

MARUS BRIDGE PRIMARY SCHOOL



POLICY FOR MATHEMATICS

For Review: 2018

School Policy for Teaching Mathematics @ Marus Bridge

‘A high-quality mathematics education provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.’



(DfES 2014)

AIMS

The aims of teaching mathematics in our school are:

- To develop a numerate environment where mathematical risk-taking, creativity and logical thought are encouraged in order to develop independent learners;
- To instil confidence and fluency with numbers and the number system;
- To improve children’s capacity to solve problems through decision making and reasoning in a range of contexts;
- To develop a practical understanding of the ways in which information is gathered, presented and interpreted;
- To explore features of shape and space and develop measuring skills in a way equips our children with life skills;
- To develop mathematical communication through speaking and listening, practical activities and recording work.

TEACHING and LEARNING

- In the Foundation Stage, children are given the opportunity to develop their understanding of number, measurement, pattern and shape and space through a combination of short, formal teaching as well as a range of planned structured play situations, where there is plenty of scope for exploration.
- Children will become competent ‘counters’ so that their fluency with the number system provides a foundation for mathematical understanding. Counting forwards and backwards in many different sized steps as well as from different starting and ending points is essential.
- Maths learning builds from a concrete understanding of concepts where children are manipulating objects. When children are able to see concepts this way, they then need to understand the same concepts represented pictorially. Children are then ready for abstract representation before being able to apply their knowledge to different situations.
- Children should be encouraged at all times to communicate their understanding of maths so that it clarifies their thoughts.
- Children’s fluency in arithmetic remains of great importance, with number facts, times table facts and various strategies for calculation taught and practiced at school with support sought from parents through homework activities.
- A progression towards efficient written calculations should be developed and applied consistently in each year-group. The school Mental to Written Calculation Policy should be closely followed.
- Class targets/objectives should be used to ensure areas where the majority of the class have not grasped a concept can be revisited and mastered.

- Though the nature of lessons will be very different depending on the needs of the class, children should be: active; practicing skills they haven't yet mastered; learning something new OR learning to apply their knowledge to different contexts. They should be: 'doing' very quickly; working at a good pace and being productive; sharing their thoughts and methods and experiencing success.
- When teaching problem solving skills across the curriculum, time (and sometimes whole lessons) should be given to each aspect of problem solving ensuring children get thorough practice at: 'preparing for problem solving', 'thinking through problems to establish what they know and don't know so far'; actually 'doing the problem solving' effectively AND 'communicating the answer effectively'. They should evaluate the process too. Over time children will improve at each aspect.

Assessment

- Assessment for learning should occur throughout the entire maths lesson, enabling teachers and teaching assistants to adapt their teaching/input to meet the children's needs. This feedback should be incisive and regular and inform future teaching.
- On a daily basis children should self-assess against the learning objective and success criteria, giving them a sense of success. Children should know when they are meeting their targets and be self-assessing against those too. They should then be able to identify ways in which to move themselves on.
- Pupils' work should be marked in line with the Marking Policy and should model how corrections should be made, giving children a chance to learn from their misconceptions or incorrect methods – this may occur during daily review time or at point of need.
- Future lesson design should depend on class success evaluated through rigorous assessment of prior learning, marking and also observations made during the lesson time.
- Assessment of pupil work and progress is ongoing by the class teacher and informs future planning. Teachers mark work in mathematics in line with the school marking policy. Teachers use on-going assessment that allows them to assess progress in mathematics, gathering evidence over the course of the year. Teachers use this information to inform planning for groups and individual pupils (**see appendix A for detailed guidance**).
- Summative assessments are made at least once per half term in order to provide further understanding of the level a child is working at and to inform a more rounded judgement of their abilities (**see appendix A for detailed guidance**).
- Tracking is used in order that children who are not making good progress over time can be targeted for support in one form or another. What that support will look like and how intensive, depends upon the child's needs and it may be a simple strategy within whole class teaching that is needed. Where further support is deemed necessary, children can access interventions, explained below.

PLANNING

- Planning begins from a thorough understanding of children's needs gleaned through effective and rigorous assessment and tracking, combined with high expectations and ambition for all children to achieve.
- Before beginning a unit of work, children will complete a prior learning assessment which will inform teacher's planning and ensure lessons are pitched accurately.
- Medium term planning will outline the areas of mathematics that will be taught during the term to ensure coverage of the National Curriculum.

- Within short term planning, clear success criteria for each learning objective taught should be created – demonstrating the progression needed to reach and master the objective ('steps to success'). This will enable the class teacher to follow a clear and systematic teaching sequence, where input and activities are differentiated by considering which parts of the success criteria individual children are ready for.
- Where children are working significantly above or below the objective, and where extending this by expanding the success criteria seems inappropriate, extra differentiation and support will be put in place.
- Planning, where possible, should involve real life contexts for maths, where children are problem solving with a purpose in mind.
- Children will additionally experience whole class investigations to practise different elements of problem solving, including: finding all possibilities, logic problems, finding rules and describing patterns, diagram/visual problems and exploring different aspects of number. During these investigations, there should be a honing in on specific problem solving skills that are transferable to other contexts.
- Class teachers should regularly plan for opportunities for children to apply their maths skills to different problems within maths lessons and across the curriculum. This will also allow children to revisit, practice and consolidate different areas of maths and apply them within different contexts.
- When planning across the curriculum, questions should be used within titles of units of work and lessons, to initiate an 'enquiry' approach. Skills of problem solving can then be taught with consistency.

Further Guidance for Teachers and TAs

Daily Counting

- **Daily Counting**- children must spend 5-10 minutes practising counting, known facts, mental calculation strategies and times tables daily. Bonds to 20 must be practised continually from Years 1 – 6.

