

Ash Green Community Primary School

C5

MATHEMATICS

1. ETHOS

Mathematics equips pupils with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem-solving skills, and the ability to think in abstract ways. Mathematics is important in everyday life. Different cultures have contributed to the development and application of Mathematics. Today, the subject transcends cultural boundaries and its importance is universally recognised. Mathematics is a creative discipline. It can stimulate moments of pleasure and wonder when a pupil solves a problem for the first time, discovers a more elegant solution to that problem, or suddenly sees hidden connections.

2. AIMS

The key aims and purposes of the school's Maths provision are to be developed through the early Learning Goals and the National Curriculum. The mathematics curriculum will reflect the main aims of the National Curriculum, as well as the Ash Green ethos, as seen below:

- Ensuring 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 and the ability to recall and apply knowledge rapidly and accurately
- Ensuring that all pupils reason Mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- Ensure that all pupils 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 and seeking solutions
- Plan opportunities for mastery to reflect that pupils have consolidated their past learning, built upon it, and can demonstrate this consistently and in a wide range of scenarios.
- Ensure that the key components of mastery are reflected throughout topics of work for each strand of Mathematics, and encapsulate the following:
 - pupils challenged in terms of depth, not content linked to age related expectations
 - pupils given the opportunity to reason about Maths and make connections
 - pupils facilitated in acquiring a 'toolkit' of facts and efficient procedures to solve a variety of problems
 - lesson design reflects quick, daily intervention in order to address misconceptions e.g, assembly intervention, pre-teaching etc
 - Develop pupils' thinking, investigative and analytical skills
 - Develop pupils' reasoning, communicative and collaborative skills
- Stimulate a sense of order and pattern
- Enable pupils to use and apply numbers in a range of situations that is planned for over a short block of time
- Empower pupils to select appropriate strategies/resources to solve a range of problems

- Raise pupils' self-esteem and confidence
- Allow **all** children to take an active role in each part of the daily maths lesson through well balanced interactive teaching and learning strategies and effective differentiation
- Allow for opportunities to enable children to use and apply Maths skills across a range of cross curricular subjects within different contexts
- Follow a clear sequence both within a lesson and across a series of lessons, made clear to the pupils through clearly displayed Learning Journeys and Working Walls to support teaching and learning

3. POLICY

TEACHING AND LEARNING METHODS

The knowledge, skills and understanding identify the strands of Mathematics in which pupils make progress, which are grouped together under the following headings:

- Number and Place Value
- Addition and Subtraction
- Multiplication and Division
- Fractions and Decimals
- Measurement
- Geometry
- Statistics

Teaching will ensure that appropriate connections are made between these strands and opportunities will be provided for children to master objectives once confidence and fluency in objectives have been achieved. The application of skills will be taught through each strand in an integrated way, making links clear. Problem solving activities will also be planned linked to the above strands of Maths, promoting problem solving skills such as trial and improvement, working systematically, pattern spotting, working backwards, reasoning logically, visualising and conjecturing. It will encompass direct teaching and interactive oral work with the whole class and groups. There will always be an emphasis on mental calculation. Controlled differentiation of tasks will take place with all pupils engaged in Mathematics relating to a common theme. Direct teaching will draw on, and balance, the following elements:

- directing
- instructing
- modelling
- explaining and illustrating
- questioning and discussing, drawing on pupils answers, ideas and opinions
- consolidating
- evaluating pupils' responses
- summarising
- collaborative work
- promoting the transference of skills

The Mathematics curriculum will endeavour to provide children with opportunities to develop the following deeper learning competencies in order to prepare children to achieve high levels to succeed at school and beyond into adulthood:

- mastery of core academic content
- critical thinking and problem solving
- collaboration
- effective communication
- self-directed learning

The problem solving opportunities provided will also encourage pupils to develop a Growth mind-set where intelligence can be developed, leading to a desire to learn and a tendency to:

- embrace challenges
- persist despite obstacles
- see effort as a path to mastery
- learn from criticism
- be inspired by others' successes

Mastery, reasoning and problem solving will be a key feature of all mid-term and short term plans. In order to solve problems effectively, teachers will ensure that time is planned in order to give pupils 'thinking and playing-with-the-problem time.' Pupils will be asked to test out ideas, to make conjectures, to go up 'dead ends' and adjust their thinking in the light of what they learn from this, discuss ideas with others and be comfortable to take risks. Teachers will support pupils to develop the skills they need to tackle problems by the classroom culture created; a culture where questioning and deep thinking are valued, mistakes are seen as useful, all pupils contribute and their suggestions are valued, being stuck is seen as honourable and pupils learn from shared discussion with the teacher, Teaching Assistant (if present) and peers. Through these activities, children will develop their higher order thinking skills of:

- problem-solving
- inquiring
- reasoning
- communicating
- conceptualising

ORGANISATION OF MATHEMATICS CURRICULUM

The school follows the framework for teaching Mathematics set out within the National Curriculum. In Early Years , we will develop Mathematical understanding through stories, songs, rhymes, finger games, board games, sand and water, construction, imaginative play, outdoor play and playground games, cooking and shopping, creative work and by observing numbers and patterns in the environment and daily routines. Thus, we are working towards the Early Learning Goals and preparing the children for starting the National Curriculum.

DETAILED PLANNING

The strands of Mathematics set out in the National Curriculum have been encompassed into a yearly overview for each year group. Each area of the Maths Programme of Study has been included in every year group overview.

Short term daily planning and an overview for the upcoming strand (weekly) is the responsibility of individual class teachers. Key weekly lesson objectives are specified (and

supplementary mental/oral/daily direct teaching objectives) together with appropriately differentiated activities at all points in the lesson. Curricular targets are set for each pupil (must/could/should) and are detailed in short term planning. Key questions and vocabulary for plenary sessions are planned at this stage and lessons are evaluated daily to inform the next short term (weekly) plan or daily lesson. Barriers and aids to achievement are identified as part of short term plans to ensure effective learning for all groups of pupils and ensure a breadth of learning styles. Homework tasks are specified in the weekly plan.

RESOURCES

Each teacher has received training on the new expectations and Programmes of Study linked to Curriculum '14 and the concept of mastery. Teachers are confident in accessing on-line resources, as well as resources purchased in order to support in the teaching of problem solving and mastery. Every class has basic Mathematical equipment and further resources, linked to specific areas of learning, are stored in relevant key stage resource rooms. Additional resources are continually being acquired to ensure that children have access to a range of stimulating high quality equipment. It is the responsibility of teachers using resource boxes to ensure that they are signed out and returned, with all resources, once the topic or module is complete. Teachers should also ensure that children care for all resources.

ASSESSMENT AND RECORD KEEPING

In Early Years, formative assessments are recorded in pupil's 'This is Me' and Maths books in Nursery, and in subject-specific exercise books in Maths in Reception. In Key Stage 1 and 2, marking is skills-based linked to differentiated objectives.

Targets are set to either address a misconception, consolidate and extend pupil learning, inform them of how current learning will impact on upcoming lessons, as well as targets that set Maths skills within a real life context. Some targets also develop the mastery element of an objective. Pupils are asked to self-assess their understanding of objectives with a show of traffic lights against daily 'Can I' statements, as well as evaluating their learning at the end of block of work. Additionally, pupils set targets for themselves in collaboration with teachers on a half-termly basis using child-friendly Maths assessment grids which encompass Target Tracker (cloud-based tracking software) and Key Performance Indicator statements. These targets are shared with parents on half-termly year group newsletters.

As well as baseline tests that take place at the beginning of the school year, pupils are tested three times a year to corroborate teacher's judgement of attainment and progress. These judgements are recorded within a simple grading system (ABCD). This system allow class teachers, assessment managers and the leadership team to monitor progress for individual pupils as well as pupils groups and cohorts throughout the year, to set ongoing termly targets and to demonstrate progress. The Mathematics manager, along with the Assessment manager, maintains an ongoing portfolio of evidence showing achievement and progress drawn from monthly agreement trialling and cluster moderation events.

PROFESSIONAL DEVELOPMENT

Professional development opportunities will be provided in line with an analysis of need linked to the implementation of the school's Mathematics policy and the delivery of the National Curriculum. Curriculum audits and training needs are completed annually; the results of which are fed into the School Improvement Plan. Funds for professional development may be used to support a range of activities both within and outside the school.

REVIEW AND EVALUATION

The policy for Mathematics will be reviewed annually as an agenda item at a staff meeting. The teacher with responsibility for managing Mathematics will lead this item. Comments from staff and governors will be taken into account and any changes to policy agreed at a staff meeting prior to ratification by the governing body. The implementation of the policy will be monitored by the Head Teacher who will, if necessary call on external agencies to give specialist advice.

Reviewed and amended September 2018
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