

St Barnabas CE Primary School



Aspire, Believe - Together Achieve

The teaching and learning of Mathematics: A guide for Parents and Carers

*These terms are explained in the glossary of terms at the end of the document.

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Our intent for the teaching of Mathematics

At St Barnabas Primary School we are determined that every pupil will have the ability to use and understand numbers and to problem solve, using a variety of strategies. Our children will learn through a seamless journey beginning in EYFS, developing through Key Stage 1 and on progressing to the end of Key Stage 2. They will demonstrate this throughout their time at school:

- By demonstrating fluency in the fundamentals of mathematics through frequent, varied practice with increasingly complex problems. This will support pupils in developing confidence, independence and enjoyment within mathematics.
- Through solving problems with increasing sophistication, helping to build resilience when seeking solutions, and also allowing our pupils opportunities to collaborate with others to further develop their use of mathematical language and reasoning skills.

We aim to provide an engaging learning environment whereby pupils are motivated to apply their mathematics across the breadth of the subject and beyond, regularly making links to real life situations and experiences where mathematics is used to solve problems so pupils have context for their learning. We do not see background, needs or abilities as insurmountable barriers to learning. We want our children to have no limits to what their ambitions are and grow up with the skills to be statisticians, engineers, architects and mathematicians. Our approach enables children to be numerate, creative, independent, inquisitive, enquiring and confident. Children should not be afraid to make mistakes and should fully embrace the fact that mistakes are part of learning! We believe that all of our children can 'Let their Light Shine' with their mathematics knowledge and skills.

Our Maths curriculum has been structured so that our children develop their arithmetic*, reasoning *and problem solving* skills and knowledge (in line with National Curriculum milestones) by building upon prior learning. We want our children to build upon previous knowledge, year upon year, so that they have a foundation for their continued school life and life beyond school.

What we teach

To learn mathematics effectively, some concepts have to be learned before others, e.g. place value needs to be understood before working with addition and subtraction, addition needs to be learnt before looking at multiplication (as a model of repeated addition). You will see this emphasis on number skills first, carefully ordered, throughout our primary curriculum. For some other topics, the order isn't as crucial, e.g. Shapes and Statistics need to come after number, but don't depend on each other. We try to mix these so pupils have as wide a variety of mathematical experiences as possible in each term and year, linking them to areas of the wider curriculum where possible.

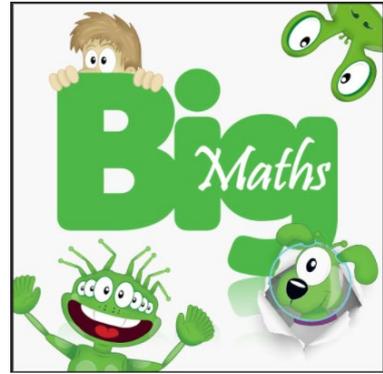
To enable this, each year group has a guidance document which lists the objectives to be taught each term. This is taken directly from the Mathematics part of the National Curriculum. These objectives are taught predominately through our daily mathematics lessons each day however some aspects will be covered and revisited through other curriculum subjects. Copies of these can be seen on the Maths Curriculum page of the website. Teaching sequences are based on small steps to ensure a good level of coherence, understanding, application of understanding and transference of skills to a range of mathematic problems and contexts.

At St Barnabas Primary School we believe in the importance of Quality First Teaching for all and know how vital it is that teachers know the learners in their class and aim to deliver content in an engaging and interesting manner that meets their needs. However, in order for children to feel comfortable with what to expect in each Maths lesson and to deliver the required content, the majority of lessons will follow a similar structure.

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Big Maths

Big Maths is all about making maths fun and simple for children, so they build their confidence whilst building their basic skills in mathematics. Big Maths sessions are used at the start of daily maths lessons and are organised into **CLIC**, prioritising basic skills provide the foundations for wider maths.



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CLIC is fundamental to mathematical development because this is learning sequence through which we all develop numeracy. It has a natural chronology;

- **First:** Counting (children learn to count and to 'count on').
- **Second:** Learn Its (children then short-cut this counting by recalling their 'counting on' as facts)
- **Third:** It's Nothing New (children then 'swap the thing' to realise that the counting fact, or 'Learn It', can be applied to any object, amount or unit of measure).
- **Fourth:** Calculation (the previous 3 phases are combined to provided a calculation structure).

Our **CLIC** sessions usually lasts for 15 minutes with roughly 5 minutes spent on 3 areas chosen from the above.

