

Altham St. James CE Primary School

Maths Policy

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Altham St. James CE Primary School

Policy for Mathematics

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POLICY FOR MATHEMATICS/NUMERACY

1. INTRODUCTION

Mathematics equips pupils with the 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. It is integral to all aspects of life and with this in mind, we endeavour to ensure that children develop a healthy and enthusiastic attitude towards mathematics that will stay with them.

The Mathematics National Curriculum 2014 describes what must be taught in each key stage. This ensures continuity and progression in the teaching of mathematics. In early years, the curriculum is guided by the Early Learning Goals.

2. RATIONALE

All school policies form a corporate, public and accountable statement of intent. As a primary school, it is very important to create an agreed whole school approach of which staff, children, parents, governors and other agencies have a clear understanding. This policy is the formal statement of intent for mathematics. It reflects the essential part that mathematics plays in the education of our pupils. It is important that a positive attitude towards mathematics is encouraged amongst all our pupils in order to foster self-confidence and a sense of achievement. The policy also facilitates how we, as a school, meet the legal requirements of recent Education Acts and National Curriculum Requirements.

3. SCOPE

This statement of policy relates to all pupils, staff, parents and governors of Altham St. James CE Primary School. The age range of pupils from 4-11 must be acknowledged in the creation of a policy and the development of the mathematics curriculum.

4. PRINCIPLES

The principles of Altham St. James CE Primary School for mathematics are:

- policy and provision are evaluated and reviewed regularly
- resources of time, people and equipment are planned, budgeted for and detailed when appropriate in the SDP.
- the governing body of Altham St. James CE Primary School discharge their statutory responsibility with regard to mathematics
- cross curricular links will be highlighted where appropriate
- planning of mathematics ensures continuity and progression across all year groups and key stages

5. AIMS

5.1 General

Although relating specifically to mathematics our aims for the subject are also in line with the school's general aims.

We aim to provide the pupils with a mathematics curriculum, which will produce individuals who are literate, creative, independent, inquisitive, enquiring and confident. We also aim to provide a stimulating environment and adequate resources so that pupils can develop their mathematical skills to their full potential.

5.2 Specific

Our pupils should:

- have a sense of the size of a number and where it fits into the number system
- know by heart number facts such as number bonds, multiplication tables, doubles and halves
- use what they know by heart to figure out numbers mentally
- calculate accurately and efficiently, both mentally and in writing and paper, drawing on a range of calculation strategies
- make sense of number problems, including non routine problems, and recognise the operations needed to solve them
- explain their methods and reasoning using correct mathematical terms
- judge whether their answers are reasonable and have strategies for checking them where necessary
- suggest suitable units for measuring and make sensible estimates of measurements
- explain and make predictions from the numbers in graphs, diagrams, charts and tables
- develop spatial awareness and an understanding of the properties of 2D and 3D shapes

6. PROVISION

Pupils are provided with a variety of opportunities to develop and extend their mathematical skills in and across each phase of education.

Lessons usually start with an opportunity to practise arithmetic skills previously taught or revisit a concept. This will be followed by the main teaching activity. Lessons include the opportunity to apply reasoning skills.

The teaching of mathematics at Altham St. James CE Primary School provides opportunities for:

- whole class teaching
- group work
- paired work
- individual work

Pupils engage in:

- the development of mental strategies
- learning by rote
- written methods
- practical work
- investigational work

- problem solving
- mathematical discussion
- consolidation of basic skills and number facts

At Altham St. James Primary School, we recognise the importance of establishing a secure foundation in mental calculation and recall of number facts. Emphasis is put on learning number bonds and multiplication tables (see Appendix 1)

We use the vocabulary section from the Lancashire support-planning disc when planning to help determine the appropriate terminology to use in our teaching and children are expected to use it in their verbal and written explanations.

Mathematics contributes to many subjects and it is important the children be given opportunities to apply and use mathematics in real contexts.

'It is important that time is found in other subjects for pupils to develop their Numeracy Skills, eg. there should be regular, carefully planned opportunities for measuring in science and technology, for the consideration of properties of shape and geometric patterns in technology and art, and for the collection and presentation of data in history and geography' (NNS).

We endeavour at all times to set work that is challenging, motivating and encourages the pupils to talk about what they have been doing.

6.1 Early Years

See Appendix 2, Curriculum Guidance for the Foundation Stage (Early Learning Goals) and Development Matters.

