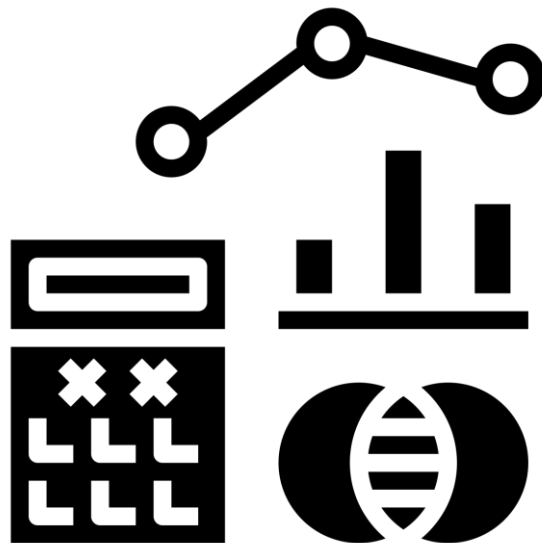




St Cecilia's
CHURCH OF ENGLAND PRIMARY SCHOOL

'Therefore encourage one another, and build each other up.'

How We Teach Maths



School vision

‘Therefore encourage one another, and build each other up.’

At St Cecilia’s, our vision is to be a community where we celebrate everyone’s gifts and where everyone flourishes and grows together

We encourage each other to use our gifts for the good of others and to build up our school as a whole. We have high expectations of academic success and strong pastoral care for all in our community.

Intention



To **Inspire** so that all our children are enthused and motivated to learn maths. Children enjoy the challenge that Maths provide and grappling that is needed to succeed.



To **Impart knowledge** so that children have the strong mathematical foundations to deepen their understanding year on year. Children will be fluent in the fundamentals of maths and will be given the tools to develop reasoning and confidently engage with mathematical problems.



To **Develop Communication** so that the children can confidently talk about their mathematical work and explaining their reasoning. Children will be confident in using mathematical language when talking about their work.



To **Be Inclusive** so that all children engage fully with the Maths curriculum and will broadly progress through the curriculum content at the same pace. To ensure equity, children will have access to the appropriate resources, scaffolding and support so that they can succeed each lesson.



To **Promote Citizenship and Spirituality** by giving children opportunities to engage with a range of problems in different contexts. Children are encouraged to be creative with how they tackle problems and record their findings.

To realise these aims we have core principles, based on extensive research, that drive curriculum design, teaching and learning in our school.

To inspire:

- We strive to place learning in to real life contexts with appropriate audiences
- We ensure that the children are challenged each day through varied reasoning and problem-solving tasks
- We incorporate games which requires the application of maths skills and logical thinking
- We make maths visible outside of the classroom and around the whole school
- We have high expectations
- We embrace mistakes as part of the learning process
- We celebrate the success of each other and praise effort and perseverance
- Wherever appropriate we utilise technology within Maths lessons
- We celebrate World Maths Day each year ensuring the theme is engaging and contextualised

To Impart knowledge:

- We ensure that each piece of knowledge is carefully mapped out and taught so that there is clear progression through units, years and between year groups
- We ensure that the children have the opportunities to retrieve key information each day so that they foundations of maths become fluent
- We use knowledge organisers which provide children with the key facts to support their learning within a unit
- We ask questions of the children to deeper understanding and thinking e.g Is there a more efficient method?
- We use carefully chosen resources to support the conceptual understanding
- Lesson objectives are clearly defined so children are clear about what they are learning
- We ensure teachers have strong subject knowledge through regular CPD
- We plan for misconceptions and ensure they are addressed in a timely manner
- We revisit key concepts regularly to ensure they enter the long-term memory.
- Individual lessons begin with a prior learning retrieval activity such as a quiz.

To develop communication:

- We give children opportunities to learn and use tier 2 and 3 language through discussions and explanations
- We ensure all key mathematical language is displayed so that the children have easy access
- We provide opportunities for children to work in small groups on mathematical challenges.
- We plan in opportunities for children to talk and listen to each other's ideas and reasoning
- Adults model good language and promote the use of higher-level vocabulary
- We provide opportunities for children to present their mathematical findings in different ways

To be Inclusive:

- We model and scaffold learning so all can access the lesson content
- We ensure learning is broken down in to small steps and these are embedded before moving on
- We have pre-teaching sessions so that children are more likely to be successful in the lesson
- We ensure we are aware of the specific needs of every child in the classroom
- We provide quality resources to support children's understanding of new content
- We use pre-assessment techniques to inform teaching
- We are flexible in how we let children show what they have learnt

To Promote Citizenship and Spirituality:

- We ensure children have time to reflect on their work and how mathematics influences the world in which they live
- We participate in local and global mathematical events including competitions

- We provide opportunities for children to work in small groups and support each other when they are finding something challenging
- We encourage children to contribute their thoughts and ideas to whole class discussions
- We provide opportunities for children to present their work and their achievements to wider audiences

Implementation

White Rose Scheme

At St Cecilia's we follow the White Rose maths schemes of work which map out all the units of work for the whole year (Appendix 1). Within each unit the small steps across a unit of work are mapped out so that the children can master each conceptual step before moving on to the next. All resources and materials can be found at the following link <https://whiterosemaths.com/>.