Learn Its!

The Learn Its section of Big Maths focuses on learning and recalling facts (multiplication tables and number bonds). The 'Learn Its' challenges check children's retention of these facts:

- Times tables
- Basic calculations
- Number bonds*

We call this section Learn Its because that's what they need to do for each fact; Just Learn It!

Our aim is for pupils to focus on only 3 new facts each week whilst also rehearsing those learnt previously.

The key principle for the children to understand are:

1. that a 'Learn It' is a fact to remember just as well as they know their own name
2. that Learn Its are 1 digit add 1 digit facts and 1 digit times 1 digit facts

There is also strong emphasis on learning key number bonds, times tables and related division facts. We expect all pupils to be proficient in all four operations (addition, subtraction, multiplication and division) by the end of Year 4 in order that they have the time to focus on more complex skills. This is achieved with regular practice and testing, at home and at school, using timed Learn it Challenges and Times Tables Rock Stars.

We expect our children to practice their weekly facts at home each week.

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Main lesson

We always begin our learning in lessons by checking what the children already know. Prior assessment information aids teachers in planning to meet the needs of their class and of individual pupils within it. They will consider if there is a need to track back for any children to develop understanding of a concept prior to beginning a new unit of learning. It is imperative that the children have a secure understanding of each mathematical concept before moving on. At St Barnabas Primary School, we ensure that the children have mastered the maths in every lesson, by ensuring that teachers are expertly using assessment for learning, identifying and addressing any misconceptions as and when they arise

Every one of our maths lessons is based on the principals that all children can achieve, which is our belief at St Barnabas. Children are taught in mixed ability groups, with all children accessing the same learning. This allows all children to be exposed to the same content and be offered the same opportunities, rather than placing a cap on children's learning. Pupils are then given tasks to enrich and stretch this learning in the form of Prove it challenges to further extend the greater depth pupils, and those who may need extra support are supported through scaffolding such as using mathematical manipulatives or by utilising teacher and TA support. No pupils will be given different objectives unless they have an EHCP/SEND which requires this additional provision.

New lesson content is introduced in the form of small steps in an I do, we do, you do* style session. There are opportunities for guided practice, shared practice and independent practice and concrete materials are always on hand if pupils wish to use them.

New learning is modelled using concrete resources before moving on to pictorial and abstract methods, enabling children to make the choice themselves about which resources will support their learning.

The Concrete – Pictorial – Abstract Approach

Research has shown that use of concrete manipulatives* and pictorial representations can support children's deeper understanding of mathematical concepts. Therefore, manipulatives and pictorial representations should be used at all levels to support children's thinking where appropriate. Our curriculum builds on the concrete, pictorial, abstract approach. By using all three, the children can explore and demonstrate their mathematical learning. Together, these elements help to cement knowledge so children truly understand what they have learnt.

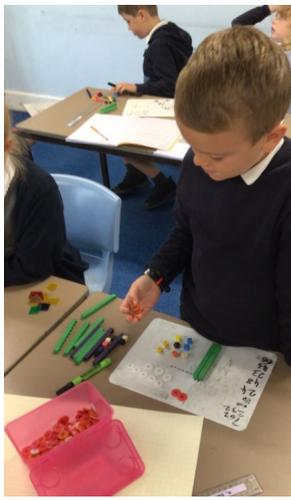


All children, when introduced to a new concept* for the first time, are encouraged to physically represent mathematical concepts. Objects and pictures are used to demonstrate and visualise abstract ideas, alongside numbers and symbols. Throughout St Barnabas Primary School you will see these three methods being used: Concrete – children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing.

Pictorial – children then build on this concrete approach by using these pictorial representations, which can then be used to reason and solve problems.

Abstract – with the foundations firmly laid by using the concrete and pictorial methods the children can move onto an abstract approach using numbers and key concepts with confidence.