6.2 Key Stage 1

See Appendix 2 and Mathematics National Curriculum 2014 Key Stage 1 programme of study
(supported by the Lancashire Mathematics Team's medium term planning)

6.3 Key Stage 2

See Appendix 2 and Mathematics National Curriculum 2014 Lower Key Stage 2 programme of study
(supported by the Lancashire Mathematics Team's medium term planning)

See Appendix 2 and Mathematics National Curriculum 2014 Upper Key Stage 2 programme of study
(supported by the Lancashire Mathematics Team's medium term planning)

7. ASSESSMENT

Assessment is regarded as an integral part of teaching and learning and is a continuous process. It is the responsibility of the class teacher to assess all pupils in their class.

In our school, we are continually assessing our pupils. We see assessment as an integral part of the teaching process and strive to make our assessment purposeful, allowing us to match the correct level of work to the needs of the pupils, thus benefiting the pupils and ensuring progress.

Information for assessment will be gathered in various ways: by talking to the children, observing their work, marking their work and the use of end of term tests. Whenever possible, we aim to give immediate feedback.

8. ROLE OF SUBJECT LEADER

The Mathematics Subject Leader is responsible for leading mathematics through the school. This includes:

- ensuring continuity and progression from year group to year group
- providing all members of staff with guidelines and a scheme of work to show how aims are to be achieved and how the variety of all aspects of mathematics is to be taught
- advising on in-service training to staff where appropriate. This will be in line with the needs identified in the Development Plan and within the confines of the school budget
- advising and supporting colleagues in the implementation and assessment of mathematics throughout the school
- assisting with requisition and maintenance of resources required for the teaching of mathematics. Again this will be within the confines of the school budget

9. ROLE OF CLASS TEACHER

- to ensure progression in the acquisition of mathematical skills with due regard to the Mathematics National Curriculum 2014 and the school's calculations policy
- to develop and update skills, knowledge and understanding of mathematics
- to identify inset needs in mathematics and take advantage of training opportunities
- to keep appropriate on-going records
- to plan effectively for mathematics, liaising with the subject leader when necessary.
- to inform parents of pupils' progress, achievements and attainment.
- To provide an environment that supports learning (Appendix 3)

10. EQUAL OPPORTUNITIES

We incorporate mathematics into a wide range of cross-curricular subjects and seek to take advantage of multicultural aspects of mathematics eg. Islamic patterns in RE.

All children have equal access to the curriculum regardless of their gender. This is monitored by analysing pupil performance throughout the school to ensure that there is no disparity between groups.

11. PARENTAL INVOLVEMENT

We encourage parents to be involved by:

- inviting them into school twice yearly to discuss the progress of their child
- providing them with a yearly written report
- inviting parents to curriculum evenings or circulating information via termly newsletters

12. GOVERNING BODY

We have an identified governor for mathematics who reviews mathematics action plans and data.

The mathematics governor receives a written mathematics report each term and visits regularly to talk with the subject leader and review children's work.

The mathematics governor reports to the curriculum committee / governing body on a regular basis.

APPENDIX 1:

Number bonds to 20

$1 + 19$, $2 + 18$, $3 + 17$, $4 + 16$, $5 + 15$

Number bonds in reception

Children start to learn about number bonds in the Foundation stage, when they might be given a number, such as 5, and then asked to select two groups of objects that will add up to that number. They will have instant recall of number bonds to 5 and beyond.

Number bonds in Year 1

Children are expected to know number bonds to 10 and number bonds to 20.

Number bonds in Year 2

Children by now need to be very confident with their number bonds to 20. They need to be able to work out number bonds to 100. They also need to be confident with the corresponding subtraction facts (for example $20 - 13 = 7$).

In **Key Stage 2**, children move onto being able to work out number bonds to 1000 (e.g. 450 and 550) and number bonds to 1 (e.g. 0.8 and 0.2).

Teachers teach number bonds in a variety of ways. When learning number bonds to 5 or 10 in Key Stage 1 it is always good to use pictorial representation, so a teacher might show rows of blocks shaded like this to make the concept clear:



It is also a good idea to show children the connection between number bonds to ten, twenty and one hundred, for example:

$$1 + 9 = 10 \quad 1 + 19 = 20 \quad 10 + 90 = 100$$

APPENDIX 2:

Reception

- Counting up to 20 everyday objects
- Saying and using the number names in order
- Finding one more or less than a number up to 20
- Children start to learn about number bonds when they might be given a number, such as 5, and then asked to select two groups of objects that will add up to that number.
- Instant recall of number bonds to 5 and to 10 for those who are able.
- Starting to use the language of addition and subtraction; counting on and back
- Sorting and matching objects and shapes
- Comparing quantities and shapes
- Finding and recreating simple patterns
- Beginning to do some simple measuring, comparing lengths and quantities
- Talking about things like size, weight, distance, time and money to develop correct vocabulary

