



Pendle Community High School & College **Mathematics Policy**

Document Purpose

This policy reflects the school values and philosophy in relation to the teaching and learning of Mathematics. The policy draws together National Curriculum guidelines and statutory requirements for Key Stage 3 (and where appropriate KS1 & KS2) & accreditation content for Key Stage 4, as well as promoting the Spiritual, Moral, Social and Cultural (SMSC) development which includes British Values.

The policy seeks to address the individual learning needs of our pupils and sets out a framework within which teaching staff can operate.

For guidance on planning, teaching and assessment this policy should be read in conjunction with the Scheme(s) of Learning for Mathematics which sets out in detail what pupils in different Key Stages and in different ability ranges will be taught.

This policy has been approved by the Governing Body following consultation with the wider teaching staff and is subject to regular annual reviews by the staff team and Governors.

Audience

This document is intended for all staff and other stakeholders with classroom responsibilities, school governors, parents, the Local Authority and Ofsted. A copy of this policy is made available for all staff within the curriculum policy file on the school network. A copy of this policy is also available to parents via the school website.

Overview and Aims (Intent)

At Pendle Community High School and College, the Mathematics curriculum covers the key areas of Number, Geometry, Measurement and Statistics and is designed to develop pupils' abilities in mathematics and to recognise its place in everyday life. Number and its application is integral to all strands and is identified throughout the curriculum.

A high-quality mathematics education provides a foundation for understanding the world, develops the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

A sound knowledge of functional mathematics will support pupils in their future pathways and preparation for a more independent life e.g. organising daily routines, transport timetables, use of money and different methods of payment, accuracy of weighing and measuring in cooking etc.

At Pendle Community High School and College, the Mathematics curriculum aims to ensure that all pupils:

- become more **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 more rapidly and accurately from their individual starting points
- begin to **reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

- begin to **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.

In addition, Mathematics aims to ensure that all learners get opportunities

- to develop their understanding of Mathematics through practical experience, exploration and enquiry.
- to work at a level matched to their ability using a variety of suitable materials within their Key Stage or from an earlier one if deemed appropriate Pupils who grasp concepts rapidly should be challenged through being given more complex problems whilst those who are not sufficiently fluent with earlier material should consolidate their understanding, before moving on.
- to show awareness of changes in shape, position or quantity and be aware of cause and effect or anticipation in familiar mathematical activities.
- to experience the vocabulary of Mathematics leading to reading and spelling mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge.

The Mathematics curriculum is broad and balanced with cross curricular links, sets high expectations and is designed to provide enjoyment and appropriate challenge for all pupils.

Cultural Capital

At Pendle Community High School and College, the Mathematics curriculum has been designed to follow and meet the needs of the National Curriculum Programmes of Study as well as supporting the 4 key components of our curriculum intent; being safe, having positive health and wellbeing, gaining independence and improving communication including social interaction. Through these we set out the knowledge, skills and understanding that our pupils of different abilities are expected to gain.

In addition, the Mathematics curriculum is supplemented with a range of activities designed to enrich the learning experience of all of our pupils, furthering their knowledge and understanding of the world around them and preparing them for life beyond school. These opportunities include but are not limited to:

- Explore the Mathematics applied in different cultures such as patterns, symmetry, tessellations and Islamic geometric patterns
- Maths clubs / Puzzle club
- Escape room projects
- Erasmus projects e.g. Maths is Everywhere, Make Every Step Count
- School trips / visits – exploring the functional side of mathematics i.e visits to the supermarket / bank
- Themed days and weeks i.e. Money week, number day
- participate in school and national competitions to encourage more positive attitudes towards mathematics
- Work place visits to explore the importance of maths
- Fundraising and charity events

Implementation

Mathematics at Pendle Community High School covers the 4 strands of Number, Geometry, Measurement and Statistics throughout the year but planned so that pupils can achieve depth and progression in their learning.

Existing knowledge is checked prior to the commencement of each topic ensuring that teaching is planned accordingly from the pupils' starting points identified through the assessment system and lessons are differentiated to ensure there is appropriate challenge for all learners.

Mathematics is delivered using a spiral curriculum approach, where learning is spread out over time and content is revisited repeatedly over the year and Key Stages. The use of number in all strands is central to the Mathematics curriculum. Topics are encountered with increasing complexity according to the learner's cognitive ability and new learning is built upon previous learning as highlighted in the schemes of learning which provide continuity, pace and challenge.

Independent learners are encouraged to be inquisitive, ask questions and work independently. The curriculum is designed to provide challenge and all activities will be appropriately matched for individual learning, as well as encouraging problem solving, mathematical reasoning and the discovery of patterns and sequences in the mathematical world.