Playing with Number / Mental Strategies

- All teachers adhere to the Marus Bridge Mental to Written Calculations Policy to ensure consistency and quality of progression through the school.
- Times-tables - Speed-Tables Challenges/addition/difference challenges must be timed and monitored every week. Ideas for activities include: songs, quick-fire questioning, tests, posters and interclass challenges.
- 'Playing with Number' activities will also be used to encourage and develop fluency - digit cards, dice, games and concrete resources will be especially useful for this purpose.
- Prompts for questioning:
 - Can I do it in my head first?
 - Can I estimate what the answer will be?
 - Can I use the facts I know already?
 - Can I prove it by using the inverse?
 - Can I explain how I did it?

Tracking and Intervention:

We aim to provide children who are not making good progress, with extra support through interventions. Interventions in maths should be based on developing key number skills that are appropriate for the children involved. Interventions will be designed to help children make accelerated progress and catch up with their peers.

Intervention provided to boost children's progression in maths should be tightly planned, with success criteria set and assessments made frequently to ensure progress is being made. Whilst interventions could be carried out by Teaching Assistants, for example, what is being taught and how it is delivered is the class teacher's responsibility and communication is essential.

We acknowledge that teacher intervention is often the most impactful and where possible 'same-day intervention' is carried out to ensure pupils progress at roughly the same pace and don't fall behind. Prior learning informs teachers of gaps in understanding and therefore pre-teaching is implemented to ensure children are ready to access the year group objective.

We also identify from tracking any progress issues that exist and plan initiatives that would address these as part of teacher performance review meetings where children's performance is evaluated on an individual basis with class teachers.

We also examine the progress of ability groups and those with English as an additional language, those entitled to the Pupil Premium and those with a Special Educational Need. Where data indicates a whole school issue, it will form part of the Dynamic Action plan which runs alongside the School Development Plan. Sometimes it will influence the School Development Plan itself.

Monitoring:

Monitoring of children's progress begins with performance review meetings but continues with the subject leader evaluating further evidence to ensure children are making progress. This monitoring happens through examination of work in books, pupil interviews, analysis of assessment results and the assessments used, and through other means depending on what is information needs to be gleaned.

Following monitoring activities feedback is given to staff about how they can strengthen their practice and CPD (professional development) opportunities built in where it would be deemed valuable. These might take the shape of inputs during staff meetings, team-teaching, shared planning or by a variety of other means.

Where specific initiatives have been put in place through action planning for school development, these are monitored by the subject leader in order to evaluate their impact. Findings are reported to the Head teacher and Governors.

Parents and Homework

We recognise that parents make a significant difference to children's progress in Maths and encourage this partnership. The homework policy and our website offer further guidance.

Other policies and documents to be read in conjunction with the Maths Policy and Mental to Written Calculation Policy:

National Curriculum 2014/Teaching and Learning Policy /Marking Policy /SEN Policy/Homework Policy

APPENDIX A – RESOURCES AND SPECIFIC GUIDANCE

ASSESSMENT

Continuous:

- **TIMES-TABLE CHALLENGE** – Medal and Certificate for all who know ALL X-Tables – individuals to be celebrated in class
- **Times-table grids** monitored and timed; completed weekly. Children should use a chart or table to keep a record of their times in their books. Teachers record scores for assessment and planning purposes.
- **NON-NEGOTIABLES FOR YEAR GROUP** will be stuck at the front of books – highlighter pens used to check coverage at the end of each half-term (as in writing). Stick the next year group, or previous year group non-negotiable list in for high/low attainers. Revisit objectives to ensure they are securely met i.e. have more than one piece of evidence (use cross-curricular opportunities to help with this reinforcement).
- **CROSS-CURRICULAR MATHS** – All strands can be supported using cross-curricular links to topic work (especially STATISTICS and PROBLEM SOLVING) – please make reference to this when highlighting non-negotiables.
- **Child Friendly Target Setting** – Targets given on a continuous basis – use NUMBER FACT assessment to help with this. Use stampers if target met, then give a new one immediately.
- **Marking** – All marking must be progressive, show in-lesson support and use of a challenge/consolidation/test style/word problem type question ready for daily review or next objective.
- **ICT - MATHEMATICS** – Used to set exciting online activities that will motivate children to practise and use jottings to support their development.

Summative:

- **Prior Learning Assessment** – completed before a unit of work to identify gaps in understand and inform planning for a unit of work.
- **HALF-TERMLY MARUS BRIDGE NUMBER FACT TEST** – scores and progress recorded - also used as a diagnostic tool for planning.
- **HALF-TERMLY ARITHMETIC TEST** – scores and progress recorded - also used as a diagnostic tool for planning.
- **TERMLY SAT or NFER TEST** completed in Autumn 2, Spring 2 and Summer 2 – results recorded, analysed per question and used to assess and inform planning. Results inputted into SIMS tracking system by teacher. QLA completed to help inform planning.

CONCRETE RESOURCES – ALL CLASSROOMS MUST HAVE:

- CONCRETE NON-NEGOTIABLES (table packs of physical resources, plus larger physical resources accessible in corner – easy independent access)
- Variety of number games to choose from per phase.
- Manipulatives/counting blocks/empty number lines/sticks
- Maths Dictionaries
- Shared Math's Cupboard per phase (for larger resources)

DISPLAY

- **AT LEAST** ONE NUMERACY DISPLAY PER PHASE OPEN AREA
- WORKING WALL/NON-NEGOTIABLE LIST/TABLE CHALLENGES/VOCABULARY PROMPTS – “Can I do it in my head?” “Prove it?”
- X TABLE CHALLENGE WALL
- Cross-curricular links referenced in displays

END