



Discovery Schools
Academy Trust

Woolden Hill

Core
Mathematics
Policy

February 2019

Established by:	Maths Subject Leaders	Approved Gov:	
Revised by:	Maths Subject Leaders	Last reviewed:	January 2019
		Next review due:	

This policy outlines the teaching, organisation and management of mathematics taught and learnt across Discovery Schools Academy Trust (DSAT).

At Woolden Hill Primary School we use the National Curriculum for Mathematics (2014) as the basis of our mathematics programme. We supplement this with the Affinity Teaching School Alliance & DSAT Calculations Policy and refer to relevant guidance from the NCETM (See Appendix of guidance and resources) and Maths Hubs.

Developing Mastery

We are committed to ensuring that all pupils achieve mastery in the key concepts of mathematics, appropriate for their age group, in order that they make genuine progress and avoid gaps in their understanding that provide barriers to learning as they move through education. Our Mathematics curriculum reflects a greater emphasis on mastery of the key skills of mathematics to ensure children have adequate time to develop their fluency and understanding before moving onto a new concept. Assessment for Learning, an emphasis on investigation, problem solving and the development of mathematical thinking and a rigorous approach to the development of teacher subject knowledge are therefore essential components of the DSAT approach to this subject.

AIMS AND PURPOSES OF MATHS

Children should:

- develop basic mathematical concepts and skills according to their ability;
- have a 'can do' attitude, demonstrating confidence, perseverance, enjoyment and curiosity for mathematics;
- become fluent mathematicians with a solid understanding of the concepts in mathematics;
- be mathematical thinkers, developing an ability to reason and problem solve;
- progress and develop clear and logical thought;
- learn to use and apply mathematical knowledge, skills and vocabulary in different contexts;
- learn that mathematics has meaning and relevance to their own lives.

We will:

- Have an expectation that all pupils are capable of achieving in mathematics.
- Provide a classroom culture where children are confident in taking risks.
- Plan carefully designed lessons that develop fluency, reasoning and problem solving for all strands of the Mathematics Curriculum.
- Assess regularly so that gaps in understanding can be addressed quickly and children who have a deep understanding can be challenged through rich and sophisticated problems.
- Provide children with the skills, vocabulary and confidence to become mathematical thinkers.
- Differentiate through precise questioning and by carefully choosing manipulatives and pictorial representations that help deepen procedural and conceptual knowledge together.
- Provide high quality verbal and written feedback.

- Continually self –reflect on our own teaching and look for ways to improve our own professional development such as sharing good practice within our school community, drawing on the expertise of others and researching ideas.
- Plan lessons that celebrate the use of mathematical ideas so that children have an interest and enjoyment of the subject that will remain within them beyond their time at Woolden Hill.

PLANNING, TEACHING AND MANAGEMENT

The Foundation Stage

Maths is taught as part of the Area of Learning designated as ‘Mathematics’ in the EYFS Curriculum. The EYFS Curriculum is made up of two strands: Numbers and Shape, space and measure. The children will receive some whole class and adult led maths teaching and they have access to independent child-initiated maths activities daily. Children are given opportunities to work on maths activities both indoors and outdoors. These activities are planned based on the main areas as outlined in the EYFS curriculum. EYFS staff also provide opportunities for the children to work on their maths targets both independently and as guided groups. As in the rest of the school, the Maths planned builds on previous learning and allows time for children to develop ‘mastery’ in the key areas of Mathematics without moving onto a new concept too quickly.

Planned whole class teaching or group work takes place every day. Maths resources are available in the environment, changing to ensure children are mastering skills and being challenged.

Key Stage 1 and 2

Planning

The New National Curriculum has several strands

- Number: number and place value, addition and subtraction, multiplication and division, fractions, percentages (Yr 5 & 6 only)
- Measure
- Geometry: properties of shape, position and direction
- Statistics (Year 2 onwards)
- Algebra (Yr 6 only)
- Ratio and Proportion (Yr 6 only)

Long term planning maps out coverage throughout the year and it is then adapted to meet the needs of the pupils. Each unit of learning is planned through the use of the White Rose Maths Hub Scheme of Learning and Maths No Problem resources. Lessons are usually planned on Flipcharts.

