

CAPTAIN WEBB PRIMARY SCHOOL



Mathematics Policy

Document History

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Our School Vision-Why do we learn Mathematics?

At Captain Webb Primary School we see Mathematics as an essential skill that we use and carry throughout our lives. We believe that through Maths, we can teach children how to make sense of the world around us. Through developing an ability to: calculate, make connections, notice patterns, solve problems and reason we believe that all children at Captain Webb will develop a depth of mathematical understanding which will allow them to appreciate relationships and patterns, in both number and space, in a variety of contexts throughout their everyday lives.

Aims

Through their growing knowledge and understanding, we aim to make all our children confident and competent mathematicians, who can make links in their maths learning to other areas of the curriculum.

We aim to provide the pupils with a mathematics curriculum and high quality teaching to produce individuals who are numerate, 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 the full.

Curriculum:

The National Curriculum order for mathematics describes in detail what pupils must learn in each year group. Combined with Captain Webb's Calculation Policy, this ensures continuity, progression and high expectations for attainment in mathematics.

At Captain Webb Primary School we use the National Curriculum for Mathematics (2014) as the basis of our mathematics program, supported by the White Rose Material. We are committed to ensuring that all pupils achieve mastery in the key concepts of mathematics, appropriate for their age group, so that they make genuine progress and avoid gaps in their understanding as they move through school.

Through a well-planned mathematical journey, varying elements of the maths curriculum is presented to the children contextually. With a focus on **fluency**, the knowledge and understanding of key concepts is then developed and deepened through quality first wave teaching. Children are then encouraged to **reason** and to **solve a variety of problems** presented to them in a wide range of situations.

At Captain Webb we aim to deliver a Maths Curriculum which:

- ❖ Understands the importance of mathematics in everyday life.
- ❖ Promotes enjoyment and enthusiasm for learning through practical activity, exploration and discussion.
- ❖ Promotes confidence, competence and fluency with numbers and the number

system.

- ❖ Develops the ability to solve problems through decision-making and reasoning in a range of context.
- ❖ Develops a practical understanding of the ways in which information is gathered and presented.
- ❖ Explores features of shape and space and develop measuring skills in a range of contexts.
- ❖ Gives children the confidence to communicate ideas in written form and orally.
- ❖ Encourages children to work both independently and collaboratively in order to share ideas and solve problems together.
- ❖ Teaches a wide range of mathematical vocabulary to be modelled and used in the classroom environment.

ORGANISATION

In EYFS, Key Stage 1 and Key Stage 2 Maths is taught on a daily basis.

In each aspect of the Maths Curriculum and throughout each key phase, the children embark on a contextualised mathematical journey. This ensures that there is breadth and depth to the curriculum offer.

Each journey consists of the following:

- 1) Use of Assessment to build on pupils' existing knowledge and understanding.
- 2) Use well-planned manipulatives and representations which the children can then draw upon independently in the future. (See Jottings Policy)
- 3) The teaching of strategies in order for the children to solve methods (See Calculation Policy).
- 4) Opportunities for the children to make connections between mathematical facts, procedures and concepts, thus developing a rich network of mathematical knowledge.
- 5) The development of independence and motivation in order to develop metacognition-the ability to independently plan, monitor and evaluate their thinking and learning.
- 6) The use of contextualised tasks and resources which challenge and support pupils' mathematics; deepening their thinking with models of proof and conjectures.

Through our creative curriculum approach, we also seek to explore and utilise further opportunities to use and apply mathematics across all subject areas which is promoted during our Theme work in the afternoon.

We recognise the importance of establishing a secure foundation in mental calculation and fluency. Therefore, each lesson is begun with K.I.R.F. Time (Key Instant Recall of Facts) These sessions last for approximately ten minutes and give the children the opportunity to learn, recall and embed number facts to support standard written methods. We use accurate mathematical vocabulary in our teaching and children are expected to use it in their verbal and written explanations.

