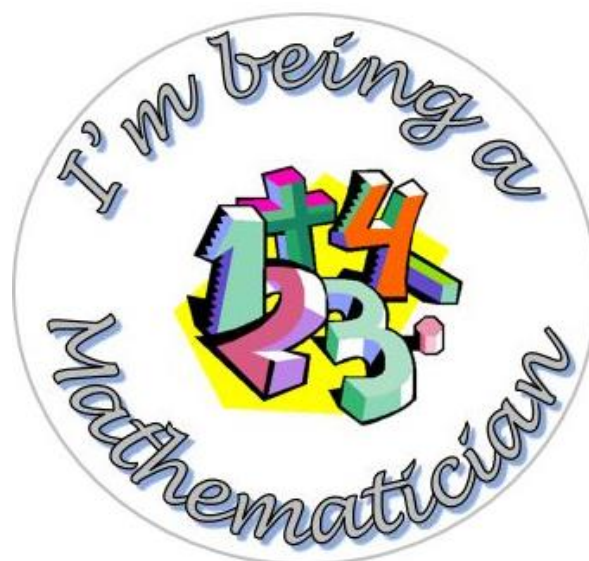




Being a Mathematician at St Chad's



What do we want Maths to look like at St Chad's?

'Pure mathematics is, in its way, the poetry of logical ideas.'

Albert Einstein

At St Chad's, we believe that mathematics is for everyone. Our intent is to develop confident, resilient and curious mathematicians who can apply their understanding fluently and flexibly in a range of contexts. We want our children to appreciate the beauty and power of mathematics and to have a love of learning in line with our school vision. We aspire to ensure that every child becomes a confident, analytical and secure mathematician throughout their time at St Chad's. Our mathematics provision promotes a culture where:

- All pupils can succeed in mathematics.*
- A positive, growth mindset towards mathematics is cultivated.*
- Depth is prioritised over acceleration.*
- Collaborative learning and professional dialogue drive high-quality teaching.*

Culture

We promote a mathematics culture where:

- Mistakes are valued as opportunities to learn.*
- Mathematical talk is expected and scaffolded.*
- Representations and structures reveal mathematical relationships.*
- Challenge is provided through depth rather than premature acceleration.*

Equity

Equity in mathematics ensures that support is proactive, responsive and rooted in evidence-informed practice. We are committed to equitable mathematics provision. This means:

- High expectations for every child.*
- Removing barriers to learning through timely and targeted support.*
- Closing gaps through structured interventions rather than narrowing curriculum access.*
- Ensuring no child is excluded from high-quality first teaching.*

Through a love of learning, children will be taught appropriate mathematical vocabulary and will gain confidence at talking like a mathematician as they progress through the year groups at St Chad's. With maths being critical to science, technology, engineering, financial literacy and most forms of employment, cross-curricular maths is regularly embedded within lessons at St Chad's. Children are

provided with real-life learning experiences and opportunities to ensure they are confident to deal with everyday mathematical challenges. To ensure children have a secure understanding of mathematical concepts, they will be modelled a learning process through 'concrete, pictorial and abstract', whilst demonstrating fluency with what is being taught and showing their mathematical thinking through both verbal and written reasoning.

Overall, we want our children to be provided with the tools to leave our school as confident, skilled and resilient mathematicians, who understand that mathematics is a fundamental part of everyday life and the world we live in.

How do we achieve our aims in Maths at St Chad's?

Our mathematics curriculum is coherently sequenced to ensure that knowledge builds cumulatively over time. Progression is carefully mapped from Early Years to Year 6 so that pupils develop secure foundations before moving to more complex concepts. We prioritise depth, connection and retention over acceleration.

Our long-term planning is informed by the schemes and small-step structures of (White Rose Maths). These frameworks support coherent sequencing, intelligent variation and a focus on the most critical mathematical content.

Principles of Progression

Progression in our school is underpinned by the following principles:

- *Small, connected steps:* concepts are broken down into manageable; components to secure understanding before new layers are added.
- *Readiness before new content:* Pupils move forward when secure, not simply when a unit ends.
- *Representation to abstraction:* Progression follows a CPA pathway, so pupils move from concrete experience to pictorial representation and then to abstract generalisation.
- *Depth before breadth:* Pupils explore patterns, relationships and structures before encountering new procedural complexity.

