

# LANDYWOOD PRIMARY SCHOOL



## **Mathematics Policy**

**February 2018**

## Policy Statement

*All pupils at Landywood Primary School will undertake mathematical lessons embracing practical activities, investigation, discussion, ICT and recording to acquire the essential numeric skills for use in the classroom and beyond.*

## The National Curriculum

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

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils **should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems**. They should also apply their mathematical knowledge to science and other subjects.

## Aims

Landywood Primary School aim to ensure consistent approaches are used to secure and promote appropriate progression in pupil's mathematical skills and understanding.

All pupils, from Foundation to Year 6, will have a full range of opportunities to develop their mathematical skills within the curriculum.

All pupils will be supported through a variety of learning styles to enhance understanding and consolidation of mathematical knowledge that may be applied to problem solving opportunities.

## Organisation

We aim for all pupils to be engaged in a discrete Maths lesson and a 15 minute Maths Meeting, four days per week, with an additional DTD lesson, that follows the agreed school Mathematics Maths Policy.

Early Years Foundation Stage – Reception children are taught a 50 minute lesson 4 days per week which includes 20 – 30 minute discrete Mathematics lead by the teacher. Child initiated learning opportunities to develop concept of number and problem solving skills are underpinned through a wide range of free-flow activities which take place both indoors and out. These activities are objective specific and both adult led or independent.

From Year 1 to Year 6, pupils are taught Mathematics as a discrete subject. Lessons are 60 minutes in Key Stages 1 and 2. Pupils will complete object related tasks incorporating a range of teaching approaches, together with appropriate differentiation through scaffold or constraint, that may be practical, written or with the use of digital media such as digital cameras, iPads or computers.

Throughout the school, mathematics is organised to follow an accelerated process with appropriate support. Using the NC guidelines, pupils are identified into three groups with the expectation of progression within all groups.

**Expected** - 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 should always be based on the security of pupils' understanding and their readiness to progress to the next stage.

**Emerging**- Those who are not sufficiently fluent with earlier material should consolidate their understanding, including thorough additional practice, before moving on. This group will include pupils with SEND mathematical targets.

**Exceeding** - Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content, to ensure depth of understanding and allow children to 'master' key skills.

## Planning

Long term / Medium Term planning is directed by Mathematics Mastery Programme of study, which is Year band specific and maps out progressional development through objectives, as stated in the National Curriculum.

Short-term planning shows:

- The main teaching objective/s of the mathematical unit
- Differentiation accommodating for the needs of all pupils to work on a common mathematical unit
- A 'Maths Meeting' (Mental maths session) 4 days per week, to develop rapid recall of essential number skills appropriate to each year band.

## Differentiation for Depth (Including provision for SEND)

Equal opportunity - Every pupil has access to the Maths Curriculum. Using the statements to identify groups; emerging expected and exceeding, all pupils in Key Stage 1 and 2 are taught in mixed ability classes, where ability groups are identified and differentiated for.

Following the aims of the Maths National curriculum, the aim is to keep children progressing at an equal pace with the majority of pupils attaining age related expectations (expected), for those grasping concept rapidly, their knowledge will be deepened to ensure they master the objectives for their specific year group rather than stretching onto the preceding year group.

Where necessary, pupils may be taught in small targeted groups to offer specific support according to need. Adaptations have been made in the form of adult support, time scale, equipment and resources to accommodate for provision of pupils with SEND, children identified to be working below expected for their year group or for pupils that are exceptionally able to have access to higher order mathematical skills.

## Assessment

Assessment in maths is viewed as part of the assessment for learning cycle. Children are provided with opportunities for self/peer-assessment and encouraged to link this to the learning objectives of the lesson.

Key mathematical skills as stated by the National Curriculum will be used to assess achievement for the age related targets. This will identify which group the pupil is working at, their targets achieved and next steps.

Using all the Key performance indicators (KPIs) from the national curriculum, children are assessed on their performance against these targets and monitored through the use of Classroom Monitor and termly PUMA standardised tests.