Teaching Approaches

Teachers use a range of teaching strategies to engage the children in maths and ensure progress is made by all children within a class. Typically, AFL questions are used at the start of lessons to establish groupings, then the I-YOU-WE approach to teaching is adopted to ensure all children make progress and the pace of learning is good for all. A typical lesson would include:

- Both teaching input and pupil activities,
- A balance between whole class, guided grouped and independent work, (groups, pairs and individual work)
- effectively differentiated activities/objectives and appropriate challenge.

Sometimes the focus for the session is new learning, at other times pupils may be practising, to master the application of a concept they have learned earlier. The focus of the session may vary for different children depending on their learning needs.

NEW CURRICULUM OUTLINE FOR EACH KEY STAGE

EYFS

Pupils are encouraged to develop their Problem Solving, Reasoning and Numeracy in a broad range of contexts in which they can explore, learn, enjoy, practise, discuss and extend their skills. Pupils are encouraged to exploit their mathematical potential in both indoor and outdoor enabling environments. They are provided with a wide range of activities that promote regular active participation, exploration of real life problems, development of imaginative play and early experience of mathematical language. All pupils are supported positively and encouraged to gain confidence and competence in their skills.

By the end of the Foundation Stage pupils should be able to count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number, using quantities and objects, add and subtract two single-digit numbers and count on or back to find the answer. Solve problems, including doubling, halving and sharing. The children should be able to use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. Recognise, create and describe patterns.

Key Stage 1

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources (e.g. concrete objects).

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of Year 2, pupils should recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. They should be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

Lower Key Stage 2 – Years 3-4

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage 2 – Years 5-6

The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

SPECIAL EDUCATIONAL NEEDS

The daily mathematics lessons are inclusive to pupils with special educational needs. Where required, children's Provision Maps incorporate suitable objectives from the New National Curriculum for Mathematics or Development Matters and teachers keep these objectives in mind when planning work. These targets may be worked upon within the lesson as well as on a 1:1 basis outside the Mathematics lesson. Maths focused intervention

programmes (Numicon and Fluency focus work) are available in school to help children with gaps in their learning and mathematical understanding. These are delivered in a small group by trained support staff and/or a teacher and are overseen by SLT.

Within the daily mathematics lesson teachers must not only provide differentiated activities to support children with special educational needs but also activities that provide appropriate challenges for children who are high achievers in mathematics. It is vital that all children are challenged at a level appropriate to their ability.

CALCULATION POLICY

Captain Webb has a written calculation policy which was reviewed in September 2018. The policy is set out in subjects: addition, subtraction, multiplication and division. Within each specific area there is a progression of skills, knowledge and layout for written methods that has been agreed by all staff. The calculation strategies which will be used will reflect this ideology – moving from concrete to pictorial and then abstract recording leading to more formal written methods. Mental methods and strategies will work in partnership with these methods. The policy ensures that there is a consistent approach across the school so that pupils are competent in **fluency, reasoning and problem solving** and can make informed and appropriate choices about the methods they wish to use (mental or written) to solve mathematical problems efficiently and effectively.

At Captain Webb Primary, we strive to develop and deepen children's mathematical thinking through problem solving. Because of this, we are developing the place and value of meaningful recordings and jottings throughout school.

There are three different contexts in which recording might take place; the purpose for jottings need to be exemplified and modelled to the children at every stage. (see Jottings Policy)

MARKING

Marking of children's work is essential to ensure they make further progress. All work is marked against a conceptual success criteria, in line with the school marking policy, and includes next steps, opportunities to share mathematical thinking and a platform to promote reasoning skills.

Work is to be marked once completed before a child starts the next piece of work in accordance with the school marking policy. Children are encouraged to self-assess their work and given time to read teachers' comments and make corrections.

For further information see the school marking and feedback policy.

ASSESSMENT AND RECORD KEEPING

Teachers make regular assessments of each pupil's progress and record these systematically. A record of a child's attainment against the key objectives for the appropriate year group is recorded in a school proforma at the front of pupil's book.

Short term

Children's class work is assessed frequently through

- regular marking
- analysing errors

- questioning
- discussion
- plenaries

This is used to inform future planning and teaching. Lessons are adapted readily and short term planning is evaluated in light of these assessments.