Lesson Planning and Resourcing

EYFS

At St Cecilia's we use Master the Curriculum to teach Maths to our EYFS children. The scheme is directly linked to the White rose scheme of work that is used in the KS2 classes. Master the Curriculum breaks down learning in to small steps that the children need to master to gain a deep understanding of maths topics and gradually their reasoning and problem-solving skills.

Year 1 and 2

Maths lesson

The children participate in a whole class maths lesson based on the white Rose Scheme of work. These sessions should last between 45 and 60mins.

Generally, a maths lesson will consider the following parts. This is based on the EEF Improving Mathematics in Key stage 2 report.

- 1) Maths recall – this is a low stakes test/ activity designed to rehearse key skills from the past (See below).
- 2) Recall the pre-requisites for new learning and ensure they are secure
- 3) Teach the concept in short clear steps with clear modelled examples
- 4) Predict the misconceptions and address these in the teaching input. This allows errors to be addressed before they happen.
- 5) Independent/ collaborative activity – carefully chosen examples to develop understanding. (See below)
- 6) Use manipulatives to support understanding. These should scaffold learning and be temporary rather than a safety net.

At the end of each lesson, teachers must assess how each child has progressed during the lesson and plan the following lesson accordingly.

KS2

Maths lesson

As mentioned above, each small step is mapped out in the White Rose schemes of work. This includes a context for the lesson and examples of fluency, reasoning and problem-solving tasks. Teachers at St Cecilia's are expected to plan their maths learning journeys using these small steps. Generally, a maths lesson will consider the following parts. This is based on the EEF Improving Mathematics in Key stage 2 report.

- 1) Maths recall – this is a low stakes test/ activity designed to rehearse key skills from the past (See below).
- 2) Recall the pre-requisites for new learning and ensure they are secure
- 3) Teach the concept in short clear steps with clear modelled examples
- 4) Predict the misconceptions and address these in the teaching input. This allows errors to be addressed before they happen.
- 5) Independent/ collaborative activity – carefully chosen examples to develop understanding. (See below)
- 6) Use manipulatives to support understanding. These should scaffold learning and be temporary rather than a safety net.

At the end of each lesson, teachers must assess how each child has progressed during the lesson and plan the following lesson accordingly.

Lesson Planning

We have no set way to plan lessons however it is recommended that teachers plan the main learning that they want to take place over a week and then find and create strong resources such as IWB presentation. We have subscribed to some high-quality resources that support the aims of the curriculum including White Rose hub, number bots/ TTR and PLanpanion. In addition to this, we also use the most recent Government guidance to support the teaching of the key objectives that allow our children to be ready to move on to their next learning stage. This guidance can be found at <https://www.gov.uk/government/publications/teachingmathematics-in-primary-schools>

As part of the lessons at St Cecilia's we apply a Concrete, pictorial, abstract (CPA) approach. This means that children should use concrete resources such as diennes and place value counters first, then represent this pictorially before moving to abstract recording of maths. This process helps the children develop a strong understanding of the concept being taught. For more information on this please follow the link <https://thirdspacelearning.com/blog/concrete-pictorialabstract-maths-cpa/>

Number fact mastery sessions

The expectation for primary school children is that all times tables up to 12 x 12 will be learnt by the end of year 4. Research suggests that speed and memory activities are not the best way for children to become fluent in their understanding of multiplication facts and that it is more important to develop "number sense" rather than memory. Therefore, it is best for children to learn times tables using a balanced approach, teaching and rehearsing them both conceptually and through repetition and low stakes testing.

To ensure that the times tables are completely mastered we follow the Third Space Learning document for progression which sets out the key objectives to be focused on each half term. 2-3 times a week, the teacher leads a times table session. These sessions include a range of the following activities.

- 1) Recognising multiplication facts conceptually in a range of forms e.g arrays, groups of objects
- 2) Repeated addition
- 3) Multiple counting – this involves number lines, counting sticks, chanting (Rolling numbers <http://mrreddy.com/blog/2016/09/teaching-your-class-to-roll-numbers/>). This progresses to missing multiples out and counting backwards.
- 4) Low stakes testing using Times Table Rockstars.

At home, so that the rehearsal of facts is continued, children use Times Table Rockstars (TTR), an online platform, which allows the children to practise their tables and their recall speeds are recorded. Children are then given instant feedback and facts that are less fluent are identified.

