
St. Mary's CE Academy

'Excellence through faith & learning'



Maths

Policy

*"I have come that they may have life,
and have it to the full."*

John 10:10

Reviewed: Spring 2020
Approved by Governors: Summer 2020
Date of next review: Summer 2022

Maths Policy



Context and Philosophy:

At St. Mary's we provide a welcoming, safe and happy school where everyone is respected and listened to; a school where we take pride in ourselves and our achievements, enabling children to become confident and successful learners. We aim to rise above the ordinary and promote excellence by providing a positive, inclusive environment for learning and growth. Inspired by our faith in Christ, and together with our parents, carers, churches and communities, we aim for each person to reach their full potential in body, mind, heart and spirit. We work as a team, in partnership with all members of the school community, to offer a high quality, stimulating, safe and innovative learning environment which values and supports all children to achieve their potential. We nurture children who understand and are able to adapt positively as active citizens, to the diverse world in which they live, both now and in the future and grow as people. Our high standards of teaching and personalised learning are set within a broad, balanced and creative curriculum. A curriculum which is intended to prepare our learners to make a positive contribution towards society and enjoy future success – School Vision.

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.

Rationale:

This policy describes our values and philosophy in relation to meeting the needs of all mathematical learners at St Mary's. It outlines the framework within which all staff work and gives guidance on planning, teaching and assessment. It is designed to describe how the school intends to meet the needs of mathematics learners of all ages.

In the first instance this will be through working within the Foundation Stage Curriculum using the Early Learning Goals. From Y1 to Y6 statutory requirements of the National Curriculum in Mathematics will be met by fully implementing the New National Curriculum objectives through the use of the White Rose Maths Hub Mastery planning documents.

The policy is intended to be read in conjunction with the calculation policy which illustrates strategies and methods outlined in the national curriculum and that are taught from Reception to year 6. It is also important to read the Foundation Curriculum Framework which highlights the Early Learning Goals and the guide of progression in the Reception year.

Mathematics is a broad structure that provides a way of viewing and understanding the world. Through the use of Mathematics, information can be:

- organised
- described
- communicated
- manipulated
- explained
- questioned
- predicted

Mathematics should be taught across the curriculum to develop pupils' mathematical fluency. Confidence in numeracy and other mathematical skills is a precondition of success across the national curriculum, which we hope to achieve at St Mary's.

Aims

St Mary's Academy, Walkley will endeavour to provide the highest possible quality of mathematical education.

All children will be taught to develop their mathematical skills to the best of their ability. This school will aim to provide a high standard of mathematical education and will promote knowledge, skills and understanding at all levels. The target is for all children to reach their age related expectations in numeracy to prepare them for the world around them.

The school will offer a caring, supportive environment to enable the children to reach their potential as mathematicians from the educational provision available.

In order to achieve this, our aims as teachers are:

- ✓ to encourage an enthusiastic and inquisitive attitude to mathematics
- ✓ to foster high standards of achievement in mathematics
- ✓ to develop pupils' numeracy and mathematical fluency, reasoning and problem solving in all subjects so that they understand and appreciate the importance of mathematics.
- ✓ to teach children to apply arithmetic fluently to problems, understand and use measures, make estimates and sense check their work.
- ✓ to enable children to apply their geometric and algebraic understanding, and relate their understanding of probability to the notions of risk and uncertainty.
- ✓ to help children understand the cycle of collecting, presenting and analysing data.
- ✓ to teach children to apply their mathematics to both routine and non-routine problems, including breaking down more complex problems into a series of simpler steps.
- ✓ to equip children with strategies to enable them to apply mathematics to real and unfamiliar situations within and beyond the classroom
- ✓ to develop an appreciation of the intrinsic value and fascination of mathematics as well as its usefulness in life
- ✓ to be fluent mentally at basic 4 operation number sentences

- ✓ Thus children will be able-
- ✓ to develop a positive and confident attitude to mathematics
- ✓ to make an active contribution to their own learning, by developing the skills of independence and enquiry
- ✓ to become confident and competent working with mathematics
- ✓ to develop an understanding of the ways in which information is gathered and presented
- ✓ to become thinkers and problem solvers
- ✓ to develop a clear understanding of the language of mathematics
- ✓ to develop logical thinking and reasoning, enabling them to record work clearly and in a variety of ways
- ✓ to develop the skills, knowledge and understanding needed in daily life

Objectives

At St Mary's Academy, Walkley, our aim is that in Maths, children:

- ✓ 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.