Medium term

Termly assessments are to be carried out across the school using the White rose assessment materials for each year group. These materials are to be used alongside judgements from class work to form a teacher assessment for each child. These judgements are then passed onto the assessment leader to be fed into the whole school tracking system. Class Teachers analyse these assessments to inform future planning and interventions.

Long term

Y2 and Y6 to complete SATs assessments every May. These are analysed and helps to inform the next Academic Year's Action Plan for the development of the subject

Target Setting

Teachers set targets based on the initial assessment at the start of each mathematical journey. These allow children to focus on a key concepts and develop the children's ability to solve problems and justify their mathematical reasoning. Targets are assessed at the end of a unit of work-at the end of the mathematical journey by:

- An assessment of key concepts
- A contextualized problem being solved which requires the child to use and apply taught skills.

RESOURCES

All teachers organise an area within the classroom dedicated to mathematics resources. This area is easily accessible to all children and allows them to become familiar with all resources.

A working wall and washing lines are also evident in every classroom and is a visual record of the mathematical journey the children are on. These can be easily accessed by the children, in order to embed key objectives and be a model for good practice. Walls are updated regularly in accordance with the area of maths being taught at the time.

Working walls contain:

- Vocabulary

In each classroom maths vocabulary and enquiry questions are displayed and discussed regularly.

- Models and Images

In each classroom we also display models and images to stimulate mathematical thinking, whether they are of children's work, teachers' modelled examples or of materials that support mathematical processes.

Magical Mistakes

This encourages the children to spot errors in workings and deepen their understanding of methods and mathematical procedures.

- Key conversion tables for measures and time

- Examples of written strategies, appropriate to year group and ability

Resources which are not used or required regularly are stored centrally in the maths cupboard accessed via A3.

HOMEWORK

It is our school policy to provide parents and carers with opportunities to work with their children at home. These activities may only be brief, but are valuable in promoting children's learning in mathematics. Activities are predominately based on fluency (KIRF TARGETs) and can take the form of games, activities or quick written tasks.

All children have access to Mathletics which enables the class teacher to set homework which relates closely to areas covered in class or an area for development for individual children.

STAFF RESPONSIBILITIES

Mathematics Subject leader

- Assist the Headteacher in carrying out the audit, reviewing and amending of the School Development Plan.
- Prepare, organise and provide school based INSET meetings, workshops and staff meetings.
- Assist with the monitoring of teaching and planning and the analysis of SATs results.
- Preparation, review and implementation of school policy documents and guidelines taking into account the recommendations of the New National Curriculum and EYFSP.
- Liaison with staff in school – working alongside them giving guidance and support.
- Introduce, organise and maintain the school's mathematics resources.
- Take responsibility for own professional development by attending courses and keeping up-to-date with current developments within mathematics education.
- Liaison with mathematics subject leaders in other schools through attendance of local network meetings.
- To provide an example to the school by taking a lead in teaching mathematics and classroom organisation.
- Maintaining contacts beyond school with numeracy consultants, advisory staff and other outside agencies.
- Ensuring equality of opportunity for all pupils.

Class Teachers

Class teachers are responsible for the planning, teaching and assessment of the daily mathematics lesson and the organisation of additional adults in the classroom. They are also responsible for implementing the contents of this policy within their classroom.

Support Staff

HLTAs and TAs that work with the children support the teaching of mathematics under the direction of the class teacher.

Governing Body

We have an identified maths governor. She is invited to attend relevant school training. The maths governor visits school termly to talk with the subject leader and when possible,

observes some daily maths lessons. The maths governor reports back to the curriculum committee on a regular basis.

STAFF DEVELOPMENT

All staff are encouraged to develop, assess and improve their teaching of mathematics. All staff are members of the NCETM and have a responsibility to use the Self –evaluation tool to reflect on their own subject knowledge and use the on-line CPD resource to develop their pedagogy in the classroom.

Whenever possible we:

- encourage staff to attend mathematics courses
- make provision for the mathematics subject leader to work alongside colleagues in the classroom or shared areas
- provide school based CPD
- involve staff with policy and decision making
- provide the opportunity to learn from colleagues' expertise
- encourage parental involvement at home.