

Mathematics Policy



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Vision for Maths at Anston Park

Every school leaver to achieve a strong foundation in mathematics, with no child left behind.
A significant proportion of pupils to be in a position to choose to study maths as far as they can.

Introduction:

This policy outlines the teaching, organisation and management of mathematics taught and learnt at Anston Park Junior School. The policy is based on the 2014 expectations and aims of the 'New Curriculum' for mathematics.

This ensures continuity and progression in the learning and teaching of mathematics. The policy has been drawn up by the subject leader, shared and discussed with staff and has the full agreement of the Governing Body.

Rationale

At Anston Park Junior School we aim to inspire all children to reach their true potential. In mathematics this means ensuring a curriculum that is fully inclusive of all children which:

- Develops children's knowledge and understanding of mathematical concepts whilst enabling them to practice and hone skills and methods;
- Enables them to think critically and communicate their understanding;
- Gives them opportunities to apply learnt mathematical skills in different contexts across the curriculum.
- Provides opportunities to develop problem solving skills useful for maths and across the curriculum.

This policy is set within the context of the school's vision, aims and policy on teaching and learning. As a result of their learning in mathematics and problem solving across the curriculum children will:

- Be prepared for applying their skills effectively in everyday life situations, in their future learning and in the work place.
- Have the building blocks in place and to provide a solid foundation to lead onto secondary, further and higher education.

Through teaching with a problem solving approach, children will learn to understand, distill and clarify information; consider what they know that will help them to solve problems, realising what they need to know next; create systems and strategies, organising information in a way that helps find patterns and ultimately solutions and to communicate and present their findings effectively.

Overview

This policy consists of key paragraphs that explain how Mathematics is taught and appendices which give further guidance about

1. The teaching of written methods of calculation for:
 - Addition
 - Subtraction
 - Multiplication
 - Division
2. Principles underpinning our approach to Mastery
3. Guidance on solving word problems,
4. Guidance on solving problems.

Aims:

The new National Curriculum for mathematics aims to ensure that all pupils:

- Become fluent in the fundamentals of mathematics, including through varied and frequent practise with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and 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 the problems into a series of simpler steps and showing resilience in seeking solutions

Expectations

By the time the children leave our school we expect them to be confident and competent with number/place value, addition and subtraction, multiplication and division, fractions (including decimals and percentages), measurement, geometry: properties of shape/position and direction and statistics.

By the end of key stage one, most pupils are expected to be at the expected standard which allows the Y3 teachers to start their planning at the appropriate are related stage. A baseline will be conducted every year by Y3 teachers on our assessment system and challenging targets will be set from these to ensure children make accelerated progress throughout their time in our school.

By the end of each academic year, the majority of pupils should be at Expected at their appropriate year. Any child who has not reached this target, will be identified and tracked by the class teacher and suitable bespoke interventions will be identified to ensure that they make accelerated progress to catch up.

By the end of key stage 2, the majority of pupils should be at Expected age related expectations. Some of the more mathematically gifted pupils will be awarded Greater Depth and will be challenged at this level throughout lessons and in additional interventions.

Principles

Planning Maths

- Planning begins from a thorough understanding of children's needs which is achieved through effective and rigorous assessment and tracking, combined with high expectations and ambition for all children to achieve. The children will sit a diagnostic test every term and gaps in their learning will be identified. Children will have targets based on their gaps and these will be taught at some point during term to ensure that they master them.
- The MTP is taken from the White Rose scheme (links will be made as in the new revised document) of work and all staff follow this (in staff file),
- A detailed prior learning assessment will be produced in line with the unit of work being studied. Staff will then create a clear and systematic teaching sequence, where input and activities are differentiated, when appropriate, to ensure that children make progress from their starting points (s plan). The school are working on a mastery approach of teaching and are focusing on keeping children learning as a whole class instead of catching pupils up.
- Where children are working significantly above or below the objective, objectives from lower age-groups will be planned and taught if SEND children are significantly behind their peers. For children deemed to be achieving significantly above their year group, the teachers will plan for children to cover the curriculum at a greater depth to further develop their level of understanding. The majority of the class will be working at their age related level of learning.
- Planning, where possible, should involve real life contexts for maths, where children are problem solving with a purpose in mind (identified on an s plan).
- Apparatus/Pictorial representations should be used to enable children to master concepts (Concrete, Pictorial and Abstract)

- There should be problem solving evident on planning (particularly if the children are covering the curriculum at a greater depth) including: finding all possibilities, logic problems, finding rules and describing patterns, diagram/visual problems and exploring different aspects of number.
- 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, practise and consolidate different areas of maths and apply them within different contexts.

