will be taught a Singaporean style maths curriculum, using the Maths – No Problem! planning and resources. The Maths – No Problem! curriculum is based around 5 core competencies: **metacognition, communication, visualisation, generalisation** and **number sense**.

All Maths teaching and learning at Courthouse Green will demonstrate the following principles:

- All children work at broadly the same pace on the same content
- Mixed ability classes and seating plans
- Concrete Pictorial Abstract
- Manipulatives available for all
- Growth Mindset promoted in every lesson
- Language, communication and reasoning developed in every lesson
- Praise effort not achievement
- Depersonalised e.g. *My friend thinks... Someone over there has suggested...*
- Emphasis on the process not the outcome
- All lessons start with a problem
- Challenge for all

Planning

Each year group's planning can be found at <https://mathsnoproblem.com/>. To ensure progression and curriculum coverage, teachers are expected to follow the Maths – No Problem curriculum in its published order, without omitting any units or individual lessons. Each Chapter Overview and Resources List will need to be looked at prior to starting a new unit, in order for all teachers and LSAs to know the end of unit expectations and to ensure manipulatives and resources are prepared prior to each lesson.

During PPA sessions, all teachers will need to read through and discuss each section of the lesson guidance. If required, this can be printed off and annotated instead of completing a written plan or lesson notes can be added to the notes browser on interactive flipcharts.

Some lesson prompts and questions are given in the lesson approach section, however, teachers are expected to plan differentiated levels of questions to support, challenge and extend all learners' understanding.

Level 1 questions should help all learners achieve the lesson objective with support. Consider what the barriers to learning might be and how resources could be used to support. *E.g. My friend says that the squares inside the shape might help you to find the area. What do you think?*

Level 2 questions should help learners achieve the lesson objective at an age related expectation. Consider the main objective of the lesson and the mathematical understanding behind it. *E.g. MFS they can see rectangles, how can this help? MFS you could use the length of the sides and then you wouldn't need to count the squares – what does she mean?* The majority of planned questions should be Level 2 to ensure depth in understanding of the main objective.

Counting in Hundreds

Pages 2–5

Lesson Objective

To learn to count in hundreds and understand their place-value. Pupils will also understand how many hundreds are needed to make 1000.

National Curriculum

Count from 0 in multiples of 100; find 10 or 100 more or less than a given number. Read and write numbers up to 1000 in numerals and in words.

Lesson Approach



Misconceptions



Formative Assessment



Non-negotiables



Variation



Resources



Level 3 questions should challenge and extend the thinking of learners who may already understand the lesson objective or show a good understanding within the lesson. Consider how to ignite their curiosity and challenge prior knowledge. *E.g. How many different ways are there to solve this problem – which is most efficient? MFS it's possible to make a shape with the same area and perimeter – do you agree?*

Level 1, 2 & 3 questions should be planned and written on the notes browsers of the relevant flipchart pages and shared with all teachers and LSAs. LSAs will be expected to use the same key questions to target identified children or groups.

Mathematical vocabulary: Key vocabulary for each unit is shown alongside Chapter Overview and is to be displayed in classrooms on Maths learning Wall. Vocabulary specific to each lesson must be displayed on flipcharts and taught during each lesson.

Sentence stems will be planned and taught to assist children with mathematical reasoning and correct use of mathematical vocabulary.

(See appendices 1 & 2 for further question prompts for developing mathematical thinking)

Lesson Structure

Each Maths lesson will follow the structure & and approximate timings:

- **Exploration (10 mins)** Using the anchor task from the each lesson plan, hook children in and discuss initial ideas and possible questions. In pairs or groups, children explore the problem and use manipulatives and whiteboards and pens to share ideas and reach possible solutions. Adults will use planned L1 & 2 questions to encourage exploration and further children's understanding. Common misconceptions will be planned for and used as a teaching point. Visualisers and Ipads will be used to share children's ideas and strategies with whole class.
- **Structuring (10mins)** Teacher brings ideas together, sharing and modelling strategies used in exploration. Adults must be clear on the key strategy/ies that children will be expected to use throughout the independent part of the lesson. This will be modelled and sentence stems will be used to orally reason and explain. The use of Ipads can be used to share children's strategies and 'great mistakes' (depending on AfL from observations during journaling)
- **Journaling (10mins)** Children to independently solve the anchor task in their Maths Journals. They are expected to work through the problem silently, showing their understanding in a variety of ways, including diagrams, bar models, calculations and written explanations. The anchor task can be written in by children, or be prepared ready to stick into journals to save time. **Adults will use AfL strategies to help all children achieve the objective e.g. observing, prompting with key questions, identifying and addressing 'great mistakes' etc...**

Work in journals should be presented as shown in the diagram: with journal number on the left and date on the right (short date or in

Roman Numerals for Y4, 5 &6). Children will give their journal a title, however, teachers will share the WALT and this is to be written by the children at the end of each journaling piece of work. All journal work is to be in pencil, with children using a ruler to underline and draw diagrams e.g. bar model.



- **Let's Learn (10mins)** During this section, use the given examples to discuss and further model the key strategies used in the exploration and those which the children will be expected to use during independent practice. Teacher judgement to be used to decide which strategies children need to be focused on in greater detail. If children have demonstrated that they are secure with a strategy from structuring and journaling, greater time can be spent on the more challenging strategies or more time given for Guided Practice.

