



**ORCHARD PRIMARY SCHOOL**

**Mathematics Policy**

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### **MATHEMATICS POLICY**

#### **1 INTRODUCTION**

1.1 Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to communicate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

1.2 At Orchard Primary School we aim to:

- promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion;
- develop mathematical skills and knowledge and quick recall of basic facts in line with the national curriculum for maths;
- promote confidence and competence with numbers and the number system;
- develop the ability to solve problems through decision making and reasoning in a range of contexts;
- develop a practical understanding of the ways in which information is gathered and presented;
- explore features of shape and space and develop measuring skills in a range of contexts;
- develop an appreciation of the creative aspects of mathematics and awareness of its aesthetic appeal;
- understand the importance of mathematics in everyday life.
- To be able to use and apply the skills and knowledge of maths to everyday real life experiences.

#### **2 TEACHING & LEARNING STYLE**

2.1 The school uses a variety of teaching and learning styles in mathematical lessons. Our principal aim is to develop children's knowledge, skills and understanding in mathematics. We do this through a daily lesson that has a high proportion of whole class and group direct teaching. During these lessons we encourage children to ask as well as answer mathematical questions. Careful planning of key questions, based on Bloom's Taxonomy, promotes higher order thinking skills. Children have the opportunity to use a wide range of resources such as number lines, number squares, digit cards and small apparatus to support their work. They use ICT in mathematics lessons where it will enhance their learning, as in modelling ideas and methods. Wherever possible we encourage the children to use and apply their learning in everyday situations. The school uses the Key Objectives from the 2014 National Curriculum and ensures that Using and Applying mathematics is fully integrated into planning and teaching.

- 2.2 In all classes there are children of differing mathematical ability. 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. Although the majority of the pupils will be taught the Key Objectives for their year group, some less able children will need this to be scaffolded through support. Other, more able children, may need to deepen their knowledge through using and applying activities. Only children with SEND or those that are deemed Gifted and Talented may need to be taught the objectives from a different year group.

We use teaching assistants to provide appropriate support to individuals or to groups of pupils. Teaching assistant within Orchard Primary School are viewed as an important 'asset' to the school and, as such, are appropriately involved in the planning and delivery of the mathematics curriculum. Their knowledge, skills and understanding are constantly updated through involvement in school based Inset.

### **3 MATHEMATICS CURRICULUM PLANNING**

- 3.1 At Orchard Primary School, we use the 2014 National Curriculum as the school's mathematics curriculum.
- 3.2 When teaching the four operations of number we follow the calculation policy and the EYFS calculation policy. See Appendix 1 and 2.
3. When teaching Shape, Space and Measure, we follow the appropriate policies, which outline in more detail the concepts and language to be covered in each year group.

### **4 TEACHING TIME**

- 4.1 To ensure that there is adequate time for developing numeracy knowledge and skills, each class is expected to provide a daily mathematics lesson for mathematics.

### **5 THE FOUNDATION STAGE**

- 5.1 We teach mathematics in our Early Years Foundation Stage. We relate the mathematical aspects of the children's work to the objectives set out in the Mathematics (M) section of the Early Years Foundation Stage Curriculum (EYFS). We give all the children ample opportunity to develop their understanding of number, calculation, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.
- 5.2 Children's mathematical development is carefully planned for, through adult led focus activities, and through mathematical learning in all areas of provision. Planning is in place to support children's mathematical development both inside and outside the classroom.
- 5.3 Throughout Foundation Stage children are encouraged to use and develop mathematics

through play in all areas. Concepts of shape, space, direction, size, length, capacity and mass are developed through sand, water and tactile play, outdoor provision, small work play, storytelling and nursery rhymes for example.

## **6 TEACHING MATHEMATICS TO CHILDREN WITH SPECIAL EDUCATIONAL NEEDS**

- 6.1 At Orchard Primary School we aim to provide a broad and balanced education to all pupils. Quality First Teaching is considered an entitlement for all pupils and these children's needs are met through careful differentiation, based on Assessment for Learning, and/or support using resources either adult or equipment. Effective pupil tracking enables identification of pupils who may benefit from early 'intervention'. Individual education plans are drawn up which set targets and a designated Teacher or Teaching Assistant works with the children on these targeted areas. A variety of resources are used to do this, including Numbers Count1 and 2 resources and practices.

## **TEACHING MATHEMATICS TO CHILDREN WHO ARE MORE ABLE (G & T)**

- 6.2 We also recognise, and aim to make provision for, pupils who have a particular ability in mathematics. This is done at a classroom level through differentiated classroom activities and homework and by providing extension work. It is also done through asking higher order questions which encourage investigation and enquiry. Outside the classroom provision for the more able is done through a Challenge Club.

## **7 ASSESSMENT**

- 7.1 Assessment has two main purposes:

- assessment of learning (also known as summative assessment);
- assessment for learning (also known as formative assessment).

### **Assessment of learning (AoL) – summative assessment**

- 7.2

Assessment of learning is any assessment that summarises where learners are at a given point in time – it provides a snapshot of what has been learned.

At the end of the academic year children in year 2 and 6 are tested using SATs documents.

Halfway through the academic year, in February, the children in year 3, 4 and 5 are given an NFER test. Most children will complete their current year's test, however, for some children, this may not be appropriate, and they may need to take a test from a lower year group. The decision as to which test the children sit is based on the teacher's discretion in consultation with the Maths Subject Leader. At the end of the academic year, in June, children in years 3, 4 and 5 will take the 2006 QCA test. Again, most children will take the test for the current year group, whilst

some children will sit that from a previous year group. In year 3 and 4 the tests given are not timed, but in year 5 the tests are timed.

