



Subject Report 2022-2023

Subject	Maths	Report prepared by	Becky Chappell
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Overview of the year: 2022-2023

As a growing school, with a higher than average number of new staff each year, it is critical that the way we teach maths is clear and consistent throughout the school. As a result, the maths action plan and subject release time has led to the following key messages:

- High quality, consistent maths teaching as a priority, through coaching, CPD and the sharing of practice across the school.
- Opportunities created for maths to be related to real-life contexts so that students can develop transferable skills that will help them later in life.
- Same-day interventions implemented and sustained to provide opportunities for children to address problems they have faced with support and confidence in preparation for new problems, with a continued emphasis on maths fluency to develop skills that help learners become more efficient and process understanding at a faster and clearer rate.

Curriculum: Intent, implementation, Impact

Intent

At the Cambridge Primary School, we want our students to love maths, appreciate the thrill of problem solving, and welcome the challenge it presents. We give interactive and engaging lessons that foster curiosity, creativity, resilience, and a growth mind-set using a maths mastery method through a programme called Maths No Problem. To help children understand the role of mathematics in the world around them and to inspire them to become lifelong learners and problem solvers, we try to incorporate our math lessons into real-world situations as much as we can. Throughout the school, maths is taught in whole-class settings, with incorporated support and opportunities for deeper knowledge to ensure that learning is accessible to everyone. A significant component of the maths curriculum is fluency this is used in all lessons and is explicitly taught every day. This is also embedded outside of maths lessons to develop, enhance, and extend number understanding and fluency skills. This enables children to fully explore during a problem-solving activity without being constrained by number facts.

We want our children to understand how mathematics helps us make sense of the world. It enables us to comprehend and value patterns and relationships in both number and space in daily life. As our knowledge and understanding expands, we come to appreciate the important role that many people had in the development and use of mathematics.

In Maths, A Cambridge Pupil will leave with:

Key Skills	Qualities
<ul style="list-style-type: none"> • To approach problems with a 'can do' attitude and resilience whilst applying skills using prior knowledge • Become confident in the fundamentals of mathematics, developing conceptual knowledge and an ability to recall and apply knowledge rapidly and accurately • Use a wide range of models, visual manipulatives and practical resources to develop a deep understanding alongside procedural fluency • Use reasoning skills to be curious and investigate number • Use and understand mathematical language and recognise its importance as a language for communication and thinking <p>To work collaboratively and independently to problem solve, discuss ideas and justify reasoning</p>	<p>The Cambridge pupil is brave, using appropriate methods to be curious, and a growth mind-set to solve problems. They are equipped with a range of innovative methods to resolve problems with more than one-step and use prior knowledge to support their enquiries and explain their methods and thinking process. They have developed resilience to face challenges and embraced that they learn through making mistakes. They take ownership in justifying their reasoning and are open to work collaboratively to investigate number and prove their understanding.</p>

Implementation

With the exception of year four, where there is a focus group due to a high level of need, maths is taught whole class throughout the school. Mixed ability classes are used in order to foster the development of mathematical language and provide opportunities for sharing and debating methods in order to increase understanding.

In order to improve children's problem-solving fluency, we must first help them remember, use, and manipulate numbers. Children will learn number recall, number bonds, and times tables through fluency, which grows over the course of their education. This is taught through a programme called 'Mastering number' from Reception through to Year 2. In KS2 fluency is taught in a 15 minuet starter 'fluent un 5' giving chn 5 minutes to recall skills from the previous year, month, week and day. This is then discussed as a class and misconceptions are addressed.

Topics taught across each year group:

	AT1	AT2	SP1	SP2	SU1	SU2
EYFS	Baseline Assessments Recognising number Sorting/comparing Number bonds to 5 2D Shape	Comparing quantities Counting/recognition to 10 One more/One less Addition and subtraction within 5 Pattern with common shapes Money Measuring/comparing Positional language Length, weight and height	Counting/recognition to 10 Number bonds to 5 Addition and subtraction to 5 Counting to 10 2D and 3D shapes Number bonds to 10 Ordering by weight, height and capacity Ordering by length and height Halving and sharing	Counting/recognition to 10 Counting irregular arrangements within 10 Number bonds to 5 Counting to 10 Length and height Size, weight and capacity 2D and 3D shapes	Adding more Taking away Counting to 20 Number bonds to 20 Doubling Halving Odds and evens Length, height and distance Capacity 2D and 3D shapes	Adding more Taking away Counting to 20 Number bonds to 20 Doubling Halving Odds and evens Length, height and distance Capacity 2D and 3D shapes
Y1	Numbers to 10 Number bonds Addition within 10 Subtraction within 10	Numbers to 20 Shape and pattern Add/subtract within 20 Number families Summative Assessment	Length and Height Numbers to 40 AS Word problems	AS Word problems Multiplication Days of the week, months and year Summative Assessment	Multiplication Division Fractions Numbers to 100 Time	Space - Whole/half turns Money Volume and capacity Mass Geometry Summative Assessment
Y2	Weeks 1, 2, 3, 4 and 5- Place Value Week 6 and 7- Addition	Week 1- Addition Weeks 2, 3 and 4- Subtraction Week 5, 6 and 7- Multiplication	Weeks 1 and 2- Division Weeks 3 and 4- Length Weeks 5 and 6- Money	Week 1- Picture Graphs Week 2 and 3- Mass and Temperature Weeks 4 and 5- 2D Shapes	Week 1- 3D Shapes Week 2- More Word Problems Week 3, 4 and 5- Time and Volume Week 6- Revisit	Weeks 1, 2 and 3- Fractions REVIST
Y3	Weeks 1 and 2- Place value Weeks 3, 4, 5, 6 and 7- Addition and subtraction	Weeks 1, 2 and 3- Multiplication and division Weeks 4, 5 and 6- Further multiplication and division	Weeks 1 and 2- Length Weeks 3 and 4- Mass Weeks 5 and 6- Volume	Weeks 1, 2 and 3- Money Weeks 4, 5 and 6- Time	Week 1- Time Week 2- Picture graphs and bar graphs Weeks 3, 4, 5 and 6 - Fractions	Weeks 1 and 2- Fractions Week 3- Angles Weeks 4 and 5 - Geometry: lines and shape Weeks 6 and 7- Measurement: Perimeter of figures
Y4	Weeks 1, 2 and 3- Place value: Numbers so 10 000 Weeks 4, 5, 6 and 7- Addition and subtraction within numbers to 10 000	Weeks 1, 2, 3 and 4- Multiplication and division Weeks 5 and 6- Further multiplication and division	Weeks 1, 2 and 3- Further Multiplication and division Weeks 4- Statistics: Graphs Weeks 5 and 6- Fractions, decimal and percentages	Weeks 1- Fractions, decimal and percentages: Fractions Weeks 2 and 3- Measurement: Time Weeks 4, 5 and 6- Fractions, decimal and percentages: Decimals	Week 1 and 2 - Money Week 3, 4 and 5- Measurement: Mass, length and volume Weeks 6 and 7 - Measurement: Area of figures	Week 1 and 2 - Geometry: Properties of shape Week 3- Geometry: Position and direction Weeks 4 and 5- Place value: Roman Numerals Week 6 and 7- Review and revise place value

Rationale for curriculum organisation:

We provide the mastery method curriculum "Maths no problem". Children can investigate number using a variety of techniques and resources due to this. In KS1 and KS2, maths is taught daily for an hour with an additional 15 minutes of fluency. In Early Years, Maths is taught through a 20 minute input alongside continuous provision activities, which explore number and shape. Teachers evaluate and provide feedback on students' comprehension of a topic during lessons using probing questions and assessments. All daily maths classes at the school have the same format. We start with a "Explore" or anchor task in which children are given a challenge to complete. They investigate the question utilising resources and previously taught techniques for problem solving to practise multiple methods. At this point, teachers can evaluate the methods used and identify students who would benefit from support. Children discuss their methods with the class, critically assess what they have learned, and discuss which approach would be the most effective to utilise. Children tackle problems similar to those in the 'Explore' task in order to practice the new methods they have learned, this section is called 'guided practice'. The teacher then reassesses and provides support if needed. Teachers progress learning on if they have assessed that children are confident in their learning. Children then utilise their understanding of the topic to finish their Maths No Problem workbooks, which contain problems that must be solved in a variety of methods. This allows children to practice methods and show understanding. Challenges are then accessible, providing mastery style questions to extend learning.

What have you done to ensure that every skill is covered?

The Maths No Problem scheme ensures learning is cyclical by revisiting skills and methods throughout each topic and building upon prior knowledge. Our skills progression document ensures that every skill is taught within this subject. As a subject lead, I supervise planning, conduct student feedback sessions, review books, and observe classes to ensure that all skills are taught across the school. We follow a scheme and classes are organised; this is constant throughout the school and can be seen clearly on planning notebooks and in books. Teachers use the skills progression document, curriculum coverage document, and MNP internet hub to identify and feel confident with what has been taught in past years and how to build on those abilities when preparing for lessons.