Teaching

In Key Stage 1 and 2 children usually have a daily mathematics session of approximately 45- 60 minutes. 1 lesson per week is focussed on the teaching of arithmetic/ times tables skills. Teachers in Key Stage 1 and 2 also plan and provide opportunities for children to use and apply maths knowledge and skills in other areas of the curriculum.

Following the mastery approach, children work on the same tasks and engage in common discussions. Differentiation is achieved through choice of manipulatives and visual representations, skillful questioning and adult support. Difficulties and misconceptions are identified through regular formative assessments and addressed with quick intervention.

At Woolden Hill:

- Learning questions are focussed on the use of precise mathematical vocabulary
- Success criteria with mathematical vocabulary
- All children will work towards the expectations of their year group and no child will be given activities relating to objectives beyond their own year group.
- Vocabulary and the learning journey are displayed on working walls
- Teachers model full sentences for answers given and encourage pupils to do the same
- Challenges and questioning are planned throughout lessons to deepen understanding
- Manipulatives are accessible to all children throughout the school and are included in lesson delivery
- Concrete, Pictorial and Abstract stages are used throughout a lesson
- Teacher's questioning encourages children to give reasons for their answers to develop their reasoning skills.

More Able pupils and those with Special Educational Needs (SEN)

Our school provides a fully inclusive maths curriculum where teaching and learning is differentiated appropriately to meet the needs of all learners with challenge for all.

SEN Provision

If a child has a specific difficulty relating to maths, they may be given extra time or additional support with a teacher or LSA to address their specific needs and to support and develop their maths knowledge and skills accordingly. PIVATs are used for some who may require a differentiated curriculum where they are working at a lower year groups objective, following guidance provided from the SENDCo or outside agencies.

More Able Provision

Where children are excelling in an area of maths, they will be given further opportunities to deepen their understanding and apply higher order thinking skills through questioning and carefully planned tasks. This includes opportunities for pupils to conjecture themselves and test their own ideas.

EAL Provision

Care is taken to diagnose when an error is caused by language proficiency or a mathematical difficulty. When language is the barrier to learning, mathematics is made 'clearer' and opportunities are provided to enable EAL pupils to engage with the learning and convey and develop their mathematical ability.

Intervention

Teachers plan for interventions for children in Key Stages 1 and 2. Class teachers use their knowledge of the children and various materials and resources to support children who are not working at age related expectations in maths. These interventions may take the form of pre-teaching, rapid intervention after a lesson and a specific planned intervention on provision maps. Interventions may be led by the class teacher or by an LSA supported and guided by the class teacher. These interventions provide short term targeted support to move the children's learning forward and enable these learners to reach their full potential and are carefully tracked and monitored.

ASSESSMENT

Class teachers are responsible for assessing individual children's attainment in maths in line with the school's Assessment and Recording policy. Progress is reported to parents termly.

Maths assessment happens in 2 forms:

- Formative – the day to day assessment that takes place continually and informs teacher's short-term planning e.g. work samples, observation notes, whole class feedback forms
- Summative – formal assessment that takes place every half term. White Rose Maths Hub tests and Rising Stars tests are used to assess all areas of maths. These results are used to inform teachers planning and identifying gaps in learning. Maths leaders also use these results to track progress through the year. Year 2 and Year 6 use past SAT papers in the same way.

The data from formative assessments is used to judge children's attainment at the end of each term or year.

Assessment records

Assessment records are kept by all class teachers. In the Foundation Stage teachers continually update children's 'Learning Journeys' with observations, photographs and work samples which details the children's progress in maths. Class teachers also keep more formal records directly relating to learning objectives and Early Learning Goals.

In Key Stage 1 and 2 teachers record test data every half term.

Assessment for Learning (AfL) in maths

Children are also expected to assess their own learning in maths. This can take different forms depending on the age and ability of the children. In the early stages of AfL, children will be expected to talk about their learning by identifying what they are good at and what they find hard and what they need to get better at. As children move through the

school they will begin to talk in more detail about their learning and areas for improvement.