In year 1, children are given formal teacher assessments at the end of each term in order to provide a National Curriculum level.

At the end of the academic year children's National Curriculum attainment is passed on to their next teacher. Pupil's attainment in mathematics is also given to parents in the end of year report. Information gained from these yearly summative assessments is also used by the Maths Subject Leader and the SLT to trace pupils' progress. Summative assessments could also take place at other times throughout the year.

### 7.3 **Assessment for learning (AfL) – formative assessment**

At Orchard Primary School we recognise that Assessment for Learning lies at the heart of good maths teaching. "Assessment for learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go to and how best to get there." Assessment Reform Group, 2002 the heart of promoting learning and in raising standards of attainment. We further recognise that effective AfL depends on using the information gained.

On-going assessment procedures within our school encompass:

- Making ongoing assessments and responding appropriately to pupils during 'day-to-day' teaching. These 'immediate' responses are mainly verbal and are not normally recorded.
- The evaluation /Next Steps column of the short term planning form is used to make brief notes about lessons.
- Using prior assessments of key objectives in order to inform teaching and planning.

## 8 **RECORD KEEPING**

8.1 Children's level of attainment is kept on "Classroom Monitor". These are completed by the class teachers. This tracking data is used to determine groupings and intervention.

8.2 Informal evaluation of lessons and achievement are recorded on the daily lesson plans under the "Evaluation/Next Steps" column.

## 9 **RESPONSES TO CHILDREN'S WORK**

9.1 We recognise the importance of responding to children's work, whether orally or in writing. At Orchard Primary School work is marked in while the child is learning or as soon after as is practical. We seek to encourage children by highlighting in pink – positive achievements.

This could include praise for use of a viable method even if the end result were incorrect. Green highlighter pens are used to identify errors and misconceptions. Stampers are used to record children's understanding in relation to their learning objectives. Written feedback in books is in response to the group's learning objective and identifies where children have misconceptions or their next steps of learning. Children should be given opportunities to respond to these comments and to correct mistakes.

- 9.2 Children are given the opportunity to respond to their own work against the learning intentions and the success criteria. In KS1 they do this using thumbs up and thumbs down. In KS2 they use green, amber or red coloured circles. Work is marked with S/S, I/S S to show the level of support, if any, the children was given in order to complete the work (see Marking Policy).

## 10. **TARGETS**

- 10.1 The children are set must, should or could targets in mathematics. These are kept in the front of their books or folders, In Year 1, they are recorded on the working wall and in the Foundation Stage, they are recorded on the children's individual target cards. These targets are based on the children's next steps of learning and are linked to the objectives being taught that week. Pitch and Expectation questions or teacher own devised questions could be used to decide if children have attained the targets. At the end of the week, the targets are assessed and stampers are used to show what targets have been achieved. The weekly evaluation sheet is completed giving a summary of the number and percentages of children achieving the target. These are kept with the Maths Planning Folder. The information gained could be used to determine if extra support and teaching is required for individuals or groups of children and to inform future planning.

## 11 **MONITORING/MODERATION**

- 11.1 Monitoring of the standards of children's work and the quality of teaching in mathematics is the responsibility of the Head Teacher and link governor, supported by the Maths Subject Leader. This is done through lesson observations, learning walks, monitoring of planning, pupil interviews and book analysis by SLT and the Maths Subject Leader. National Curriculum attainment recorded on "Classroom Monitor" is verified using test/book analysis.
- 11.2 The work of the subject leader also involves supporting colleagues in the teaching of Mathematics, being informed about current developments in the subject and providing a strategic lead and direction for the subject in the school.
- 11.3 A named member of the school's governing body is briefed to overview the teaching of Mathematics. This governor meets regularly with the mathematics subject leader to review progress.

## 12 **CONTRIBUTION OF MATHEMATICS TO TEACHING IN OTHER CURRICULUM AREAS**

### 12.1 English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening.

### 12.2 ICT

The effective use of ICT can enhance the teaching and learning of mathematics both within school and when used for homework activities, Eg when using “Education City” and “My Maths”, as long as it is used appropriately. When considering its use we take into account the following points:

- ICT should enhance good mathematics teaching. It should be used in lessons only if it supports good practice in teaching mathematics.
- Any decision about using ICT in a particular lesson or sequence of lessons must be directly related to the teaching and learning objectives for those lessons.
- ICT should be used if the teacher and/or the children can achieve something more effectively with it than without it.
- Useful suggestions as to integrating ICT into the school’s curriculum are given in the planning section of the Renewed Framework.

### 12.3 Science

Almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating and recording in tables and graphs. In science pupils will, for example, order numbers, including decimals, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.

### 12.4 Design & Technology

Measurements are often needed in Art and Design & Technology. Many patterns and constructions are based on spatial ideas and properties of shapes, including symmetry. Designs may need enlarging or reducing, introducing ideas of multiplication and ratio. When food is prepared a great deal of measurement occurs, including working out times and calculating cost; this may not be straightforward if only part of a packet of ingredients has been used.

### 12.5 History, Geography and Religious Education

In History and Geography children will collect data by counting and measuring and make use of measurements of many kinds. The study of maps includes the use of co-ordinates and ideas of angle, direction, position, scale and ratio. The pattern of the days of the week, the calendar and recurring annual festivals all have a mathematical basis. For older children

historical ideas require understanding of the passage of time, which can be illustrated on a time line, similar to the number line that they already know.

#### 12.6 Physical Education and Music

Athletic activities require measurement of height, distance and time, while ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games.

#### 12.7 Personal, Social and Health Education (PSHE) and Citizenship

Mathematics contributes to the teaching of Personal, Social and Health Education and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each others views.

Reviewed Autumn Term 2014

To be reviewed Autumn Term 2016