- *Cumulative review: Previously taught content is revisited regularly to strengthen long-term retention.*

EYFS to KS1

Progression begins with strong number sense in EYFS, focusing on:

- *Subitising and counting principles.*
- *Composition and decomposition within 10.*
- *Comparison of quantities and measures.*

In KS1, this develops into:

- *Secure understanding of place value within 100.*
- *Fluency in addition and subtraction.*
- *Early multiplicative thinking through grouping and arrays.*

KS2 Development

In KS2, progression ensures pupils:

- *Extend place value understanding to larger numbers and decimals.*
- *Develop formal written methods rooted in conceptual understanding.*
- *Build multiplicative reasoning, including fractions, ratio and proportion.*
- *Apply knowledge flexibly in multi-step problem solving.*

Equity Through Progression

Our progression model supports equity by:

- *Identifying prerequisite knowledge for each unit.*
- *Using pre-teaching where prior knowledge is insecure.*
- *Providing same-day intervention when misconceptions arise.*
- *Ensuring no pupil is accelerated beyond conceptual readiness.*

Careful sequencing ensures that all pupils access ambitious mathematics while being supported to succeed. Progression is therefore not simply about coverage, but about secure, connected and retained mathematical understanding over time.

Power through the 5C's of Learning

Alongside St Chad's vision of 'learning to love, loving to learn', St Chad's 5C's of learning drive the creation of our Curriculum. Further information as to how the 5C's of learning positively support the teaching of Maths can be identified in the table below.



St Chad's 5C's	Using our 5C's within Maths
Community	<ul style="list-style-type: none"> • Visits and Visitors • Participation in different local events • Be a <u>Rockstar</u> Day • Fair Trade event
Communication	<ul style="list-style-type: none"> • Progression of mathematical vocabulary • Use of APE structure to support mathematical fluency and reasoning. • STEM sentence starters to support all children across the school.
Curiosity	<ul style="list-style-type: none"> • Opportunities to secure mathematical understanding through problem solving. • Developing children's understanding of how manipulatives can be used in different ways to support learning.
Collaboration	<ul style="list-style-type: none"> • Working in groups on problem solving activities. • Self and peer-assessment within lessons. • Collaborative partner work when discussing mathematical thinking.
Creativity	<ul style="list-style-type: none"> • Make links with our Connected Curriculum as well as with Science and Computing. • Exploring mathematical knowledge through real-life contexts both inside and outside of the classroom.

An example of declarative knowledge and mental strategies in KS1 (Year 1)

Year 1: Block 2 (Addition and Subtraction)

Declarative Knowledge					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #fff9c4;">Number Fluency (1)</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"> <ul style="list-style-type: none"> - Subitise 8 using dots and objects. - Understanding 8 as a group of 5 and a bit. - Subitise 9 - Understanding 9 as a group of 5 and a bit. - Understanding different compositions of 8 and 9 using dots, objects and part-whole models. - Making 8 when a part is missing. - Making 9 when a part is missing. - Number bonds to 8 - Number bonds to 9. </td> </tr> </tbody> </table>	Number Fluency (1)	<ul style="list-style-type: none"> - Subitise 8 using dots and objects. - Understanding 8 as a group of 5 and a bit. - Subitise 9 - Understanding 9 as a group of 5 and a bit. - Understanding different compositions of 8 and 9 using dots, objects and part-whole models. - Making 8 when a part is missing. - Making 9 when a part is missing. - Number bonds to 8 - Number bonds to 9. 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #fff9c4;">Fractions Declarative Knowledge</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"> <ul style="list-style-type: none"> - I know that a half is when an object/shape/number is split in two equal parts. - I know that a quarter is when an object/shape/number is split into 4 equal parts. </td> </tr> </tbody> </table>	Fractions Declarative Knowledge	<ul style="list-style-type: none"> - I know that a half is when an object/shape/number is split in two equal parts. - I know that a quarter is when an object/shape/number is split into 4 equal parts.
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An example of declarative knowledge and mental strategies in LKS2 (Year 3)

Year 3: Block 3 (Multiplication and Division)

Declarative Knowledge					
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An example of declarative knowledge and mental strategies in UKS2 (Year 5)

Year 5: Block 2 (Addition and Subtraction)

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Maths in the EYFS Curriculum

Developing enthusiastic and motivated mathematicians at St Chad's begins with the learning that takes place within the EYFS classroom. Ensuring the teaching of maths using concrete apparatus is imperative to support children with their early mathematical understanding. With a large focus on counting, comparison, composition, pattern and shape and space, this ensures children progress through EYFS with a good level of development. Using a large amount of repetition helps to ensure children are embedding taught knowledge within their long term memory. Even through the teaching of 'Drawing Club', and within continuous provision, mathematical knowledge is constantly drip fed to the children to progress children's knowledge and ensure security as they progress through their time in the EYFS classroom.