Impact

Monitoring shows that children are confident and understand the structure of our maths classes; they can use skills from prior years to assist them when faced with new topics; this is evidenced in books and pupil conferencing. This year it has been clear to see that there is strong consistency in the structure of lessons and that children are building on previous knowledge, which is having a positive impact on learning.

<p>What does marking and assessment look like in your subject? How do you know this has been effective for children's progress?</p>	<p>What CPD have you received / research have you carried out in your subject area? What has been the impact of this on the children?</p>
<p>Across the school we have a live marking approach, in maths this is used to assess and support rapid progress in all lessons. During lessons through questioning and feedback teachers identify children who need support and who they can challenge in that moment. In order to challenge children during lessons they are asked to explain how they achieved an answer, prove their answer is correct, create a story about the question being asked or asked to draw a representation of the question. There are also challenges to complete addressing the misconceptions identified by the teacher prior to the lesson. At the end of the lesson, as a class we then work together to go through the answers together and children mark their own work using a purple pen. They assess their confidence of their own learning by adding a dot of green (understood and applied knowledge), amber (understood but struggled to apply) or red (did not understand). This allows them to reflect on their own learning and have a voice in their learning journey. At the end of the lesson the teacher will then look through the books and initial their coloured dot if they agree with it. Teachers will take this time to identify any children who need some extra practice on the subject taught and stick an intervention sheet into their books, which they will then complete the same day with either the class teacher or another adult to ensure that they are confident to continue the learning the next day.</p>	<p>Through the maths hub, the subject leader, and another member of staff have had the opportunity to develop and deepen subject knowledge and support my colleagues with their practice. The subject leader has had the opportunity to do further training with the maths hub through sustaining practice workshops, working alongside colleagues in reception, year 1 and 2 to develop knowledge of maths fluency and number to implement and support the development of 'Mastering Number'. The subject leader is part of an ongoing research project to design and embed a fluency approach across the school, to embed 'Mastering number'. The subject leader has also completed online CPD through the National College and Maths No Problem, which has been disseminated to staff, to support both teachers and support staff to deliver this effectively.</p>
<p>What Performance Information is monitored? What are the 3 questions are you considering for future developments?</p>	<p>How are Fundamental British Values, the Cambridge Learning Characteristics and personal development promoted within your subject?</p>
<p>Progress in maths is good, through monitoring it is evident that all children are making progress and with further implementation and consistent use of same day interventions. The subject leader monitors regularly (weekly) using a variety of strategies:</p> <ul style="list-style-type: none"> • Learning walks focusing on displays and resources • Book looks • Pupil conferencing (during the day and reflecting on feedback after school) • Check ins with staff regarding subject knowledge questions and queries • Lesson observations and feedback (during the day) • Looking through planning • Researching other schools' maths ideas and strategies • Governor maths mornings where I alongside the governors reflect on maths across the school. <p>Monitoring leads to feedback to staff to ensure that it has an impact and good practice and new strategies are shared.</p> <p>Key Questions:</p> <ol style="list-style-type: none"> 1. How are children using practical resources to deepen their understanding? 2. How are we relating maths to real life, are the children aware they are developing problem solving and reasoning skills? 3. Are children using mathematical language in their lessons, do they understand how to explain their reasoning? 	<p><u>Fundamental British Values</u> In maths we ensure that we show mutual respect children behave appropriately, allowing everyone involved the opportunity to work to the best of their ability. In addition, they take turns, sharing equipment, reviewing each other's work respectfully and working collaboratively on projects whilst helping others.</p> <p><u>The Cambridge Learning Characteristics (BICO)</u> In maths, children at the Cambridge are brave enough to solve problems, make marvellous mistakes and take risks to develop and deepen their understanding of number and investigation. Children are innovative by trying, creating and exploring different methods, thinking outside of the box and working with others. In maths children work collaboratively to solve problems and investigations, support and challenge their peers and discover new ways to improve their understanding. Children take ownership for their learning by utilising resources that support them best, using their environment and peers to develop strategies and approaches when it comes to challenges and critical thinking.</p> <p><u>Opportunities for Personal Development</u> Maths has many cross-curricular links, it is heavily linked to Science when reading and interpreting statistics. We have a coding club that relies heavily on the use of maths to create games, programmes and positioning of elements to design and create interactive materials. This shows and inspires children how maths is used in everyday life and future careers.</p>