The national curriculum states 'Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas.' Therefore, it is organised into distinct domains. However, pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

These domains for KS1 are

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions
- Measures
- Geometry: properties of shape
- Geometry: position and direction
- Statistics (Year 2)

These domains for KS2 are

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions (including decimals and percentages)
- Ratio and proportion (Year 6)
- Measures
- Geometry: properties of shape
- Geometry: position and direction
- Statistics
- Algebra (Year 6)

The distinct domains highlight the important areas of mathematics children need to learn to make effective progress.

Through combining the national curriculum aims and the Math hub principles our objectives are

- ✓ A dedicated daily mathematics lesson is planned in each class, which will last for an hour KS1 and KS2. In the Foundation Stage there will be maths taught every day for 20-30minutes followed by 1 or 2 focused smaller groups, alongside opportunities for mathematical activities daily through continuous provision.
- ✓ Lessons are well structured, lively and delivered at a good pace.
- ✓ Lesson are structured to embed mathematical understanding through concrete, pictorial and abstract representation.
- ✓ Variation will be used to broaden the children's exposure to the learning objectives in a wide range of context to ensure deeper understanding of concepts.
- ✓ The foundations of mental calculation and recall of number facts are established thoroughly through daily starters (Flashback 4) which consolidate mental recall and informal/written calculations and revisits information the children have previously learned.
- ✓ Teaching, questioning and level of support is differentiated children so that the children are all working towards the same learning objective appropriate to their age group.
- ✓ All children will be exposed to challenge through tasks and questioning including further mastery standard problem solving activities for gifted and talent pupils.
- ✓ Time is given in other subjects for pupils to develop and apply their mathematical skills. Opportunities in Science are evident through investigations and presenting data.
- ✓ Children will actively take part and are enthusiastic during their maths lessons and will develop an appropriate mathematical vocabulary as modelled by the teachers using guidance from the vocabulary specified in the national curriculum and year specific learning passports.

Teaching and Learning Strategies

- ✓ The children are taught in discrete year groups.
- ✓ Differentiation is provided with targeted, positive support to help those who have difficulties with mathematics, as well as those who are higher achievers.

- ✓ In line with the aims of the NC2014, differentiation has now moved to focus on all children achieving the same learning outcome and the differentiation is the way that different groups of children are supported to achieve this.
- ✓ Work is carried out using a balance of individual, paired and group work.
- ✓ Teachers demonstrate, explain and illustrate mathematical ideas to fully involve pupils and maintain their interest through appropriately demanding work.
- ✓ Teachers use and expect pupils to use correct mathematical notation and vocabulary.
- ✓ Mathematical errors and misconceptions are dealt with as they are identified in a positive and supportive way, teaching what is right and what is not right.
- ✓ The emphasis on pupils' learning begins with practical examples leading onto informal jottings and mental strategies, and finally to formal representations as laid out for year groups in the calculation policy
- ✓ Children are given a variety of mathematical approaches to solving problems. They are encouraged to develop their own mathematical strategies as well as learning standard methods.
- ✓ We recognise and help to develop the children's abilities to select methods for problem solving mentally, recognising that these may differ from those used to solve pencil and paper problems.
- ✓ Pupils are expected to present work carefully. Work in maths books is headed with a success criteria that states the learning objective and steps to success. This is marked by the teacher or TA at the end of each lesson (sometimes SC may stretch over a couple of days- depending on the topic being taught).
- ✓ Children also assess their learning with a learning score before and after learning takes place and peer assessment is used sometimes as well. There are challenges at the end of each SC linked to the learning for each child to complete as next steps.
- ✓ The children are expected to gain a wide range of experiences with a variety of materials including IT.
- ✓ A high priority will be placed on children reasoning and explaining their strategies.
- ✓ Homework for all pupils is set in accordance with the Homework Policy.
- ✓ Weekly times table/arithmetic tests are encouraged.

Curriculum and Planning

The LTP is taken from the White Rose maths hub overviews and their lesson overviews are used to inform MTP. The LTP is used as a guidance tool in order to pace out coverage of the curriculum throughout the year. Teachers are encouraged to use professional discretion when deciding on how long is needed on particular curriculum area whilst ensuring all objectives are covered by the end of the academic year.

Through the use of daily Flashback 4, topics are being revisited throughout the year for children to recap on prior learning.

Short term planning is used weekly and SC for each lessons are developed. A weekly overview of learning objectives is emailed to the Head of School weekly.

Books are scrutinised by SLT and Maths lead throughout the term and feedback is provided each half term.

