Maths at The Priory Primary School

At The Priory Primary School we aim to equip all pupils with the skills and confidence to solve a range of problems through fluency with numbers and mathematical reasoning. Children are encouraged to see the mathematics that surround them every day and enjoy developing vital life skills in this subject.

We started our journey to improve the teaching and learning of mathematics for every child in October 2017. There are several elements which have influenced improvements in attainment and progress in mathematics for our children. Mathematics is led by Mr Mcgee (MaST) who is undertaking the Mastery Specialist Teacher this year. This document sets out our approach and the reasons why maths at The Priory Primary School may look a little different to other schools, or the way lessons/books looked a few years ago.

The three aims of the NC should be addressed every day (not just in the maths lesson):


Mathematics Planning

- **Whole class together** – we teach mathematics to whole classes and do not label children. Lessons are planned based on formative assessment of what students already know and we include all children in learning mathematical concepts. At the planning stage, teachers consider the scaffolding that may be required for children struggling to grasp concepts in the lesson and suitable challenge questions for those who may grasp the concepts rapidly. In line with NCETM advice, one form of depth frequently used, during the first part of the lesson, is variation theory (conceptual and procedural). Variation is one of the five 'big ideas' at the heart of Teaching for Mastery. For example, a child who can produce a quick correct answer may be asked to solve the question using more than one other procedure, to represent the question in more than one way (such as the bar model or part whole).

- **Longer but deeper** – in order to ensure children have a secure and deep understanding of the content taught, our plans have been adjusted to allow longer on topics and we move more slowly through the curriculum. After evaluating the findings of the National Textbook Project, ‘Power Maths’ textbooks were purchased to support progression and variation. Teachers adapt each lesson to meet the needs of their children and add extra questioning / tasks which will allow children to learn the content more deeply. The learning will focus on one key conceptual idea and connections are made across mathematical topics. To outsiders it may appear that the pace of the lesson is slower, but progress and understanding is enhanced.

- **Questions** will probe pupil understanding throughout, taking some children’s learning deeper. Responses are expected in full sentences, using precise mathematical vocabulary.

- **Fluency** – there is a whole school focus on developing an instant recall of key facts, such as number bonds, times tables, division facts, addition and subtraction facts. A lesson a week as well as mini sessions have been dedicated to the development of fluency skills.

Lesson Structure

- **Power Up**- Each lesson will start with a whole-class ‘Power Up’ activity, designed to support fluency in all key number facts. Power Ups across the year will also link conceptual understanding to different contexts as well as revisiting previous learning.

- **Discover and Share**- Hands on problems should spark curiosity and provide opportunities for deeper questioning. Children share, reason and learn from misconceptions through whole-class discussion. This part of the lesson will be teacher led and heavily scaffolded to support the children’s conceptual understanding as well as tackling misconceptions head on.

- **Think Together**- At this point during a lesson, the scaffolding is carefully reduced to prepare children for independent practice. Children will be asked to consider solutions as a class, with partners and independently. Again this section of the lesson will be led by the teacher but in more of a facilitating role than the ‘discover and share’ section of the lesson.

- **Practice**- this section of a lesson has been carefully designed to be completed independently, this practice uses conceptual and procedural variation to build fluency and develop deeper understanding of underlying mathematical concepts. A challenge question and links to other areas of maths encourages children to take their understanding to a greater level of depth.

- **Reflect**- This is an opportunity for children to review, reason and reflect on learning and to help teachers assess depth of understanding and to support further teaching / intervention.
• Develop reasoning and deep understanding (contexts and representations of mathematics) – problems are often set in real life contexts – carefully chosen practical resources and pictorial representations are used to explore concepts. These pictorial representations will appear in books as children show their understanding, rather than answers to a series of calculations. The use of practical resources, pictorial representations and recording takes place in every lesson (the CPA approach).

• Structuring – the teacher will organise the findings of the exploration, compare/contrast strategies and guide toward the most efficient strategy (or the one being learnt that day).

• Step by step approach – journey through the mathematics (these steps may appear small, especially at the beginning of a lesson, there are points when suddenly a jump appears to have been made, or an extra challenge appears – this is normal).

• Questions to challenge thinking – teachers use questioning throughout every lesson to check understanding – a variety of questions are used, but you will hear the same ones being repeated: How do you know? Can you prove it? Are you sure? Can you represent it another way? What’s the value? What’s the same/different about? Can you explain that? What does your partner think? Can you imagine? Listen out for more common questions you hear.

NB: Due to the style of the lessons with frequent questioning, lessons may appear to move slower than in the past. There will be more talking and less recording in books. We do not want children to attempt independent recording until we believe they are secure with the concept. We do not want them to practise errors.

• Discussion and feedback – pupils have opportunities to talk to their partners and explain/clarify their thinking.

• Recording the learning – not just pages of similar calculations – Power Maths books are used across the school. In books you will see a range of activities including those requiring written explanations of the children’s understanding.

• Practising – not drill and practice but practice characterised by variation – years 1-6 use Power Maths textbooks to provide children with carefully chosen questions that are essential in assessing how the children have understood the concept taught. You will also see another level of differentiation within these books as some children rapidly grasp the concepts and therefore complete the pages quickly and move onto questions or activities where their understanding can be developed to a greater depth (challenge question and/or exploring different representations). Some children will work very hard in the lesson to complete the pages independently, some children will need additional support to complete the pages and some children will sometimes be provided with different tasks and questions appropriate to their understanding of a concept.

• Rapid intervention – in mathematics new learning is built upon previous understanding, so in order for learning to progress and to keep the class together pupils need to be supported to keep up and areas of difficulty must be dealt with as and when they occur. Ideally this would happen on the same day but this is not always possible so it may be the following morning but will be before new learning is introduced.

• Marking – the marking policy has been amended following the change in approach within maths and using the recommendations from the NCETM. The current marking policy is that learning is highlighted green (correct) or yellow (incorrect). A comment is made if/when a teacher feels this is necessary to move learning forward. Gap tasks or challenges may appear for individual children in their books, but usually gaps are addressed through same day or early morning catch up and therefore will not always be recorded in books. The most valuable feedback is given during a lesson. Very often the children’s next steps are addressed in the subsequent lessons and therefore will not appear as questions for some children to answer after a lesson has taken place.

• LA/SEND pupils – may be supported by additional adults, different resources, differentiated activities. They will also complete additional activities outside of the mathematics lesson.

• Children in EYFS explore mathematical concepts through active exploration and their everyday play based learning. Children are taught key concepts and application of number using a hands on practical approach. EYFS practitioners provide opportunities for children to manipulate a variety of objects which supports their understanding of quantity and number. The CPA approach is used when teaching children key mathematical skills. Practitioners allow children time for exploration and the use of concrete objects helps to support children’s mathematical understanding. Maths in the early years provides children with a solid foundation that will enable them to develop skills as they progress through their schooling and ensures children are ready for the Nation Curriculum.