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CONCRETE

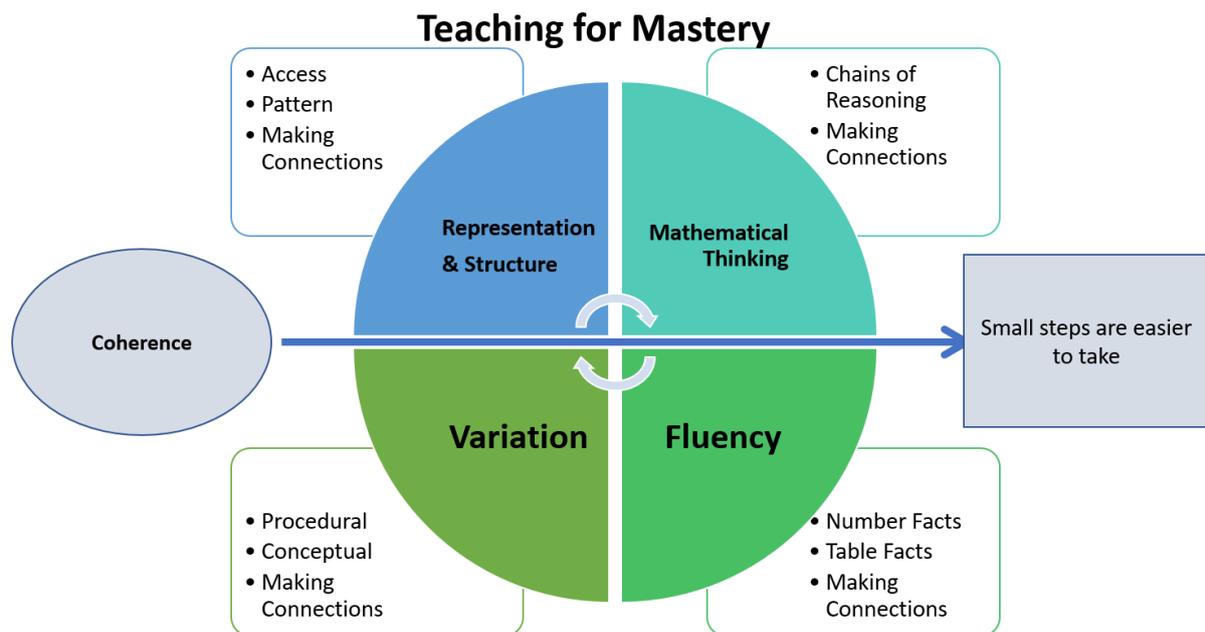


PICTORIAL



ABSTRACT

Fluency in the curriculum goes hand in hand with reasoning and problem solving. Reasoning questions are woven into the teaching and tasks throughout the units so that pupils develop their reasoning skills, both verbally and in writing, whilst deepening their understanding of concepts as we believe the ability to reason and problem solve is a life-long learning skill.



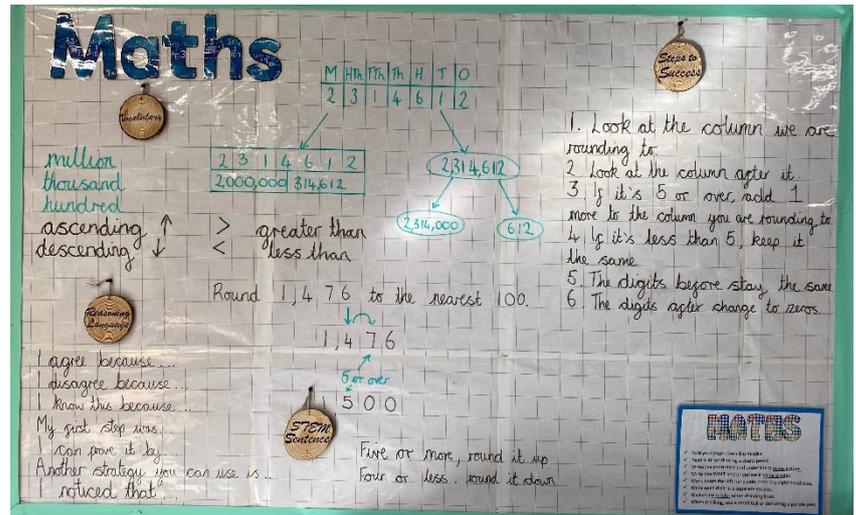
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Learning walls

Working walls are a valuable resource used to support Maths learning at St Barnabas.

They include the following:

- Prior knowledge
- Key vocabulary (with explanation of meaning to support understanding when needed)
- Clearly modelled examples (using CPA approach where possible)
- Steps to Success (to support pupils in understanding mathematical processes)
- Examples of reasoning questions and modelled responses



Maths learning walls are created with the children as part of the lesson and are referred to regularly as a reminder and to support pupils in building their independence in their own learning.

