

Matthew Arnold Primary School



Maths Policy

Curriculum Intent

School Policy and the National Curriculum

At Matthew Arnold we offer a broad, balanced, relevant and adapted curriculum in mathematics that is designed to meet the different needs of all the pupils in our school and the requirements of the National Curriculum. Teachers from Y1 – Y6 use the National Curriculum Programmes of Study and the Liverpool maths plans, as a basis for their planning. The national curriculum for mathematics aims to ensure that all pupils:

- Become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding, the ability to recall and apply knowledge rapidly, then accurately.
- **Reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- Can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

The programmes of study for mathematics are set out year-by-year for key stage 1 and 2. Teachers are expected to teach the children at the age-related expectations (ARE) for their year group (these ARE should be met by the end of the year) Relevant programmes of study are only required to be taught by the end of the key stage. DFE Curriculum Guidance 2020 also inform our teaching and learning.

In maths we aim to:

- Encourage exploration and discovery and help pupils develop lively, enquiring minds.
- Ensure that pupils acquire appropriate knowledge and skills to prepare them for further study and the world at large.
- Ensure that pupils acquire and use appropriate mathematical language and methods.
- Ensure that pupils can use numbers in all their forms effectively and with understanding.
- Ensure that pupils develop a body of subject knowledge combined with skills and understanding which covers a wide range of mathematical topics on which to base progress in many other subjects.
- Ensure that the children have planned opportunities for reasoning, challenge and problem solving through their maths work.
- Ensure that each and every pupil experiences success in learning and attains as high a National Curriculum level of attainment as they are capable of.

The following objectives directly relate to our aims and how we hope to achieve them.

- Create a positive atmosphere where children can confidently ask questions and investigate under challenging circumstances.
- Provide practical activities that require logical thought and organisation to stimulate learning.
- Use a range of manipulatives to aid learning.

- Focus upon the development of both basic skills and applying skills, knowledge and understanding within our planning with clear objectives for the assessment of learning.
- Develop pupils' mathematical vocabulary by encouraging the use of appropriate language to communicate their mathematics effectively.
- Provide regular opportunities for pupils to talk about and explain their work.
- Provide opportunities for pupils to develop and practise a wide range of mental strategies for solving calculations.
- Ensure that pupils are able to estimate, approximate, and check for reasonableness of their answer.
- Provide a wide range of activities to emphasise the links between number and measurement, shape and patterns.
- Provide pupils with opportunities to apply mathematical concepts, knowledge and skills to new situations and other curriculum areas.
- Differentiate work to provide a suitable challenge for individuals based upon assessment of previous attainment.

Curriculum Implementation - Teaching and Learning

Each class teacher is responsible for the mathematics in their class in consultation with and with guidance from the mathematics lead.

Planning

At Matthew Arnold we recognise that it is important that planning, at all levels, is consistent across the school. We carry out curriculum planning in mathematics in three phases (long-term, medium-term and short-term).

Long-term Planning - long-term plans are based upon the National Curriculum.

Medium-term Planning – use of Liverpool Maths Medium Plans

Short-term Planning - weekly plan – teacher's weekly plans are devised upon the Liverpool Plans. Teachers use a range of resources e.g. Classroom Secrets and White Rose Maths, and Test base to help create tasks and work for the children to complete.

Our approach to the teaching of mathematics is based on the following key principles:

1. A mathematics lesson every day.
2. '4 a day' basic skills recall daily before the maths lesson. This is adapted throughout the school to link with any learning gaps or skills required and is inclusive for all. As children progress through school the number of basic skills questions will increase.
3. Each lesson has a clear teaching sequence to ensure skill practice and challenge.
4. Having a clear focus on encouraging children to explain their thinking and develop justifications for answers and decisions.
5. Planning regular opportunities to use and apply the mathematics which they have learned, both within maths lessons and across the curriculum.

6. Once weekly, having a focus on fluency, recall and applying different skills through use of recall questions.

EYFS

In EYFS we explore maths through a mixture of adult led inputs and child-initiated activities in our continuous provision. Each setting has a maths area which has a range of resources to encourage independent mathematical thinking. We plan opportunities in adult lead inputs and continuous provision for children to develop and improve their skills in measures, comparison, counting, cardinality, composition, spatial awareness, shape and pattern.