What have we done in 2022?	
Implementation	Impact
Monitoring planning, teaching and books to ensure a consistent approach and standard to the teaching of maths across the school, including a focus in Reception using the new foundation modules.	Every week I have been setting aside an hour on a Tuesday after school for maths. I have been documenting how I utilise this time on a document to assess and set actions moving forward in the year. This also allows me to identify areas for improvement and successes also.
Purchased the MNP Maths scheme (for 360 pupils) Workbooks (book A and B) Year 1 – 130 Year 2 – 130 Year 3 – 130 Year 4 – 130 Year 5 – 130 - Alpha: The 1 st book of Mathsteasers- Year 4 - Alpha: The 2 st book of Mathsteasers- Year 5 - Access to MNP Hub (14 staff) - Access to Video tutorials (8 staff)	Reduced teacher workload. Consistent and systematic approach to teaching Maths across the school. Growth mind-set and greater depth problem solving. Improved pupil confidence in approaching maths problems. Mathsteasers books are there to support teachers with challenges and adapting learning.
Whole Staff CPD, termly in staff meetings, termly support staff meetings	All staff are sharing and contributing to the school's vision for maths. CPD intends to develop quality teaching for all and a consistent approach across the school.
Work closely with the Maths Hub to develop our understanding of differentiation in the curriculum and feed back to teaching staff.	The Surrey Plus Maths Hub Mastery Readiness Programme has provided increased subject and curriculum knowledge. The hub has, and will continue to, work alongside staff to develop the planning and delivery of maths at our school, ensuring an effective, progressive curriculum from Early Years to the end of Key Stage 2.
Purchased Maths NTS Assessment papers (3 points during the year CP2, CP4, CP6) GAPS – 6 packs for each term (18 per year) 1 administering manual KS2	Informing teacher assessments, identifying gaps in knowledge from school closures and enable teaching to be adapted to plug gaps. Shine Programme is used alongside the NTS papers to identify and plug gaps addressed in the papers.
Whole school access for Times table rock stars (online times table platform) Unlimited teachers and students and NumBots.	Engaging and interactive method of learning times tables and beneficial for preparation for the Year 4 times table test.
What is the action plan for 2023?	
Implementation	Impact
Purchased the MNP Maths scheme (for 360 pupils) Workbooks (book A and B) Year 1 – 130 Year 2 – 130 Year 3 – 130 Year 4 – 130 Year 5 – 130 Year 6- 130 - Alpha: The 1 st book of Mathsteasers- Year 4 - Alpha: The 2 st book of Mathsteasers- Year 5 - Access to MNP Hub (14 staff) - Access to Video tutorials (8 staff)	Reduced teacher workload. Consistent and systematic approach to teaching Maths across the school. Growth mind-set and greater depth problem solving. Improved pupil confidence in approaching maths problems. Mathsteasers books are there to support teachers with challenges and adapting learning.
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<p>Purchasing of maths resources set up new classes (Year 6 x 2) and to top up established year groups that are currently sharing resources.</p> <p>New resources needed for year 6: Time, fractions, percentages and decimals, money, shape and place value to millions, position and movement and measurement.</p>	<p>MNP is based on the theory that children need to work through concrete, pictorial and then abstract stages. Every lesson is introduced with concrete materials. Children do not move on to the next stage until they are secure with the previous stage. It is essential that the children have concrete objects to explore and problem solve with. It is also important that children are exposed to a variety of ways to problem solve to deepen their understanding. The continuous provision room enables learners to embed their learning through play.</p>
<p>Purchase 'maths box' of resources for each classroom consisting of practical resources that are used or can be used daily to support practice.</p>	<p>Support for teachers to scaffold learning. Impact practical learning and development of practical, pictorial and abstract learning to challenge and embed learning. This will also support teachers assess and implement support actively rather than acting after the lesson.</p>
<p>Renew whole school access to Times table rock stars (online times table platform) Unlimited teachers and students and NumBots.</p>	<p>Engaging and interactive method of learning times tables and beneficial for preparation for the Year 4 times table test.</p>
<p>Monitoring planning, teaching and books to ensure a consistent approach and standard to the teaching of maths across the school focusing on fluency and how this is consistent across the school yet progressive.</p>	<p>Quality maths teaching across the school and pupil progress at expected or above.</p>
<p>Continue to ensure that time is made for pupil conferencing and maths intervention in order for children to keep up and not catch up.</p>	<p>Gather feedback from teaching staff. Learning walks and book monitoring.</p>
<p>Supporting parents (parent maths workshop) and working collaboratively to understand and feel confident with teaching maths in a reasoning style.</p>	<p>Supporting parents, which will in hand, support children in their understanding of reasoning and developing mathematical language. This will also create an avenue for communication and discussions regarding maths.</p>