

Maths Policy

This policy should be read in conjunction with the Calculation Policy, Progression of Skills document and Non-Negotiables document.

Our Shared Vision & Values



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We are ambitious to ACHIEVE ;	we aim high, anything is possible!
We show SELF-RESPECT ,	we support each other with empathy, tolerance and quiet confidence.
We are PROUD :	positive, practical and we persevere.
We want to be INSPIRED ,	show our creativity, "Dream Big".
We demonstrate RESILIENCE ;	we learn from our mistakes, are reflective and reciprocal, take responsibility for our actions.
Everyone is EQUAL ;	there are exciting experiences at Carlton Road for all.

The Context of our School and its Curriculum

Carlton Road Academy is a two-form entry school with our own attached Nursery based in Boston, Lincolnshire. With a cohort drawn from the immediate area, the school serves a diverse community with a greater-than-average number of EAL and Pupil Premium students; mobility is high. As a result, it is key that our approach to teaching and learning is accessible to all children, regardless of their background. Our ethos 'Aspire to Achieve' is embedded throughout the school, its curriculum and our knowledge expectations – we expect our children to 'Aim High and Dream Big'.

Our 'Aspire' curriculum brings to life the school's ethos and values. It embraces the whole child and their success in education – both academic ambition, practical skills and social achievements. At the same time, we expect the children to be proudly responsible of and for their own efforts, to persevere when the going is not always easy thereby making their individual contribution to the shared, equalitarian and democratic learning experience at Carlton Road.

Curriculum Intent

Maths

At Carlton Road Academy, in order to successfully provide a structured, rich curriculum with a clear progression of skills, we deliver the statutory requirements of the National Curriculum for mathematics through the White Rose Scheme of Learning. At the core, we want our pupils to:

- become fluent in the fundamentals of maths through intelligent practice;
- develop their conceptual understanding and the ability to recall and apply knowledge rapidly;
- be able to reason and problem solve by applying their mathematics to a variety of increasingly complex problems.

Building upon their knowledge and understanding of mathematics from Nursery to Year 6, our children develop independent learning behaviours through choice, challenge and the CPA approach (concrete, pictorial and abstract learning). It is our intent that our pupils develop into confident and articulate mathematical communicators, thinkers and decision makers who have the resilience and stamina to reason and problem solve with confidence.

The secure mathematical understanding gained by the children whilst at Carlton Road Academy, will assist them with their transition into Key Stage 3. We pride ourselves in nurturing enthusiastic mathematicians of the future who see the importance that such a subject plays within their daily lives as well as their future careers.

Our curriculum promotes	A S P I R E	Achievement,	all learners are academically ambitious, aim high, maximising their own potential from their considerably different starting points. Everyone reads with enjoyment and enthusiasm. Anything is possible!
Our curriculum instils		Self-respect,	creating confidence, tolerance and mutual respect within the whole school community, children support and encourage each other upholding British Values.
Our curriculum promotes pupil's		Pride,	they feel part of something bigger, maintain positivity, take pleasure in their work, using both practical skills and their own mindset to help them persevere.
Our curriculum enables students to be		Inspired;	its varied content and wide-reaching subject matter offers a wealth of learning opportunities that encourage creativity, from close to home and further afield; we "Dream Big" at Carlton Road.
Our curriculum develops learners who are		Resilient	to be honest in their understanding and learn from their mistakes, overcome setbacks and challenges, to take responsibility for their own learning, to be reciprocal and reflective in lessons.
Our curriculum embodies		Equality;	everyone is entitled to exciting experiences, cultural, sporting and enriching and to have their views and voices heard.