Year 1

- Reading and writing numerals to at least 100 in numerals and in words
- Finding one more or less than any number
- Recognise the place value of each digit in a two-digit number
- Children are expected to know number bonds to 10 and number bonds to 20 (instant recall)
- Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=)
- Recognising, finding, naming and writing simple fractions of a length, shape, set of objects or quantity
- Measure and record the length, height, weight or volume of different objects
- Recognise and talk about the value of different denominations of coins and notes
- Tell the time to the hour and half past the hour, drawing the hands on a clock face to show these times
- Ordering and arranging objects in patterns and sequences
- Recognise and name common 2D and 3D shapes including squares, circles and pyramids

- Describing position, direction and movement

Year 2

- Comparing and ordering numbers from 0 to 100, using $<$, $>$ and $=$ signs
- Counting in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward
- Recognise the place value of each digit in a three-digit number
- Using place value and number facts to solve problems
- Children by now need to be very confident (instant recall) with their number bonds to 20 (addition and subtraction facts). They need to be able to work out number bonds to 100. They also need to be confident with the corresponding subtraction facts (for example: $20 - 13 = 7$)
- Adding and subtracting two-digit numbers using mental and written methods
- Recalling and using multiplication and division facts for the 2, 5 and 10 multiplication tables, and recognising odd and even numbers
- Solving addition and subtraction money problems, using symbols for pounds and pence
- Telling and writing the time to the nearest five minutes
- Identifying, describing, comparing and sorting 2D and 3D shapes
- Interpreting and constructing pictograms, tally charts, block diagrams and simple tables

Year 3 & 4

- Using and understanding numbers up to 1000 (Y3) 10000 (Y4)
- Recognise the place value of each digit in a four-digit number/ five digit number (and beyond)
- Identify the value of each digit to one (Y3) two (Y4) decimal places
- children move onto being able to work out number bonds to 1000 (e.g. 450 and 550) and number bonds to 1 (e.g. 0.8 and 0.2)
- Counting up in multiples of 10, 25, 50 100 and 1000
- Using negative, as well as positive, numbers
- Adding, subtracting, multiplying and dividing mentally and using formal written calculation methods
- Remembering times tables up to 12×12
- Solving maths problems
- Exploring fractions and decimals
- Analysing and comparing a range of 2D and 3D shapes and their properties

- Telling the time accurately, including using Roman numerals, and calculating with time
- Calculating with measurements, including calculating perimeter and area
- Converting measurements (e.g. from centimetres to metres)
- Interpreting and presenting data using pictograms, tables and bar graphs.

Year 5 & 6

- Reading, writing, ordering and comparing numbers up to 10,000,000 and determining the value of each digit
- Rounding whole numbers and beginning to use negative numbers
- Reading Roman numerals to 1000 and recognising years written in Roman numerals
- Adding and subtracting numbers with more than 4 digits, using formal written methods
- Multiplying and dividing numbers with up to 4 digits by two-digit whole numbers, using long multiplication and division
- Identifying common factors, common multiples and prime numbers
- Using the order of operations and solving multi-step problems
- Comparing, ordering and simplifying fractions
- Calculating with fractions and associating fractions with decimals and percentages
- Solving problems involving ratio and proportion
- Using simple formulae and expressing simple problems algebraically
- Converting between units of measure and calculating with measurements, including time, area and volume
- Drawing 2D shapes and recognising, describing and building simple 3D shapes
- Drawing, identifying and measuring angles
- Using tables, pie charts and line graphs
- Calculating and interpreting the mean as an average

APPENDIX 3: Non-negotiables

1. All classes to display a place value chart
2. Infant class to display number bonds
3. All classes to display a large 100 square on the wall.
4. All classes from Year 2 to Year 6 to display a large multiplication square on the wall.
5. All classes to display a 'Calculations Wall, showing what calculations in a particular year group should look like (please refer to the calculations policy when making a 'Calculations Wall').
6. Emphasis/daily practise should be given to number work, e.g. Place value and partitioning, adding/subtracting in 1s, 10s and 100s, recall of multiplication and division facts using a multiplication square.
7. When children are ready to start drawing their own number lines in their maths books, these should be neat and drawn with a ruler.
8. One digit per square should be used for more formal, vertical calculations as detailed in the calculations policy.