Supported and experiential learners follow a thematic approach, where many areas of the curriculum are connected and integrated within a theme. These classes work in smaller groups whose learning is met primarily through experiences and activities which are multi-sensory and stimulate learning through kinaesthetic approaches and are supported through structure and routines. This curriculum is used to enhance early learning and development in pupils across school who present with sensory issues and those who learn best via a highly experiential, multi-sensory approach.

Mathematics is well resourced and specific resources are mapped to specific groups and topics to support effective teaching and learning. Concrete manipulatives and pictorial representations are used to support conceptual understanding and to make links across topics.

Pupils will be taught to:

- develop confidence and mental fluency with whole numbers, counting and number facts extending to the four operations and the concept of place value.
- develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers and attempt increasingly complex problems.
- begin to make connections between multiplication and division and with fractions, decimals, percentages and ratio.
- Develop their ability to recognise, describe, draw, compare and sort different shapes extending to classifying shapes with increasingly complex geometric properties and to learn the vocabulary they need to describe them
- begin to compare different quantities such as length, mass, capacity/volume, time and money and use measuring instruments with increasing accuracy whilst making connections between measure and number.

- read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge.
- begin to reason mathematically by following a line of enquiry, consider patterns and relationships and develop an argument or proof using mathematical language.
- begin to solve problems by applying their mathematics to a variety of problems, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

The National Curriculum for Mathematics reflects the importance of spoken language in learners' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that learners hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. Pupils will be assisted in making their thinking clear to themselves as and supported to remedy any misconceptions.

In KS4, Mathematics continues to follow the above guidance but follows the AQA accreditation routes for Entry Level and Unit Awards alongside GCSE, where appropriate.

Meeting the needs of all pupils within Mathematics

Pupils at Pendle Community High School & College have Moderate, Severe and / or Profound and Multiple Learning Difficulties including other associated difficulties such as Autism, Multi-Sensory, Visual & Hearing Impairment(s). All pupils access a wide range of learning opportunities within Mathematics e.g. pupils with the most complex learning needs teaching and learning is based upon an immersive, multi-sensory and thematic approach.

Time Allocation / Cross-Curricular Links

The subject of Mathematics is allocated the appropriate amount of time, taking into account NC guidance, to provide all learners with a broad and balanced curriculum which is appropriate for their needs. For some pupils with more profound and complex needs the breadth and balance of the curriculum is addressed through a thematic approach and/ or the engagement assessment alongside personalised timetables. Maths is a creative and highly interconnected subject, which is essential to everyday life and necessary for most forms of employment.

This subject affords opportunities to link to other curriculum areas such as:

Literacy	Reading and spelling of mathematical vocabulary and numbers, sequencing a story, labelling items, sorting and matching symbols, following instructional text, comparisons
Geography	Daily weather charts, Surveys on origin of items, map reading and co-ordinates in town planning, use of thematic data when comparing and contrasting countries, sorting and matching symbols
Digital Literacy	Calculators, programming roamers and bee bots, use of equipment, interactive whiteboard puzzles, use of spreadsheet charts for data presentation, ordering within algorithms, using counters within a loop, using timers within a program, organising folders, flowcharts

Cooking	Measuring ingredients, temperature, simple fractions, expiration dates and costing of ingredients, estimating shape and size, following a recipe, exploring data, cooking times, sorting plants from animals
Science	Measuring liquids, calorific value of food, spacing of seeds when planting, measuring growth of plants, use of dibbers, comparing temperature, length of incubation, simple fractions and using measuring cylinders
History	Placing items/ events in chronological order, Roman numerals, dates, age, duration of events, time between different periods, vocabulary linked to time
Careers/ Voc Ed	Planning a budget, understanding wages, identifying coins, practical and real-life money exercises, reading timetables, sorting exercises, matching and pairing, memory games
PSHE	Surveys on healthy eating. sequencing the stages of development, charities and fund raising. Recognising British coins and notes, role play banks and shops exchanging coins for items. Exploring the cost of items and simple budgets, sequencing empty bottles of alcohol by alcohol strength, classifying drugs into Class A, B, C, exploring the price of cigarettes/ alcohol and illegal drugs and how addiction can lead to financial loss amongst other things. Dangers of gambling; look at betting odds /probability of winning etc
PE	Timed activities, distances, positional vocabulary, measuring in non-standard units, dimensions, colours and shapes in apparatus
Art	patterns and tessellations, sequencing and mixing colours and shapes
RE	geometrical patterns and recognising shapes within buildings, specific religious dates/ months

Impact

As a pupil progresses through the school, they develop an understanding and fluency in mathematics. Skills and knowledge taught in Mathematics are transferable and support pupils to do more and engage more in other curriculum areas. Teachers have high expectations and evidence of this is demonstrated in progress data and KS4 and KS5 accreditation results. Impact is also recognised in pupils' increased confidence and accuracy in answering questions, application of knowledge to solve a range of increasingly complex problems, use of correct mathematical vocabulary and ability to recognise connections in both a cross curricular and real-life context.