What our intent looks in Maths

A	Achievement	<ul style="list-style-type: none"> We want all pupils to achieve in maths and make their journey an exciting experience. Therefore, we encourage the 'I do, We do, You do' approach in lessons to give all pupils equal opportunities to succeed. We also encourage paired and group work so that pupils can learn from each other. Because children learn at different paces, we ensure that our lessons are made fully accessible, achievement is encouraged for all pupils. Where learning is not secure, scaffolded and tailored support is in place. Through guidance and modelling, we give pupils opportunities to showcase their understanding through fluency and reasoning and problem solving; this is a process with an end goal in mastering maths within each strand of the curriculum.
S	Self-respect	<ul style="list-style-type: none"> We encourage our pupils to have pride and confidence in their own mathematical abilities. Through modelling positive learning behaviours, we encourage pupils to be focused and respectful at all times; celebrating the achievement of others, no matter how small, but also their own successes. By doing this, they will develop their self-esteem and become more confident in their own learning.
P	Pride	<ul style="list-style-type: none"> At Carlton Road Academy, we want our pupils to be proud of their work and achievements in maths. This is accomplished through careful modelling to secure conceptual understanding, thereby ensuring that each pupil feels that they are part of the class and that they have all of the tools in which they need to succeed. As staff, we ensure that we celebrate all successes, whether large or small, with our pupils to instil a sense of pride and purpose in everything that they do.
I	Inspired	<ul style="list-style-type: none"> Through our teaching and learning, we aim to inspire, motivate and encourage our pupils to be excited about maths and see the importance of such a subject in the workplace. Our overall ambition is to develop confident mathematicians who will take their place in society and make a difference using the knowledge and skills that are developed during their journey with us.
R	Resilient	<ul style="list-style-type: none"> Through our teaching, we encourage all pupils to be resilient learners. We want them approach maths with confidence, focus and ambition, but at the same time show determination and a positive growth mindset when learning may be more challenging. This life skill will enable our pupils to become successful mathematicians.
E	Equality	<ul style="list-style-type: none"> At Carlton Road Academy, we want equal opportunities for all. We therefore create classrooms where pupils can thrive together. We understand that all pupils' characteristics make them unique but not 'different' and celebrate this through the diverse questions, scaffolds and tasks we provide. In lessons, we ensure equality through high quality teaching, making it accessible for all pupils.

Curriculum Implementation

How we deliver our curriculum:

- Topic overviews are planned to ensure a broad and balanced curriculum is taught across all areas of maths.
- Daily maths lessons include elements of fluency, reasoning and problem solving.
- Pupils are involved in every aspect of the lessons, through answering and asking questions, participating in paired talk activities and completing a range of tasks to deepen their conceptual and procedural fluency.
- Connections within and across Maths strands are acknowledged and applied where appropriate in lessons.
- Lessons provide opportunities for intelligent practice and appropriate challenge for all groups of learners.
- Concrete manipulatives and pictorial representations are used to support conceptual understanding.
- Retrieval practice is part of daily maths and provides an opportunity to embed, recall and link prior learning beyond the current academic year.
- Pre and post checks are carried out at the beginning and end of each strand. Pre checks assess prior knowledge and determine starting points for pupils and post checks check retention of knowledge and skills once a strand has been taught. They enable teachers to plan further intervention where appropriate.
- We use Times Table Rock Stars to enthuse the children in learning times tables.
- We use Numbots in KS1 to embed understanding of number.
- Opportunities to collaborate in pairs or small groups are regularly provided so children can learn from and support each other.
- Opportunities for peer and self-assessment are provided so pupils are given instant feedback in their learning.
- Teachers effectively model and use assessment for learning to make sure children are suitably challenged or supported.
- Interventions are quickly put in place, such as PiXL therapies and Maths for those children who need it.
- Purposeful cross-curricular links are provided when opportunities arise.
- Mathematics 'working walls' are in each classroom to demonstrate and support current learning and include models, questions, key vocabulary and additional challenges.

Teaching and Learning turns “thinking” (the task of the working memory) into “knowledge” (our long-term memories) that can be recalled and used again and again. The table below demonstrates the types of knowledge the pupils acquire and what it looks like in Maths.