- **Guided Practice (10mins)** Children work in pairs, in Maths journals, to answer the questions in Guided Practice. Questions can be displayed on IWB or using the Maths-No Problem! textbooks. After completion, strategies and answers can be discussed, with further modelling as required. Answers can be marked by children as strategies are discussed. Guided Practice questions to be looked by teachers when journals are marked in order to identify common misconceptions or children for WW.
- **Independent Practice (10mins)** Children to work independently through the relevant pages of their workbook, using strategies from previous parts of the lesson. Adults to use AfL to decide which children may need further support at this part of the lesson. Teachers will identify which questions all children must answer and which may be less appropriate for lower attaining children.

What if an able child completes the Independent Practice pages quickly and easily?

- Ensure they have self-checked their answers to ensure accuracy
- Return to journaling – have they shown how to solve the anchor task in many different/all possible ways? Which way do they prefer? Which is most efficient?
- Have they fully answered the L3 questions? (These may need setting again)
- Can they write a different problem using the same concept?
- Have they noticed and explained any patterns? Or links with previous learning?
- Set a problem from NCTEM Mastery materials

What if a child or group of children have struggled with today's learning?

If AfL within the lesson or marking shows that a small group of children have misconceptions with the lesson's learning, Wobbly Wallet or assembly booster session must be used to keep children up with the rest of the class. Wobbly Wallet sessions should consist of 3 parts, using the relevant textbook and workbook pages:

- 1) Re-visiting **Let's Learn** will give a further opportunity to discuss the strategies used to solve the anchor task.
- 2) As a small group, use **Guided Practice** questions to consolidate the strategies learnt.
- 3) Children should then apply this to their **Independent Practice workbook pages** and either correct misconceptions or independently solve further examples. These questions should be marked with 'WW' to show the impact of intervention.

If more than a small group of children show misconceptions, then part or all of the lesson may need revisiting as a whole class before moving on to the next lesson. Teachers to use AfL and professional judgement as necessary.

Marking and Feedback

In order to assess understanding, identify misconceptions and plan next steps, children's workbooks and journals must be marked after every lesson. However, marking must be efficient so that time can be spend on lesson design and preparation.

Journals: Must be looked at daily by the class teacher. If a child has answered the anchor task, shown their thinking or explained their understanding to a level appropriate to their ability, the WALT can be pinked. There is no need to write a 'pink' comment. 'Growth' stickers or stamps could be used to celebrate effort. However, if there is a misconception, this will need to be highlighted in green, with a brief comment, if necessary, to enable the child to make corrections. Where verbal feedback is to be given, the green can be marked with VF, which is to be given either prior to or at the start of the next lesson. Children may also get a green comment if the explanation in their journal is incomplete or incorrect. Question prompts, such as *How do you know? Can you explain? Are you sure?* can be used to develop or correct reasoning.

There is no need to set a 'green task' or next step as the next lesson is designed to take account of next steps.

Workbook questions: a quick mark is required after each lesson to assess who may need intervention before the next lesson. A tick for a correct answer and a dot next to an incorrect answer. Children may peer or self-

mark within the lesson using purple pens, however the class teacher will still need to look at workbooks to assess who will benefit from WW or whether any questions will need whole-class revisiting.

Children will be given time to correct errors and improve journal entries before the next lesson (e.g. during registration, before next anchor task...)

Assessment

AfL: Teachers and LSAs to use AfL within lessons to guide the lesson structure and timings (see earlier information on lesson structure). Marking and feedback will be used to inform the next lesson or sequence of lessons.

End of unit assessment: The end of chapter review must be completed independently by each child after completion of each chapter. This will identify which children are on track to achieve ARE by the end of the year. It will also identify children who require intervention to 'keep up' with the year group. If a small group of children are not secure with a key skill from the chapter, this can be the intervention focus for the next half term. If many children are not secure with a key skill from the chapter, this will need re-visiting for the year group.

The end of unit assessments will be used to monitor progress of all children, particularly those being targeted to reach ARE. The outcomes of assessments will inform planning, interventions and pupil progress meetings.

Half-termly assessment: at the end of each half-term, teachers must plan an assessment lesson (assess and review day) to give children the opportunity to independently show their understanding of the chapter just completed and all previous chapters. Assessment questions must be based on the skills covered during the year but applied to new contexts. Example assessment questions can be found at:

- NCTEM assessment for mastery
- Whiterose Maths Hub assessment materials
- Progression in reasoning
- Numicon Progress Explorer pupil books
- Testbase (Y2 & 6)

Formal assessment: During assessment week, at the end of each term, all pupils will be formally assessed in Maths using PUMA Maths assessments.

Additional Maths Provision

Years 1 – 4: An additional 15 minutes per day of mental maths and arithmetic. This may include: Big Maths, Maths Fluency Mats (Y4), calculation practice, times tables practice & test, Gordon's games. The children should also discuss and solve a daily 'Problem of the Day' which can be found at <http://whiterosemathshub.co.uk/>

Years 5&6: An additional arithmetic lesson is timetables for each week (50mins). The children will focus on mental & written calculation skills, in order to develop fluency. The children should also discuss and solve a daily 'Problem of the Day' which can be found at <http://whiterosemathshub.co.uk/>