In Nursery and Reception, we have adopted a Maths Mastery approach which helps the children develop a deep understanding of number. The adults in the setting play a key role in supporting the children in their child-initiated learning and developing their mathematical language through play. We sing number songs and do counting as part of our daily routine. In MAPS and Nursery maths is recorded mainly through observation and in Reception in a maths book.

KS1/ KS2

From Year 1 to 6 all pupils have a daily mathematics lesson. Throughout the lesson the children will be taught a skill and be given the opportunity to practise the skill in a range of ways, including concrete, pictorial and abstract methods. They are challenged to apply the skills they have learnt through reasoning, problem solving and investigations. Teachers use a range of resources and equipment to support learning and broaden deep of understanding.

Our approach to teaching both written and mental calculation strategies is consistent across the school and allows all pupils to gain confidence and skills at their own level. We follow Liverpool LA calculation teaching sequence.

Our teaching includes opportunities for:

- estimation
- exposition / modelling/ teaching of the skill
- using inverse and understanding how to use it for checking calculations.
- work with units of measurement
- missing box questions
- problem-solving, including the application of mathematics to everyday situations
- investigational work through open ended questions.
- discussion between the teacher and pupils and between pupils themselves
- collaborative work.
- appropriate practical work
- consolidation and practice of fundamental skills and routines
- investigational work through open ended questions.
- challenge for all
- ICT links
- Timely intervention – this is to be recorded when support is given.

Adaptive Teaching

We believe that the daily mathematics lesson is appropriate for all the pupils in our school. We aim to meet individual needs by planning for a range of different starting points and provide challenge for all. Accessing the curriculum for all pupils in the main part of the lesson requires the provision of meaningful material for both the more-able and the less-able pupil. Teachers' planning considers these different approaches to ensure that pupils receive a variety of mathematical experiences.

In order to present pupils with a broad, balanced, relevant and adapted mathematics curriculum a mixture of individual, group and whole class teaching approaches are adopted across each unit of work. We strive to support lower able children and challenge and extend all pupils in every maths lesson. We use a range of apparatus within lessons to provide support for those children who need it. We believe that all children should be taught the entire curriculum for their key stage and aim to provide this.

Cross Curricular Opportunities

The programmes of study for maths are organised into distinct domains. This does not mean they always have to be taught in isolation. Teacher's in-depth planning will allow ample opportunities for all children to make rich connections between their maths skills in maths lessons and the maths they come across in other areas of the curriculum.

Planning opportunities for links to be made between Maths and other curriculum areas help to develop fluency, mathematical reasoning and competence in solving problems. We plan for maths across the curriculum and make cross curricular links from EYFS to Year 6.

As a school we believe mathematics contributes significantly to the teaching of other curriculum areas. Therefore, we:

- Ensure that there are appropriately planned activities, within each of the curriculum areas, to allow pupils to apply their range of maths skills.
- Model and display, high quality examples of maths being applied across the curriculum.
- Promote the continuing use of basic skills.
- Recognise pupil achievement, at all levels.
- Create a positive and attractive environment, which celebrates maths.

Times Tables

Good times table knowledge is imperative and as a school we start to develop children's times table knowledge in KS1. We have KS1/ KS2 document that shows what each class are doing in each term to support the children in their class prepare for knowing all of their times tables. (see times tables coverage document). We use Times Table Rockstars consistently from Year 2 to Year 6 and promote home usage. Weekly certificates are given out across the classes.

Maths Ambassadors

Our Maths ambassadors are children from each class that have been chosen to represent their class. The group consists of one child per class from Y1 – Year 6. They meet with the maths lead once per month to promote maths throughout the school. They will also

- Help to run and manage maths competitions/ events.
- Support children in KS1 with basic mathematical recall facts (number bonds etc.).
- Help to upkeep the Maths displays in school.

- Help the maths lead tweet about maths events.
- Talk to visitors and school Governors about Maths in the school.