Pupils further develop their abilities in the 4 key components of the curriculum as well as improving their mathematical reasoning and problem-solving skills. Pupils will begin to recognise that the use of number and its application is essential to daily living. The depth of knowledge that pupils will attain will vary but all will demonstrate progress from their individual starting points.

Pupils will have also learnt about careers and related work opportunities that are accessible for them in the local and wider community. This is enhanced by educational visits which provide opportunities for further relevant and contextualised learning.

Assessment, Recording and Feedback

Teachers record progression with evidence and levels of mastery through the school's online data recording system which allows all teachers access to cross curricular targets from other subjects. Staff have a good knowledge of the strengths and areas for development of individual pupils. From this, accurate judgements can be discerned to ensure targets are sufficiently challenging to meet staff's high expectations through:

- Continuous Teacher assessment of small step targets which are related to previous National curriculum and P scales descriptors
- External assessment leading to nationally recognised accreditation.
- The monitoring and evaluation of Individual Education Plans (IEPs) and individual objectives, target planning and recording.

In addition, summative information can be found through:

- End of Key Stage 4 & 5 Record of Achievements and accreditation (AQA and NCFE pathways respectively)
- the Annual Review of a learner's Education, Health & Care Plan.
- the annual End of Year Report.

Additional supporting comments can be gathered through:

- Regular parents' evenings.
- Comments and input from parents and other professionals.

Annotation and Feedback

Pupil work (be it digital or physical form) should be named, dated and annotated by staff. This annotation should include achievements, level of independence and any staff input. This is done in accordance with the annotation & marking policy and will inform future lessons and provide evidence towards pupil assessment progress on Onwards and Upwards.

Verbal feedback is provided constantly by staff to support and allow the pupil to gauge their progress and success immediately. This allows pupils to learn from errors/ misconceptions and to make appropriate adjustments in their learning. Verbal feedback must be appropriate to the level and understanding of the learner. Staff regularly inform the teacher as to the level of independence and mastery of targets throughout the lesson and all these contribute to supporting the staff team and teacher to fully monitor, evaluate and record pupils' progress

Role of the Subject Leader

The subject leader's responsibilities are to:

- ensure a high profile of the subject in both the independent curriculum and the thematic approach
- ensure a full range of relevant and effective resources are available to enhance and support learning and for providing a regularly updated audit of resources planned through the annual Subject Development Planning cycle and expenditure evaluated as part of that process.
- model the teaching of Maths
- ensure progression of the key knowledge and skills identified within each unit and that these are integral to the programme of study and relevant to each child's start and end

points.

- monitor data, books and ensure that key knowledge is evidenced in outcomes, alongside and as supported, by SLT
- monitor planning and oversee the teaching of Maths
- lead further improvement in and development of the subject as informed by effective subject audits and colleague feedback
- ensure that the Maths curriculum has a positive effect on all pupils with SEND
- ensure that the Maths curriculum takes account of the school's curriculum drivers which promote independence, communication, being safe and positive physical and mental health & wellbeing.
- ensure that the curriculum takes account of the school's context and promotes children's pride in the local area and, where possible provides access to positive role models from the local area to enhance the Maths curriculum
- ensure that approaches are informed by and in line with current identified good practice and pedagogy; to network and maintain existing links with clusters or individuals with specialist expertise, and take advantage of regular opportunities for professional development to enrich and improve teaching and learning in Maths
- have a general responsibility for LA and Schools Safety Policies within their subject area and be directly responsible to the headteacher for the application of all health, safety and welfare measures and procedures within their own department/ area of work. E.g. conducting risk assessments for the subject and associated educational visits.

Appendices:

- 1. Subject Maps for Key Stages 3 & 4**
- 2. Schemes of Learning**

Links with other policies

- **Curriculum Policy (2021)**
- **Calculation Policy (2022)**
- **Annotation and Marking policy (2022)**
- **Autism Policy (2021)**
- **Intensive Interaction Policy (2021)**
- **AAC Policy (2021)**
- **Total Communication Policy (2021)**
- **Online Safety Policy (2021)**

This is not an exclusive list of policies and should not indicate to the reader that there are no other policies relevant to the understanding of best practice within our learning community.

Policy redrafted July 2022

Policy approved by staff
Policy approved by governors

Review date August 2023

Signed  _____

(Chair of Governors)

Signed  _____

(Head teacher)