Meeting Our Curriculum Drivers

As a school, we meet our curriculum drivers through a robust system of planning, a consistent approach to teaching mastery of maths (including varied fluency, problem solving and reasoning), supportive learning environments and a triangulated approach to assessment.

Creating our Mathematics Curriculum

As previously stated, our maths curriculum is based upon developing children's declarative, procedural and conditional mathematics knowledge. We want children to be secure with their understanding of different mathematical concepts and processes, combined with a genuine procedural fluency. A child who has mastered a concept is able to apply their understanding in a different context and choose the appropriate method to solve different types of problems. Using White Rose Maths as the basis for planning, long-term planning maps out the South Gloucestershire Age Related Expectations (ARE's) across the year in a logical order with a focus on teaching in small steps. Medium term planning plots the weekly learning objectives for arithmetic and the main teaching concepts. Small steps planning (weekly plans) are used for daily teaching - highlighting teaching procedures as well as types of reasoning and problem-solving questions to be shared with the children. Children are taught through the process of concrete, pictorial, and abstract concepts to develop a deeper understanding.



Number, counting, making links:

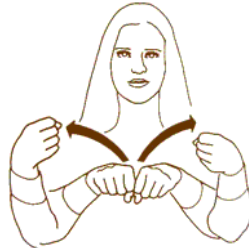
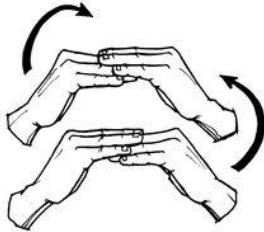
'Knowing more, remembering more and making links' is at the core of our mental maths teaching. For the first ten minutes of every maths lesson, children complete a mixture of maths talk and retrieval activities focused upon developing children's declarative knowledge and mental strategies. Following a maths talk structure, children will have the opportunity to learn, discuss and use a variety of strategies when answering mathematical sums using a mental method. The oracy aspect of this opening 10 minutes is important to provide children with a chance to discuss their mathematical thinking within a safe and secure environment. Children use hand gestures to agree, build or

challenge their peers' mathematical thinking and sentence stems are used to support verbal sentence construction.

BUILD

CHALLENGE

AGREE

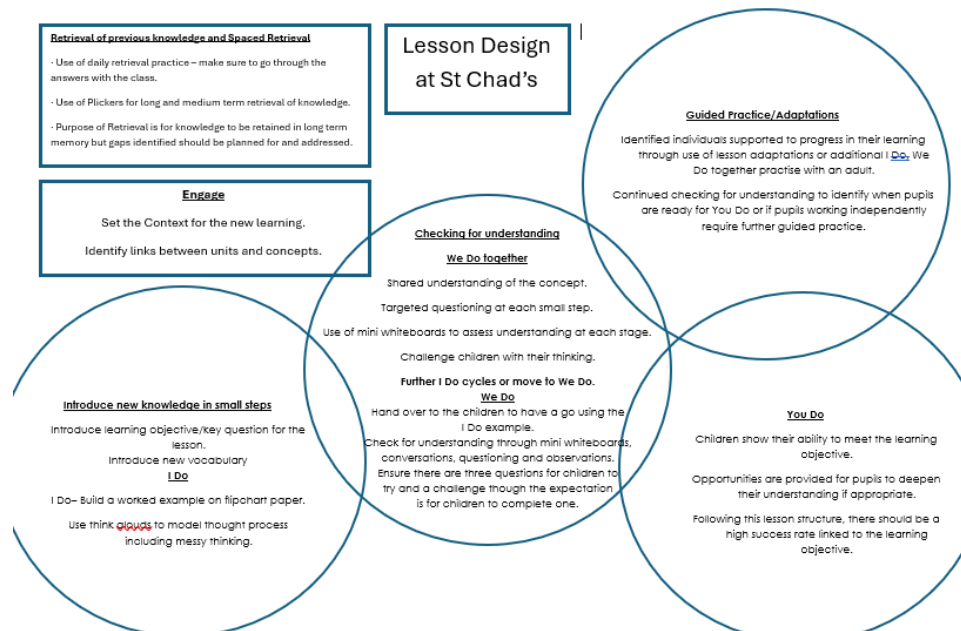


Year 5: Block 2 (Addition and Subtraction)