In the majority of lessons, teachers will create try it, use it and prove it activities for children to complete to enable them to practise, consolidate and deepen their understanding. As a general guide:

- Try it activities allow discrete practise of the basic skills
- Use it activities encourage children to apply the mathematical skills in a variety of ways
- Prove it activities challenge children to use their new skill to solve more open ended investigations and problems.

After each lesson, teachers will consider how they may need to adapt the next lesson or groupings to ensure relevant challenge and support for all.

Enriching our curriculum

At St Barnabas Primary School, we take every opportunity to apply mathematical learning across our wider curriculum. We practise and embed mathematical learning through our computing curriculum, where discrete coding is taught with explicit links to mathematics. Science, Geography, PE and History lessons are also closely planned with maths in mind to ensure children have the opportunity to apply their mathematical skills through our broad, balanced curriculum.

e.g.



Maths supports our understanding of chronology in history.



Accurate use of measure enables us to create fair tests in science.



In nursery we use mathematical language in stories and rhymes.

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Meeting pupil needs

The expectation is that the majority of pupils will move through the programmes of study* at broadly the same pace. However, decisions about when to progress should be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Assessment

Teachers and TA's actively assess throughout daily lessons and provide immediate feedback to move learning forwards. Children regularly receive on -the-spot verbal feedback to support, direct and challenge them. If extended verbal feedback is given, this is indicated in a child's book with the use of a VF symbol.

Marking

Teachers active mark* through the lesson to provide immediate feedback and intervention* where needed. Mini plenaries are used effectively to address common misconceptions identified as a result of active marking. KS2 Pupils are encouraged to self-mark where appropriate and are expected to correct their mistakes which is shown in purple pen (see marking and feedback policy).

Teachers use their knowledge of the children as mathematicians, along with their performance in class tasks and their engagement and understanding during the lessons to assess their current attainment. The application of mathematics in our wider curriculum e.g. using timelines in history or graphs in science also enables us to make a valid assessment of what the children know, understand and can do independently. This information allows teachers to adjust their teaching accordingly, directing particular children to specific tasks or offer support and additional challenge when needed.

End of unit assessments are carried out from the White Rose scheme and supplemented with other activities where needed for immediate assessment before moving on to a new unit of work. .

We complete adapted White Rose* Assessments 3 times a year which also feed into our to our teacher assessment judgements. Our bespoke assessment system is updated on a termly basis to keep track of pupil attainment.

Termly pupil progress meetings are held to discuss pupils and lesson observations in maths by the SLT are conducted once a year and support put in place if needed.

A book scrutiny is carried out termly by the St Barnabas Maths Subject Leader along with regular pupil voice meetings and maths learning walks. Support is put in place for any staff who need it in the form of coaching, modelled lessons and joint planning sessions with the Maths Subject Leader. Full reports on maths audits are shared with the maths link governor.

Regular feedback on maths is given to parents/carers during our termly parent's evenings and at the end of the year in their school report.

Impact

By the end of Key Stage 2 we aim for pupils to be fluent in the fundamentals of mathematics, with a conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. They will be able to **independently** solve a range of problems, including those in unfamiliar contexts and in real-life scenarios. Children will be able to reason mathematically in order to justify and explain their strategies and approaches.

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Glossary of Terms

Active mark	Teachers mark within the lesson so they can provide pupils with instant personalised feedback, support and challenge.
Arithmetic	The use of numbers and properties of number including addition, subtraction, multiplication, and division of numbers.
Concept	An idea.
I do, we do, you do	The practice of teacher modelling learning, the children working with a partner to verbalise how to solve a problem and build confidence, then the children working independently.
Intervention	Additional support by an adult to guide learning and help pupils to make progress.
Manipulatives	Practical resources used to support pupil's mathematical understanding.
Number bonds	A number bond is a simple addition of two numbers that add up to give the sum.
Place Value	A number can be made of more than one digit. So we use place value headings, like ones, tens, hundreds and thousands, to help us understand the value of each digit. This helps us to identify the <u>value</u> of each digit.
Problem Solving	This allows children to apply their maths knowledge to real-world problems, deepening their learning and developing the ability to approach practical "real world" uses of maths.
Programme of Study	The programmes of study describe a sequence of knowledge and concepts children are expected to gain secure understanding of.
Reasoning	This involves children being able to explain their mathematical thinking and use this to support their answers, giving explanations verbally and in writing.
White Rose	White Rose Maths is an organisation that provides maths resources and Schemes of Learning for pupils of all ages, from early years to secondary school.

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