Arithmetic

- Children's basic skills are of great importance, with number bonds, times tables facts and various strategies for calculation taught and practised at school with support sought from parents through homework activities and Times Table Rockstars.
- Arithmetic lessons (non negotiables- calculation policy) should be delivered daily in 15 minutes sessions. These sessions have a particular focus on encouraging the children to learn and recall basic skills/mental strategies which they can apply within their maths lesson (linked to the mental calculation non-negotiables).
- The weekly plan either addresses misconceptions seen in the maths lessons or assessment tests. Sometimes staff will look ahead to the next unit of maths and identify fluency facts/strategies the children may need in their learning.
- The staff plan a week on a particular basic skill eg doubling and break down the learning into steps each day moving learning on so that the children can master the concept being taught,
- The teachers stick to the following teaching structure: model the concept, children work independently on questions (differentiated when appropriate) and then mark their learning together addressing misconceptions,
- All learning completed by the children is done in their Arithmetic book so that they can use it as a reference point if needed. This book is not marked by the teacher but marked collectively by the pupils everyday.
- Presentation needs to be to a high standard.
- One objective/heading should be put in their book at the start of the week and the date for every other lesson after that until a new block of learning is started.

Teaching

- Maths learning builds from a concrete understanding of concepts where children are able to manipulate concrete apparatus, identify pictorial representations and answer abstract questions (can be fluid in approach),
- Children should be encouraged at all times to communicate their understanding of maths so that it clarifies their thoughts.
- A progression towards efficient written calculations is developed and applied consistently in each year-group (Calculation policy).
- Though the nature of lessons will be very different depending on the needs of the class, children should be: active; practising skills they haven't yet mastered (perhaps recapping on their misconceptions); learning something new or learning to apply their knowledge to different contexts. They should be: 'actively learning' very quickly; working at a good pace and being productive; sharing their thoughts and methods and being successful.
- When teaching problem solving skills across the curriculum (noted above and attached in the appendix), time should be given to each aspect of problem solving ensuring children get thorough practise 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.
- In all classes children have a wide range of mathematical abilities. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to

the ability of the child. We achieve this through a range of strategies – in some lessons through differentiated group work, and in other lessons by organising the children to work in pairs on open-ended problems or games.

- A Maths board is evident in every classroom to remind children about their learning and to build up modelled examples of strategies they should be using across the unit of work following the agreed structure. This should be updated frequently to match the learning.

Formal Termly Assessments

- Assessment for learning should occur throughout the entire maths lesson, enabling teachers/teaching assistants to adapt their teaching/input to meet the children's needs. This feedback should be incisive and regular.
- On a daily basis children should self-assess against the learning objective (not indicated but through discussions about what they have learnt) giving them a sense of success.
- Teachers use the White Rose Assessment tests every term which assesses the units of work covered over the term. This is recorded on an electronic EazMAG system which allows teachers to assess each objective covered and they will be awarded either Below, Expected or Greater Depth for their year group. Summative assessments are used to provide further understanding of the level a child is working at and to inform a more rounded judgement of their abilities. Teachers analyse the gaps for their class and produce a Zap the Gap action plan for the following term which is discussed and reviewed at Pupil Progress meetings. Tracking is used to identify children who are not making good progress over time so they can be targeted with 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 or mop up sessions to address misconceptions.
- Assessments are made in line with the school assessment policy. Teachers report to parents three times a year at parents' evenings and in the annual report to parents.