Maths Recall Starters

Learning can be defined as moving information from the short-term memory to the long-term memory. For this to happen, science has shown that repetition is key. As a result, at the beginning of every maths lesson, we complete a maths recall starter. This starter gives children the opportunity to recall and rehearse concepts and skills that have already been taught in the past. The four questions that the children complete should be purposeful and linked to the needs of the children. Therefore, the following are used to inform which four questions are used.

- 1) From QLAs on assessments – what have the children got wrong on a test?
- 2) Access prior learning – What do you need the children to recall to access the learning the following week?
- 3) From past teaching, what area of maths did the children find most challenging?
- 4) Examples linked to the key objectives outlined in the government guidance (Ready to progress criteria)

For children who require specific maths intervention, this part of the maths lesson is used to do it e.g number bonds instead of completing whole class recall.

Calculation Policy

When teaching calculation methods, we follow the school calculation policy which has been designed to match the methods used in White Rose.

SEND

A key aim of our curriculum is to be inclusive for all pupils. We use one curriculum, White Rose Maths, that works for all, with everybody studying the same topic and being provided with support and challenge as needed. When teaching children with SEND, teachers will utilise teaching strategies that support the learning. These include:

- Using concrete and pictorial representations
- Regular opportunities to revisit learning

- Misconceptions are planned and taught
- Small steps in learning
- Adult support where appropriate

Where needed children will participate in interventions based on the key foundations of maths and pre-teaching of units.

Assessment

End of Unit Assessment

Following the completion of each maths unit, White Rose have created a short assessment which aims to test the children's understanding of what has been taught. Because we want to test whether children have retained this knowledge, these assessments are completed by the children two weeks after the teaching. These assessments are used to identify areas which have not been retained or not fully understood. These concepts can then be revisited again in recall sessions and later on in the year. The outcomes of these assessments can also be used to inform teachers as to whether the children are working at ARE or not.

Termly assessment

Each term, the children complete an assessment that is designed to test the knowledge learnt throughout the term.

Feedback

In line with our feedback policy, teachers do in the moment feedback and marking as this gives the teacher the opportunity to highlight and address misconceptions straight away. If this form of feedback cannot be done then teachers look at books after the lesson, complete a feedback sheet and assess progress so that it informs the subsequent lesson (See feedback policy).

Impact

Once a term, Teachers meet with senior leaders to discuss how the children are progressing in maths. Teachers are expected to say whether children are working at WTS/EXS/GDS level based on what they have taught already. This information is generated from teacher assessment, end of unit assessments and termly assessments.

The data that is given to the senior leaders is then compared to their previous statutory assessment point and their progress to date evaluated.

From PPM sessions, children who are making less progress from their start points are 'targeted' by the teacher and discussed again at the following PPM. If necessary the SENCO can become involved at this stage.

As well as this, the maths subject leader and members of the SLT complete termly lesson visits and book

Evaluating the Maths Curriculum

When evaluating our curriculum, we ask ourselves these questions which are derived from our curriculum aims:

Inspire

- To what extent do our children show independence, resilience and high aspirations in Maths?
- To what extent does our Maths curriculum provide challenge?
- To what extent do the children understand maths as a life tool?

- To what extent are children motivated and enthused in the maths lesson

Impart Knowledge

- To what extent do children retain the knowledge/ Facts learnt in Maths?
- To what extent does the Maths curriculum build/ progress over time?
- To what extent do children make progress in Maths?
- To what extent does teacher's subject knowledge impact learning?
- To what extent do children know how to solve problems?

Develop communication

- To what extent does our Maths curriculum teach quality language?
- To what extent does the Maths curriculum provide opportunities to work collaboratively?
- To what extent does the Maths curriculum support children with oracy skills?
- To what extent can the children reason and explain thinking?

Inclusivity

- How well is learning broken down and scaffolded in Maths?
- How well is assessment used to inform planning in Maths?
- To what extent does the Maths curriculum meet the needs of all learners including SEND/ EAL etc?
- How effective are Maths interventions?

Citizenship and Spirituality

- To what extent does the Maths curriculum allow children to take responsibility for their learning?
- To what extent does the Maths curriculum offer opportunities to present work in creative ways?
- To what extent does the Maths curriculum offer opportunities to utilise the skills of the wider community?
- To what extent do learners contribute to discussions and verbalise ideas?