In lessons, children are asked to reflect on their own learning journey and consider which stage they are at- developing, consolidating, mastering, mastered. This is in line with our teaching and learning policy. Working walls display the learning journey in maths in a visual, interactive form.

EXPECTATIONS

All pupils should be working at age related expectations for their year group.

By the end of Foundation Stage, most children, when assessed against the Early Learning Goals for Mathematics, will be judged as 'expected' this means that they have reached the level of development expected at the end of the EYFS. For example, they will:

- Count to 20.
- Count reliably at least 10 objects.
- Use 'more' and 'less' to compare two numbers.
- Estimate number of objects and check by counting.
- Recognise written numerals 1 to 9.
- Say one more/less (to 10).
- Add and subtract two small groups of objects (to 10).

By the end of Year 1 children are expected to achieve Age Appropriate Expectations or above. For example they will:

- Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- Count, read and write numbers to 100 in numerals
- Count in multiples of twos, fives and tens
- Given a number, identify one more and one less
- Read and write numbers from 1 to 20 in numerals and words.
- Represent and use number bonds and related subtraction facts within 20
- Add and subtract one-digit and two-digit numbers to 20, including zero

By the end of Year 2, teachers will use class work and SATs test results to make a level judgement about children's attainment. Children are expected to achieve Age Appropriate Expectations or above. For example they will:

- Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward
- Recognise the place value of each digit in a two-digit number (tens, ones)
- Compare and order numbers from 0 up to 100
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables

- Recognise odd and even numbers
- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - a two-digit number and ones
 - a two-digit number and tens
 - 3 one-digit numbers
- Find simple fractions, e.g. $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{10}$ of shapes & amounts.
- Tell and write the time to five minutes

By the end of Year 3, teachers will use class work and test results to make a level judgement about the children's attainment. Children are expected to achieve Age Appropriate Expectations or above. For example, they will:

- Count from 0 in multiples of 4, 8, 50 and 100
- Find 10 or 100 more or less than a given number
- Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
- Compare and order numbers up to 1000
- Read and write numbers up to 1000 in numerals and in words
- Add and subtract numbers mentally, including:
 - a three-digit number and ones
 - a three-digit number and tens
- Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- Add and subtract fractions with the same denominator within one whole
- Know the number of seconds in a minute and the number of days in each month, year and leap year

By the end of Year 4, teachers will use class work and test results to make a level judgement about the children's attainment. Children are expected to achieve Age Appropriate Expectations or above. For example, they will:

- Count in multiples of 6, 7, 9, 25 and 1000
- Find 1000 more or less than a given number
- Count backwards through zero to include negative numbers
- Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- Order and compare numbers beyond 1000
- Solve number and practical problems that involve all of the above and with increasingly large positive numbers
- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- Recall multiplication and division facts for multiplication tables up to 12×12
- Add and subtract fractions with the same denominator
- Read, write and convert time between analogue and digital 12 and 24-hour clocks

By the end of Year 5, teachers will use class work and test results to make a level judgement about the children's attainment. Children are expected to achieve Age Appropriate Expectations or above. For example, they will:

- Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
- Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero
- Add and subtract whole numbers with 4 or more digits
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $2/5 + 4/5 = 6/5 = 11/5$)
- Convert between different units of metric measure including time

By the end of Year 6, children will take their statutory KS2 test. Children are expected to achieve Age Appropriate Expectations or above. For example, they will:

- Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
- Add, subtract, multiply and divide numbers with up to 4 digits using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division
- Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
- Express missing number problems algebraically
- Convert between miles and kilometres

MONITORING AND EVALUATION

The policy will be monitored and reviewed in line with the school's monitoring and review practices. The work undertaken will be monitored and evaluated by the curriculum leader with responsibility for Maths. This will be in line with the school's monitoring and evaluation practice/ policy. Monitoring and evaluation will be carried out across the academy trust to ensure rigorous moderation takes place.