Marking of Maths Books

- Maths books will be marked daily in line with the teaching and learning policy (2 quality marks a week),
- Green pen corrections will be completed daily either at the start of the maths lesson or at the start of the school day. If they are not completed in the time given, the children are expected to complete them in their own time.
- Green pen corrections will be marked,
- Marking slips with a practise and deepen activity will be stuck in books when an objective has been achieved by the children. The section that they are completing will be highlighted using a pink highlighter by the class teacher. If support is highlighted, the staff member will write the misconception they have and what support received.

Display (Maths working wall) and Resources

- In the classrooms there should be, either on display or easily accessible to children, stage appropriate resources (apparatus),
- Strategies taught and pictorial representations should be displayed to support children in their learning. Modelled examples should also be evident both by children and staff,
- The working wall will be built up as the unit progresses with efficient strategies and variation included to ensure children can refer to it.
- There should be maths work on display in classrooms and in other areas of the school in order to encourage a positive attitude and enthusiasm towards mathematics for all groups of children

Guidance for Teachers and TAs

- Class teachers should complete gap analysis for the termly test which will generate the gaps for their class (based on their understanding of what children need to learn next). From this, unit plans should be completed on the s plan. Gaps may be plugged as part of the arithmetic sessions as long as it is related to the non-negotiable mental calculations or another mental strategy. It should not be used to teach concepts like shape, statistics etc.
- Maths should be taught every day (minimum 60 minutes a day- 15 minutes Arithmetic and 45 minutes maths lesson).
- Resources to assist with the planning, teaching and assessment of mathematics can be found in the shared area of the school's computer network. Resources that can be found there include: calculation policy; problem solving and reasoning resources; fluency with fractions, decimals, percentages and ratio and proportion, mental maths, picture maths, maths for more able mathematicians FOCUS scheme, White Rose Scheme, NCETM resources, basic skill non negotiables and any other information given in staff meetings/INSET days, Other practical resources can be found at the back of the hall and in classrooms.
- In addition, to assist with the teaching of mathematics there are the following ICT resources available Maths Pack 1-4, Primary games 1-8, Times Table Rockstars accounts for all, Maths Invaders and various apps on the ipads.
- Termly targets should be set based upon their diagnostic tests and will be printed and sent home,

Tracking and Intervention:

- At Anston Park Junior School 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. These will be bespoke to meet the needs of the children and will take the form of personalised interventions or mop ups to address misconceptions. If children still do not make the relevant progress, they will be referred to the SENDCo.
- Interventions 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 it is the class teacher's responsibility and communication is essential. Teacher meetings with TAs are planned as regularly as is possible.
- We identify from tracking any groups (Boys, Girls, PP, SEND, HAPs) who have not made progress 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 every half term.

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 the scrutiny of work in books, lesson drop ins, pupil interviews, analysis of summative/formative assessment results, and through other means depending on what information needs to be gathered. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for mathematics in the school. The subject leader gives the head teacher an annual position statement in which they evaluates strengths and weaknesses in the subject, and indicates areas for further improvement.
- 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 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 directly to the Head Teacher on the relevant monitoring format,
- The success of interventions is also monitored by the SENDCo and this informs future planning of interventions.

Parents and Homework

- We recognise that parents make a significant difference to children's progress in Maths and encourage this partnership. Calculation workshops are delivered every year to support parents with the calculation policy and give them the necessary skills to support their children with the relevant methods,
- Parents are also invited in to support their children in learning activity mornings where they can see the structure of the lesson and how their children are taught,
- Homework is issued in line with our homework policy and home/school agreement (Time Table Rockstars)
- Parents' evenings are offered 3 times during the year where children's progress and any necessary home support is discussed.

This policy must be read and used in conjunction with the:

- New Maths Curriculum 2014 government documentation,
- Zap the Gap documents for each class
- Calculation Policy,
- Learning and Teaching Policy (including staff maths non negotiables and marking and feedback policy)
- Assessment Policy,

Review

This policy will be reviewed at least every two years.

Date: September 2015, September 2017 and September 2018