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<p>Addition and Subtraction Objectives</p> <ol style="list-style-type: none"> 1) Add whole numbers with more than 4 digits (inc rounding to check & compare 2 or more calculations) 2) Subtract whole numbers with more than 4 digits (inc rounding to check & compare 2 or more calculations) 3) Inverse operations (addition and subtraction) 4) Find missing numbers 5) Reasoning and problem solving within addition and subtraction (inc multi-step) (1 week) 	<p>Problem solving and revisiting opportunities</p> <table border="1"> <thead> <tr> <th>Problem Solving Opportunities</th> <th>Revisiting knowledge across the curriculum</th> </tr> </thead> <tbody> <tr> <td>Add whole number with more than 4 digits</td> <td></td> </tr> <tr> <td>Subtract whole numbers with more than 4 digits</td> <td></td> </tr> <tr> <td>Inverse operations</td> <td></td> </tr> <tr> <td>Find missing numbers</td> <td></td> </tr> </tbody> </table>	Problem Solving Opportunities	Revisiting knowledge across the curriculum	Add whole number with more than 4 digits		Subtract whole numbers with more than 4 digits		Inverse operations		Find missing numbers	
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Example long term plan for the 'Number, Counting, Making links' part of the lesson.

Main teaching



Within the main part of the lesson, our children have the confidence to choose their level of learning from the 'We do' and are then directed to appropriate fluency, problem solving and reasoning activities to deepen understanding. With guided practice tailored to individual needs, each child can move in and out of support ('ping pong') where necessary. Children of all abilities develop their mathematical understanding through the use of manipulatives such as 'bar models', 'base ten', 'place value counters' and 'numicon'. There is no ceiling to achievement in our lessons and children report that they feel happy to make mistakes, enabling them to improve along their journey.

In KS2, we prioritise the development of fluency as the foundation of mathematical competence. Pupils are taught to recall key facts rapidly, use efficient written and mental calculation strategies, and apply formal methods with confidence. Dedicated weekly arithmetic sessions further strengthen accuracy and automaticity. Reasoning and problem-solving form an integral part of weekly teaching. Pupils are explicitly taught to articulate their mathematical thinking, justify solutions, identify patterns and apply skills to multi-step and non-routine problems. Through this approach, we ensure pupils develop both procedural security and deeper mathematical understanding. In KS1, weekly number fluency sessions are embedded to secure rapid recall of key number facts and promote accuracy and confidence in fundamental mathematical skills.

St Chad's Calculation Policy

As previously suggested, within the main teaching section of a maths lesson, teachers introduce mathematical concepts through a concrete, pictorial, abstract approach to support the child's conceptual understanding of the concept being taught. St Chad's Calculation Policy is a progressive document that outlines the mathematical methods taught, and manipulatives used to do so, in each year group of the school. The focus is on supporting children to become confident at using mathematical strategies accurately and as they move up the school, they will become more efficient and independent at using these.

Developing a secure understanding of times tables

We use Times Tables Rock Stars (TTRS) to motivate and track progress, alongside wider strategies including:

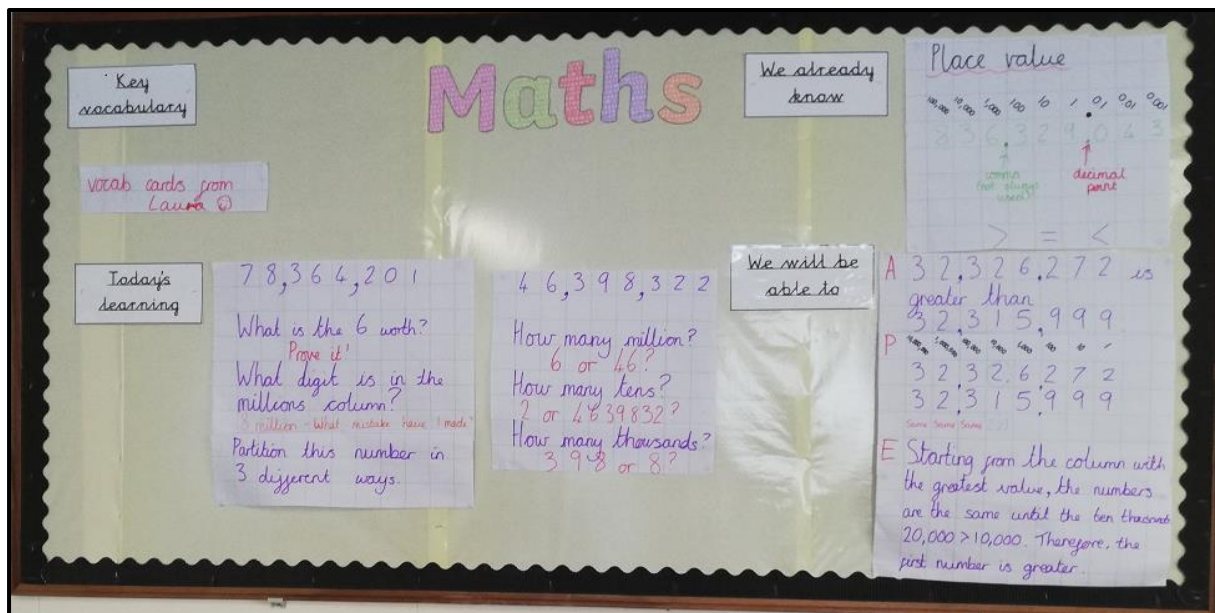
- Teaching multiplicative structures explicitly.
- Use of arrays and area models.
- Rhythm-based practice and chanting.
- Pattern recognition across tables.

- Structured small-group support.

Equity is ensured through targeted interventions, scaffolded practice and access to school-based digital opportunities.

How do our learning environments support development of knowledge?

In all classrooms, there is a maths learning wall, readily available manipulative boxes/ practical equipment and APE sentence stems. By reducing the amount on classrooms walls to focus on the key knowledge children need to achieve and progress within lessons, this helps to reduce the extraneous load for children and therefore helps to lower the cognitive overload.



Learning walls are added to as the learning progresses, with examples of learning going on the display as they happen. They contain key vocabulary (for each unit of work) what we already know (yesterday's work), today's learning and an example of what the children will be able to do after the teaching input. These walls will act as prompts to support teaching and learning throughout maths lessons. The aim is to allow children to become more engaged with their environment and use the prompts available to them. To develop their oracy skills, children use APE sentence stems to help them explain their answers when reasoning.

How is maths linked in closely with the connected curriculum?

With maths being critical to science, technology, engineering, financial literacy and most forms of employment, cross-curricular maths is regularly embedded within lessons at St Chad's. Children are provided with real-life learning experiences and opportunities to ensure they are confident to deal with everyday mathematical challenges. Within our connected curriculum, maths can be seen in lessons such as computing, science, DT, and humanities. Walking through our school, you will notice our corridors are filled with high quality cross-curricular displays, reflecting the children's love of the subject.

How is progress assessed in Maths?

Assessment is continuous, responsive and integral to teaching. Our approach is informed by Barak Rosenshine's principles of explicit instruction, including:

- Daily review.
- Small-step teaching with frequent checks for understanding.
- Guided practice before independent work.
- High participation through questioning.

Activation of Prior Knowledge

- Retrieval of previous concepts.
- Vocabulary rehearsal.
- Representation recall.
- Linking prior learning to new content.

Equity in Assessment

- Regular checking for targeted pupils (informed by assessment)
- Rapid identification of gaps.
- Informing pre-teaching and small-group support.
- Preventing widening attainment gaps.

Assessment of Maths

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graph TD; A[Assessment of Maths] --> B[Use of retrieval opportunities, to check for understanding of taught knowledge and vocabulary.]; A --> C[Use of Tapestry as an evidence tool to demonstrate learning through multi-sensory approaches.]; A --> D[Scrutinies of children's written work.]; A --> E[Intervention programmes are used to support children's gaps in learning.]; A --> F[End of term teacher assessments against the year group ARE's to identify progress that the children have made across the academic year.]; A --> G[Pupil Conferencing and learning walks by the subject leader.]; A --> H[Use of a range of questioning techniques to check for children's understanding of knowledge that is taught in small steps.];
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