**Our Curriculum for
Maths – Long Term Plan of Topics**

		FS					
		Autumn I	Autumn II	Spring I	Spring II	Summer I	Summer II
Year 1	Topic Focus	Development Matters Arithmetic: Numbers Mathematics – Shape, Space and Measures					
	Topic Focus	<ul style="list-style-type: none"> Number: Place Value (within 10) – 4 weeks Number: Addition and Subtraction (within 10) – 4 weeks Geometry: Shape – 1 week Number: Place Value (within 20) – 2 weeks 	<ul style="list-style-type: none"> Number: Addition and Subtraction (within 20) – 4 weeks Number: Place Value (within 50) – 3 weeks (Multiples of 2, 5, 10 to be included) Measurement: Length and height – 2 weeks Measurement: Weight and Volume – 2 weeks 	<ul style="list-style-type: none"> Number: Multiplication and division (reinforce multiples of 2, 5, 10 to be included) – 3 weeks Number: Fractions – 2 weeks Geometry: position and direction – 1 week Number: Place Value (within 100) – 2 weeks Measurement: Money – 1 week Measurement: Time – 2 weeks 			
Year 2	Topic Focus	<ul style="list-style-type: none"> Number: multiplication and division – 2 weeks Statistics – 2 weeks Geometry: properties of shape – 3 weeks Number: Fractions – 3 weeks Measurement: Length and height – 1 week 					
	Topic Focus	<ul style="list-style-type: none"> Number: Place Value – 3 weeks Number: Addition and Subtraction – 5 weeks Measurement: Money – 2 weeks Number: multiplication and division – 2 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Area – 1 week Number: Fractions – 4 weeks Decimals – 3 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Area – 1 week Number: Fractions – 4 weeks Decimals – 3 weeks 	<ul style="list-style-type: none"> Decimals – 2 weeks Measurement: Money – 2 weeks Measurement: Time – 1 week Statistics – 2 weeks Geometry: Properties of shapes – 3 weeks Geometry: position and direction – 1 week 		
Year 3	Topic Focus	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 					
	Topic Focus	<ul style="list-style-type: none"> Number: Place Value – 3 weeks Number: Addition and Subtraction – 2 weeks Statistics – 2 weeks Number: multiplication and division – 2 weeks Measurement: Area and perimeter – 2 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 	<ul style="list-style-type: none"> Number: Fractions – 3 weeks Measurement: Time – 3 weeks Geometry: Property of shapes – 2 weeks Measurement: Mass and Capacity – 3 weeks 		
Year 4	Topic Focus	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 					
	Topic Focus	<ul style="list-style-type: none"> Number: Place Value – 3 weeks Number: Addition and Subtraction – 2 weeks Statistics – 2 weeks Number: multiplication and division – 2 weeks Measurement: Area and perimeter – 2 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 	<ul style="list-style-type: none"> Number: Fractions – 3 weeks Measurement: Time – 3 weeks Geometry: Property of shapes – 2 weeks Measurement: Mass and Capacity – 3 weeks 		
Year 5	Topic Focus	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 					
	Topic Focus	<ul style="list-style-type: none"> Number: Place Value – 3 weeks Number: Addition and Subtraction – 2 weeks Statistics – 2 weeks Number: multiplication and division – 2 weeks Measurement: Area and perimeter – 2 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 	<ul style="list-style-type: none"> Number: Fractions – 3 weeks Measurement: Time – 3 weeks Geometry: Property of shapes – 2 weeks Measurement: Mass and Capacity – 3 weeks 		
Year 6	Topic Focus	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 					
	Topic Focus	<ul style="list-style-type: none"> Number: Place Value – 3 weeks Number: Addition and Subtraction – 2 weeks Statistics – 2 weeks Number: multiplication and division – 2 weeks Measurement: Area and perimeter – 2 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 	<ul style="list-style-type: none"> Number: multiplication and division – 3 weeks Measurement: Money – 1 week Statistics – 2 weeks Measurement: Length and perimeter – 3 weeks Number: Fractions – 2 weeks 	<ul style="list-style-type: none"> Number: Fractions – 3 weeks Measurement: Time – 3 weeks Geometry: Property of shapes – 2 weeks Measurement: Mass and Capacity – 3 weeks 		

Each lesson will begin with a Flashback 4 where children will revisit learning points from the week before, the month before, the unit before or even last year to ensure a spiral curriculum where topics are revisited throughout the year.