Teachers monitor the acquisition of skills, knowledge and understanding through appropriate teacher intervention, observations and discussions with groups and individuals and unit tests, and records of acquisition of the key skills in maths for each year group are updated on the school tracking system. In addition to the assessment opportunities outlined in the Teaching and Learning Policy, teachers must use their better judgement when identifying where the pupil is at their next steps. This should be shared regularly with the pupil concerned.

## Calculation Strategies

Mental and written calculation strategies have been outlined to be used, which are age appropriate and which aim to increase pupil's efficiency and accuracy within all four operations. The methods also aim to encourage recall of \*Mental Maths Number skills, enabling pupils to solve a variety of problems with accuracy. They are designed to develop children's conceptual understanding of maths through a 'concrete,' 'pictorial,' 'abstract' approach.

The focus is on ensuring pupils use mental methods wherever appropriate, but for calculations that they cannot do mentally, pupils are to use an efficient written method accurately and with confidence. The calculation strategies are based on the suggested strategies within the National Curriculum and, the published scheme of work and those of staff at Landywood Primary.

***See separate 'Progression in Calculations for details of Mental and Formal Written calculation progression across the Primary Phase.***

## Problem solving

**NC Mathematics 2014 Purpose of study:** *Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore 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.*

All maths taught and learnt should have a purpose; practice within the classroom setting should make connections to the world beyond the classroom through problem solving tasks. The recommended sequence for all Maths taught is:

- Introduce the maths topic with a problem put in context that the children can grasp an immediate connection with the concept. This should be appropriate to the curriculum and the context should be that to engage their interest. Eg. Adding or taking sweets in Foundation, grouping and sharing stickers in Key Stage 1 and creating football score charts and interpreting them in Key Stage 2.
- Pupils should understand that all calculations have a purpose in life and examples of this should be often mentioned and opportunity for pupils to discuss scenarios related to where the maths skills may be used.
- All maths topics taught should include problem solving lessons that may include practical, paired or group work as well as independent recorded work in books showing understanding of solving worded problems.
- Pupils should also make connections with the maths skills attained by experiencing problem solving activities in other curriculum subject areas.

## Presentation and Marking

Teachers are expected to adhere to the schools marking policy when marking books and presentation policy when guiding children as to how to present their work specific to the phase they are taught in. (**See Marking Policy** for EYFS, KS1 and KS2)

All pupils will be taught the correct number formation starting at the top to form each digit. It is so important for a child to learn the right way to write numbers and letters. It makes it easier for fluidity of writing; there are no pauses to think where to place the pencil. (**See appendix 1**)

All pupils should be encouraged to show working out. This may be using concrete equipment, pictorial, use of number-lines or jottings and abstractly.

Each phase has a clear marking scheme. The main purpose of marking is to ensure that as children complete tasks, practical or written; they will benefit from constructive guidance given as verbal feedback or recorded in their books.

## Homework

Teachers set appropriate homework tasks that may be linked to classroom learning or set online tasks or learn essential number skills to support their development of mental maths (number bonds, time tables, etc.).

All pupils will have at least one Maths task a week.

This will be regular and completion will be monitored. Parents will be contacted when pupils repeatedly fail to hand in completed homework or hand in homework that has not been completed with quality.

All pupils should have set number skills as ongoing homework. This may be learning number bonds, time-tables and related division.

Year Group Newsletters – All Year groups include a section in their newsletters on Maths. This gives guidance to parents on the topics being covered and how they can best support their children at home.

## Themed Days

One themed day is set for all key stages 2 per school calendar year. The day is planned constructively to provide both consolidation and challenge opportunities for all pupils to exercise their mathematical skills in a variety of practical problem solving activities.

## Monitoring

The monitoring of the standards of children's work and the quality of learning and teaching mathematics is the shared responsibility of the Leadership Team and the subject leader. Mathematics provision in the school is monitored and evaluated by conducting regular work scrutiny, observations, learning walks and assessment data analysis.

The work of the subject leader provides a strategic lead and direction for the subject in the school. This involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject.

A named member of the school governing body is briefed with an overview of the teaching of mathematics in the school.

Appendix 1

## Number Formation