Homework

Opportunities for children to practise, consolidate and stretch their skills and knowledge in the daily mathematics lesson are extended through the regular setting of homework. Homework in KS1 and KS2 is given out Friday and returned on Wednesday. It is used to consolidate and challenge knowledge and skills from the classroom. Homework activities are varied to motivate children, stimulate their learning and foster different study skills. Not all homework set is written work. The types of activities we ask children to do at home include:

- Activities which make use of the home context, such as finding how many cylinders and cuboids are in the food cupboard, or weighing things on the kitchen or bathroom scales
- Gathering information to use in the next lesson
- Learning number facts or times tables by heart
- A home school link project on a certain topic etc 3D shape. The children present their work in a way they choose to.

All children are given feedback on their homework to show that their efforts are valued.

Discussion and Mathematical Language

The development of mathematical language is of fundamental importance. It is important that teachers carefully plan the key vocabulary that will be introduced or reinforced during each lesson. Children's ability to recall mathematical terms and vocabulary is reinforced during both maths lessons and where appropriate throughout the other curriculum areas.

We have ensured that the links between English and maths subject leads is strong. We provide regular opportunities for children to talk about and explain their mathematics.

Mathematical vocabulary is displayed in every class through the maths working wall. The maths working wall displays relevant modelled examples from the class teacher, alongside strategies and methods to support the children. Vocabulary is also displayed for children to revisit and use.

Pupil's Recording of Work

Children are taught a variety of methods for recording their work and are encouraged to use the most appropriate and convenient method to them for recording. Teachers will plan a variety of activities to allow children to experience different forms of recording.

All children are encouraged to work tidily and neatly when recording their work, using a one digit one square approach.

Marking

We recognise that the quality of marking in mathematics is crucial to ensuring all children make good progress.

- All maths books should be marked daily in red pen.
- Short date and title to be underlined.
- Level of support to be annotated on work – I independent, T teacher, LSA etc

Acknowledgement Marking

- Acknowledgment marking is everyday marking. Checking date and title are underlined, one digit one box, work is presented neatly (etc)
- Used as a way of communicating to the child how well they have achieved. Ticked if correct and dotted if incorrect.

Quality Marking - Twice Per Week:

Quality marking focuses on the objective or related success criteria and lets our pupils know how well they have achieved.

- Highlight **Green** - good aspects.
- Highlight **Orange** – things that are incorrect or need worked on.

Marking should be in line with Assessment for Learning guidelines (see Feedback and Assessment Policies) and include a “close the gap/moving on” target on the individual piece of work, to enable children to make specific, targeted improvements. Children should then be given an opportunity in the next lesson to respond to the target.

In KS2, self and peer assessment of individual pieces of work is an important part of most lessons, encouraging children to become independent learners, identifying for themselves areas to improve/develop. We encourage dialogue between the teacher and the child, so that verbal feedback can be given if needed.

Interventions

Interventions are used to support children who have been identified through assessment and pupil progress meetings as needing extra support. We deliver this through daily precision teaching. This may be needed due to many factors including: in receipt of pupil premium, if working below ARE, lack of skills, confidence or not meeting individual targets. Interventions are put in place to support the needs of the individual child and progress is monitored. Interventions are reviewed regularly. These are assessed regularly to ensure an impact is being made. LSA's lead the intervention groups, supported and guided by the Deputy Head Teacher and the maths and English leads. Teachers are accountable for their children's progress.

SEND

Pupils in main stream classes who have Special Needs and all pupils in the Language Units have an Individual Learning Support Plans (LSPs). These have specific mathematical targets and are reviewed termly and the child's progress carefully tracked using either PIVATS or Target Tracker data. These are shared regularly with parents

Teachers use a range of strategies to meet children's special educational needs. Lessons have clear learning objectives; work and support are adapted appropriately and assessment is used to inform the next stage of learning.

Children are supported in a manner that acknowledges their entitlement to share the same learning experiences that their peers enjoy. Wherever possible, children are not withdrawn from the classroom situation. However, there are times when, to maximise learning, children may work in small groups, or in a one-to-one situation outside the classroom. Careful organisation of the timetable ensures that these children receive their full entitlement to the National Curriculum.

Measuring Impact - Assessment

We acknowledge that assessment is an integral part of all teaching and learning. Without it progress could not be ensured as assessment procedures produce information to enable staff to provide a better match between children and the mathematical work that is offered to them. Assessment is an ongoing part of the daily routine in Matthew Arnold; we assess daily through questioning, listening and observing. This assessment is used to adapt planning and teaching. It identifies children who need intervention or extra support, allowing teachers to choose appropriate intervention / support for the child.