Differentiation and Access

Differentiated activities across the school will take account of the children's differing needs and abilities (working toward expected standard, at expected standard and at greater depth) ensuring all children have access to the mathematics curriculum at the appropriate standard. Children with special educational needs in mathematics are supported to enable them to achieve the learning objective.

Assessment

Assessment is a vital tool in the teaching of Mathematics, designed to monitor children's progress and measure attainment. It is also used to inform future planning. Teachers are responsible for assessing and recording children's progress in mathematics. Assessment opportunities are built into the planning of lessons and a range of other methods are used as appropriate. Standards are checked both in school and through external moderation opportunities.

These include:

- ✓ Pre-learning tasks to assess what children already know before a unit is taught.
- ✓ children's work marked in accordance with the school marking policy
- ✓ completion of the Foundation Stage Profile on-entry and at the end of the school academic year
- ✓ summative standardised tests from Y1 to Y5 termly, half termly SATs tests with Y2 and Y6 with statutory tests at the end of Years 2 and 6
- ✓ self assessments in the form of learning scores and peer assessments
- ✓ listening to what children say and questioning them to ascertain their level of understanding
- ✓ half termly Teacher Assessments recording on Arbor.
- ✓ observations of individuals or groups, looking for particular skills or concepts to be demonstrated
- ✓ homework set that is appropriate and relevant to the mathematics curriculum being taught
- ✓ Personalised targets in maths books that are monitored regularly and changed at least once every term.

Teachers assess the standard of work against the key objectives for each year group and compare and moderate work to standards as displayed in the national curriculum. This data is recorded in Arbor and reviewed by Executive Headteacher and Maths lead to facilitate tracking and target setting and support the monitoring of children's progress.

Parents are sent home documents 3 times a year to say where their child is working in Maths (WTS, EXS or GDS) and targets are given for the next term.

Resources

Each class is equipped with a range of mathematical resources and apparatus relevant to the year group of that class. These are stored in accessible and clearly labelled drawers / shelves / containers.

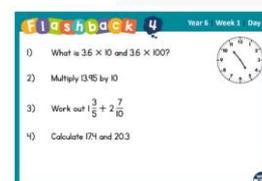
All children have access to a range of numeracy aids such as place value cards, dice, time table squares and 100 squares.

General Mathematics equipment is stored centrally in the resources room.

The resources are audited, checked and updated.

Yearly subscription to TTRockstars for all children.

Yearly subscription to WRM Premium resources for access to Flashback 4.



Monitoring and Review

Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the mathematics subject leader, the Head of School, the Executive Headteacher and the class teacher.

The main aspects of the mathematics subject leader involve

- ✓ providing leadership and direction in Mathematics
- ✓ ensuring the national curriculum is implemented effectively
- ✓ working closely with staff, offering guidance, support, leadership and arranging in-service training as appropriate
- ✓ scrutinising books frequently, completing termly feedback throughout the school.
- ✓ scrutinising the results of termly / annual assessments
- ✓ analysis of KS1 and KS2 SAT results, pupil response, teacher assessments and other standardised assessments
- ✓ managing, storing and updating resources, following a whole school audit
- ✓ monitoring and evaluating the quality of teaching and learning throughout the school in Mathematics
- ✓ monitoring pupil opinions and feedback yearly (pupil voice)
- ✓ liaising with the governor responsible for maths
- ✓ coordinating the review and updating of the policy when necessary
- ✓ ensuring the Mathematics Action Plan is implemented, monitored, evaluated and reviewed

MATHS Work Analysis – Completed by: _____

St. Mary's CE Academy

KS2	Year	Number	Place Value	Addition and Subtraction	Multiplication and Division	Fractions, Decimals and Percentages	Measurement	Geometry	Statistics	Other
Y2	1									
Y3	1									
Y4	1									
Y5	1									

Responsibilities for Maths within the school (Executive Headteacher and Governors):

As well as fulfilling their legal obligations, the governing body and Executive Headteacher also ensure that:

- ✓ all pupils make progress in achieving the learning objectives of the Maths curriculum
- ✓ the subject is well led and effectively managed
- ✓ Standards of achievement in Maths and the quality of the provision are subject to regular and effective self-evaluation
- ✓ those teaching Maths are suitably qualified and trained in the subject and have regular and effective opportunities for CPD
- ✓ teachers explore how new pedagogies and technology can be fully utilised to support Maths learning objectives
- ✓ clear information is provided for parents on the Maths curriculum
- ✓ Maths is resourced, staffed and timetabled so that the school can fulfil its legal obligations in Maths and pupils can make good progress