



An Adventure in Learning

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Greenmount Primary Mathematics Policy November 2018

Maths is a key skill of life that involves confidence and competence with numbers and measures. It requires an understanding of the number system, a repertoire of computational skills and an ability to solve problems in a variety of contexts. Maths also demands practical understanding of the ways in which information can be gathered and communicated using graphs, diagrams and tables.

At Greenmount we will help children acquire these proficiencies by focusing on the relevant aspects of the programmes of study for maths.

National Curriculum

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The Programmes of study for mathematics are set out year by year for Key Stages 1 and 2 in the new National Curriculum (2014). The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They will also apply their mathematical knowledge to science and other subjects. (National Curriculum 2014)

Aims

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 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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress will always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly will be challenged through being offered rich and sophisticated problems to develop mastery before any acceleration through new content. Those who are not sufficiently fluent with earlier material will consolidate their understanding, including additional practice, before moving on. (National Curriculum 2014)

Intent

Mathematics at Greenmount is geared towards enabling each pupil to develop within their capabilities. We aim to help children achieve this by developing their confidence to talk about mathematics and be able to explain HOW and WHY they have arrived at a particular answer or conclusion. We want children to:

- To be **Fluent, reason, explain** mathematically and **solve problems**
- To challenge children and take risks in their learning
- To develop an enjoyment of learning through practical activity, investigation, mastering a skill, exploration, mental exertion and discussion
- To develop confidence and competence with numbers and the number system
- To have positive attitudes towards mathematics with ever increasing confidence, independence, perseverance and resilience.
- To develop the ability to solve problems through connecting ideas, decision-making and applying their mathematical skills in a range of contexts, including other subjects in the national curriculum.
- To understand the importance of mathematics in everyday life, especially in relation to essential life skills, such as telling the time and understanding money.

Implementation

Planning

- All teachers in KS1 and KS2 follow the maths overview which blocks the strands throughout the year. The blocks have deliberately not been given timescales as it is important that children master a concept before moving on to a new strand. The maths overview and National Curriculum maths objectives are the basis for all maths planning. There are 'fluency plans' for each year group which show all the objectives that year needs to cover. The fluency plans are set out in what we have deemed as sequential learning meaning the most logical order in which to teach the objectives. Our calculation policy (see appendix) clearly states which strategies should be taught in which year groups and this document is used as a starting point for 'what and how' to teach strategies. Teachers can record their planning on 'Cover-notes', weekly plans

and slides. The White Rose small steps are used as a starting point (alongside the calculation policy) to ensure that there is an equal balance of the 'basics' (fluency) has been taught as well as reasoning and problem solving. Learning and teaching resources are supplemented with Nrich, NCETM, Testbase materials, textbooks (maths no problem) and other materials to support children's learning.

Daily Maths lessons

Maths is taught daily in each year group with an addition arithmetic lesson on one of the days. Each lesson is approximately 50-70mins (50-60 for KS1, 60-70 KS2) and follow a similar format. Lessons began counting, either whole class or pairs. This is to ensure children receive regular practice. This is followed by a 5-10-minute oral/mental starter that allows children to apply skills learnt and recall number facts. The main part of the lesson involves developing new skills, reasoning and problem solving. Ideas are shared, misconceptions addressed, and children are active learners. Children work on the same objective and there is variation within the tasks and work is differentiated for the SEN and Gifted and Talented.

Arithmetic Maths

All classes (R-yr6) have a dedicated timetable slot to practise, revisit and consolidate basic arithmetic learnt. In years 3-6, children complete weekly arithmetic quizzes (mainly Twinkl and also other providers when needed) to ensure new skills learnt are practised regularly and kept 'simmering'. This enables teachers to regularly identify misconceptions, errors and any areas that need revisiting and can be immediately addressed or then planned for in the weekly maths sessions. Reception-Year 1 complete a weekly 'number of the week' poster that is differentiated for each year group. This ensures basic number sense is frequently revisited and practised weekly, alongside the taught maths strands. Introduction of Numbots and numberbond work

Times Tables Rock Stars (TTRS) are used regularly in year 3-6 to increase children's recall of multiplication and division facts. The maths leaders monitor the use of TTRS and promote its use, at school and at home, with half termly rewards.

Cross Curricular Links

Although maths is mainly taught as a separate subject, every effort is made to link maths with other areas of the curriculum. We try to identify links with ICT (e.g. beebot, log boxes, spreadsheets, coding etc) Science (e.g. graphs and tables) and DT (e.g. measure and geometry). We draw children's attention to the links between maths and other curricular subjects, so they do not see maths as an isolated subject. Maths needs to be experienced beyond the classroom and made relevant to the lives of children.

Children with Special Educational Needs and Disabilities (SEND)

We aim to fully include SEND pupils in the maths lesson so that they benefit from the emphasis on oral and mental work and by listening and participating with other children in demonstrating and explaining their methods. SEND children, whenever possible, will be learning a similar maths strands to that of their peers, although their objective may differ slightly to meet individual needs. Objectives for SEND children are taken from our detailed assessment tracker (B-squared). Where necessary teachers will, in consultation with the SENDCo if needed, draw up an individual education plan for a child. Gifted and talented children are also considered and set tasks that promote greater depth of understanding rather than acceleration through the maths curriculum (unless this is appropriate).

Assessment

Children are assessed termly in both KS1 and KS2 using the Progress in Understanding Mathematics Assessment (PUMA). The maths coordinator analyses data from assessments to identify areas of strength and areas for development within a year group and as a school. Teachers are continually monitoring the performance of the children and will adapt their planning to ensure it meets the children's needs. Weekly arithmetic scores are collected by class teachers and the maths coordinators collect and analyse the online data (from TTRS) for fluency in times tables. Marking and feedback is an integral part of our assessment (See appendix for maths marking policy).

Homework

Children in KS1 and KS2 have homework journals. The amount of homework set is about 10 mins for KS1 and 15-20 mins for KS2. This can be written work to be completed, practise of key skills or directed time on Times Table Rock Stars. Homework is acknowledged by the teacher through oral feedback, marking or peer marking.

Resources

All classes have a maths working wall which reflects the learning that is taking place. A wide range of manipulatives are used throughout school. Number rods, place value counters/cards are vital to help children to move from the concrete to the visual understanding of number and calculations. Numicon is a multi-sensory maths teaching resource that uses structured patterns and shapes to help children understand the concept and ideas of number and their relationships. Numicon is used throughout the school, especially in EYFS/KS1, as a practical resource for developing the understanding of number and used to help support older children that find number concepts challenging.

Impact

- End of key stage results are in line with national percentages
- childrens attainment and progress is tracked termly to identify trends and target support.
- work scrutiny demonstrates well planned, sequential learning with a balance between fluency of basics and problem solving and reasoning. Children are confident at explaining their ideas.

Next review date Oct 2021