Assessments inform teaching plans at three linked levels – short-term, medium-term and long-term assessments to ensure that there is a continuous cycle of planning, teaching and assessment.

Short-term Assessment

- Assessment for learning occurs throughout the entire maths lesson, enabling teachers/teaching assistants to adapt their teaching/input to meet the children's needs. This feedback is incisive and regular.
- Children self-assess against the learning objective and success criteria, giving them a sense of success.
- Pupil's work should be marked in line with the Feedback Policy and should model how corrections should be made, giving children a chance to learn from their misconceptions or incorrect methods. Feedback could also offer children a challenge or opportunity to apply skills.
- Future lesson design depends on class success evaluated through marking and observations made during the lesson.
- 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 feedback policy.

Medium-term Assessment

- Teachers use National Curriculum linked age related expectations (ARE) to assess children's progress in mathematics, gathering evidence from learning. Teachers use this information to inform planning for groups and individual pupils.
- Summative assessments are made at least termly in order to provide further understanding of the level a child is working at and to inform a more rounded judgement of their abilities.
- Target tracker is used to band pupils within the ARE descriptors. 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 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 targeted intervention.
- Target tracker is used to track the progress of cohorts and of groups of pupils
- FSM / Pupils Premium / SEN / Gender / EAL.
- The progress of pupils with SEND is tracked using PIVATS

Long-term Assessments

- Teachers assess against National Curriculum objectives - ARE for the year group.
- Target tracker is used to band pupils within the ARE descriptors; yearly progress of cohorts and groups is analysed.

- At the end of EYFS and KS2 pupil are assessed against national standards
- Assessment gives supplementary information about individual pupils' attainment and progress; this is reported to parents and passed on to the next teacher.
- Progress and attainment is used to set whole school targets for mathematics.

Moderation of teachers' assessment judgements

Assessment judgements are moderated by colleagues in school and by colleagues in other schools to make sure our assessments are fair, reliable and valid. Our moderation processes include:

- Discussions about pupil's work in staff meetings
- Planned moderation of pupil's work. These will be timetabled meetings either within school or with local cluster (DGT) schools.
- Attending standardisation sessions lead by the LA
- Other evidence forms part of moderation sessions such as photographs and recordings.
- Half termly book scrutiny.

Reporting

The Headteacher uses long-term assessments to inform the governing body and parents on overall progress and attainment in the school as a whole, including progress towards school, LEA and national targets.

Reporting to parents on their individual child is done on a termly basis through parent's evenings and annually through a written report. Reporting in mathematics will focus on each child's achievements, effort and attitudes. Each pupil's strengths will be reported on as well as areas in which they need to focus upon to improve further.

CPD

Development of mathematical knowledge is encouraged, with external courses being sourced where necessary. Internal INSET is provided by the mathematics lead.

Resources

Resources for mathematics are updated according to need. A range of practical resources are available both in classes and in the resource room. Resources used daily are easily accessible in every classroom; those not used regularly are stored centrally in the maths resource section of the resource home.

Maths stations containing helpful resources are available in each class. This is to help children with their learning and to improve their independence. It is the responsibility of the class teachers/ LSAs to ensure that this equipment is returned as a full set and put away tidily in the correct place.

As new resources become available, staff are made aware of their availability during staff meetings and training is provided where appropriate.

We use Times Table Rock Stars from Year 2 to Year 6 as an effective and enjoyable resource to help the children become fluent and confident with their times tables. This is also available for the children to use at home.

Parental Involvement

Parents are one of the most important influences on attitudes and attainment. At Matthew Arnold we value parents and actively involve them in school life by inviting them in or tweeting to:

- Make them more aware of the key role they play in helping their child to realise his/her full potential in mathematics.
- Raise and develop the skills of those parents who are keen to be involved and are willing to support the school with their child's learning.
- Develop knowledge and skills in those parents who would like to be involved with their child's learning but lack the confidence or skills to do so.

We liaise with parents in parents' evenings, learning plan evenings and homework tasks.

This policy is available in alternative formats on request.