Appendix 1 – Yearly Overviews

Nursery

<p>Comparison 1</p> <p>More than, fewer than, same</p> <p>VIEW</p>	<p>Shape, space and measure 1</p> <p>Explore and build with shapes and objects</p> <p>VIEW</p>	<p>Pattern 1</p> <p>Explore repeats</p> <p>VIEW</p>	<p>Counting 1</p> <p>Hear and say number names</p> <p>VIEW</p>	<p>Counting 2</p> <p>Begin to order number names</p> <p>VIEW</p>	<p>Subitising 1</p> <p>I see 1, 2, 3</p> <p>VIEW</p>
<p>Pattern 2</p> <p>Join in with repeats</p> <p>VIEW</p>	<p>Shape, space and measure 2</p> <p>Explore position and space</p> <p>VIEW</p>	<p>Subitising 2</p> <p>Show me 1, 2, 3</p> <p>VIEW</p>	<p>Counting 3</p> <p>Move and label 1, 2, 3</p> <p>VIEW</p>	<p>Shape, space and measure 3</p> <p>Explore position and routes</p> <p>VIEW</p>	<p>Pattern 3</p> <p>Explore patterns</p> <p>VIEW</p>
<p>Counting 4</p> <p>Take and give 1, 2, 3</p> <p>VIEW</p>	<p>Shape, space and measure 4</p> <p>Match, talk, push and pull</p> <p>VIEW</p>	<p>Subitising 3</p> <p>Talk about dots</p> <p>VIEW</p>	<p>Composition 2</p> <p>Compare and sort collections</p> <p>VIEW</p>	<p>Pattern 4</p> <p>Lead on own repeats</p> <p>VIEW</p>	<p>Shape, space and measure 5</p> <p>Start to puzzle</p> <p>VIEW</p>
<p>Pattern 5</p> <p>Making patterns together</p> <p>VIEW</p>	<p>Subitising 4</p> <p>Make games and actions</p> <p>VIEW</p>	<p>Counting 5</p> <p>Show me 5</p> <p>VIEW</p>	<p>Pattern 6</p> <p>My own pattern</p> <p>VIEW</p>	<p>Counting 6</p> <p>Stop at 1, 2, 3, 4, 5</p> <p>VIEW</p>	<p>Comparison 3</p> <p>Match, sort, compare</p> <p>VIEW</p>

Reception

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	Getting to Know You		Just Like Me!			It's Me 1 2 3!			Light and Dark		Consolidation			
Spring	Alive in 5!		Growing 6, 7, 8			Building 9 and 10			Consolidation					
Summer	To 20 and Beyond		First Then Now			Find My Pattern			On The Move					

Year 1

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value (within 10)			Number: Addition and Subtraction (within 10)					Geometry: Shape	Number: Place Value (within 20)		
Spring	Consolidation	Number: Addition and Subtraction (within 20)		Number: Place Value (within 50)			Measurement: Length and Height		Measurement: Weight and Volume		Consolidation	
Summer	Consolidation	Number: Multiplication and Division		Number: Fractions		Geometry: Position and Direction	Number: Place Value (within 100)		Measurement: Money	Measurement: Time		

Year 2

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value			Number: Addition and Subtraction					Measurement: Money		Number: Multiplication and Division	Consolidation
Spring	Number: Multiplication and <u>Division</u>			Statistics		Geometry: Properties of Shape		Number: Fractions				
Summer	Measurement: Length and Height	Geometry: Position and Direction		Consolidation and problem solving		Measurement: Time		Measurement: Mass, Capacity and Temperature			Consolidation	

Year 3

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	
Autumn	Number: Place Value			Number: Addition and Subtraction					Number: Multiplication and Division				
Spring	Number: Multiplication and Division			Measurement: Money	Statistics		Measurement: Length and Perimeter			Number: Fractions		Consolidation	
Summer	Number: Fractions			Measurement: Time			Geometry: Properties of Shape		Measurement: Mass and Capacity			Consolidation	

Year 4

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value			Number: Addition and Subtraction			Measurement: Length and Perimeter		Number: Multiplication and Division			
Spring	Number: Multiplication and Division		Measurement: Area	Number: Fractions				Number: Decimals			Consolidation	
Summer	Number: Decimals	Measurement: Money		Measurement: Time	Statistics	Geometry: Properties of Shape		Geometry: Position and Direction		Consolidation		

Year 5

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value			Number: Addition and Subtraction		Statistics		Number: Multiplication and Division			Measurement: Perimeter and Area	
Spring	Number: Multiplication and Division			Number: Fractions						Number: Decimals and Percentages		Consolidation
Summer	Consolidation	Number: Decimals			Geometry: Properties of Shape		Geometry: Position and Direction		Measurement: Converting Units		Measurement: Volume	

Year 6

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value		Number: Addition, Subtraction, Multiplication and Division				Number: Fractions					Geometry: Position and Direction
Spring	Number: Decimals	Number: Percentages		Number: Algebra		Measurement: Converting Units	Measurement: Perimeter, Area and Volume		Number: Ratio		Statistics	
Summer	Geometry: Properties of Shape		Consolidation or SATs preparation		Consolidation, investigations and preparations for KS3							