	Forms of Knowledge	What that knowledge looks like in school	What that knowledge looks like in Maths.
A	Academic Answers	Children encounter facts, learn knowledge that is “known”: number bonds, spellings, capital cities, the wives of Henry VIII, colours. Facts that can be straightforwardly shared, memorised and recalled.	Pupils will learn and understand mathematical vocabulary through daily teaching. It is an integral part of both lessons and the maths working wall in each classroom. Pupils will be encouraged to use the vocabulary in sentences to build their mathematical understanding. Pupils will also learn strategies for rapid recall of number bonds and times tables.
S	Situational and Symbolic	Children interpret knowledge in the context of what they comprehend from the cultures they know/their context/ community/ heritage. This includes their understanding of symbols – written, gestures, body language, pictorial, coded such a computers or road signs etc.	In maths, pupils encounter a range of symbols daily. These are taught and explained with their synonyms so that pupils understand their meaning and how to interpret them when solving problems. They also use a range of visual representations to aid their conceptual understanding of a concept.
P	Practical – the “How to?”	Children learn practical knowledge when they need to know the “How to...” e.g., ride a bike, read a map. The knowledge may come in steps or stages. It could be written down to follow like a recipe or automatically retrieved, once learnt, such as how to swim.	At Carlton Road Academy, we use the CPA approach (concrete, pictorial and abstract) for maths. Pupils have opportunities during every maths lesson, where applicable and appropriate, to use manipulatives. This enhances their mathematical understanding of concepts, especially new concepts.
I	Implicit and Incidental	Implicit knowledge often unconsciously obtained, and we may not recall learning it: such as how to walk or talk, it builds on past experiences. Incidental knowledge is similar in that we acquire it from experiences, but these are unplanned or unintended.	All strands in maths are progressive. Pupils will therefore build on prior knowledge as they move between year groups. This ensures that they are taught the appropriate age-related concepts. Some pupils will bring prior knowledge to a strand, knowledge that they have not necessarily been taught in school e.g. how to tell the time, read scales or recognising money. These concepts stand them in good stead when the concepts are taught explicitly.
R	Relationships and Real Life	This is knowledge that supports children build relationships and understand how social interactions work; the knowledge behind “real life” skills such as empathy, friendship, honesty. For some it comes naturally, most children need a level coaching to acquire it.	In maths we encourage working together and sharing ideas. Adults encourage pupils to help and support each other and work as a team or partnership. We also encourage them to be respectful of others’ opinions. However, there are times when independence is necessary during lessons and assessments.
E	Experiences and Experts	This is knowledge built up from a range of experiences both undertaken or encountered personally such as a visit to a place of historical interest, it may be explicitly taught, or delivered by an “expert” such as a professor, or sensorily observed such as an experiment.	Pupils are provided with practical experiences, such as making 3-D nets, filling in a weather chart, measuring ingredients with a scale and a cup when baking, the use of a telephone and a timer. Where appropriate, maths is presented to pupils in real-life contexts so that they can see the importance of the subject in the wider world.

In Maths, we teach to secure that knowledge in the following ways:

	How the children will acquire their knowledge:	What that practice looks like in Maths
A	<i>Active construction of knowledge, the acquisition of vocabulary, teacher articulation of learning processes and the asking and answering of questions.</i>	<ul style="list-style-type: none"> • Pupils will use a variety of manipulatives to give them the opportunity to develop their mathematical understanding by using mathematical vocabulary, exploring shape and space, estimating and measuring, making predictions and recording results. • Pupils are supported on their learning journey through modelling, asking and answering questions and the use of working walls. • Teachers have a secure knowledge of pupils’ capabilities to support them on their journey in the different strands of the maths curriculum.
S	<i>Staged development enables children to join up intertwined groups of meaningful knowledge into schemas. This comes semantically, through the senses, through skills and socially.</i>	<ul style="list-style-type: none"> • In maths, all strands of learning show progression. As it is based on understanding, progression therefore can be seen as the development of the pupil’s ability and confidence to be able to explore and utilise a variety of mental strategies and basic skills grows. • To facilitate progression in maths, effective planning and teaching by the teacher and good resources are important. • In maths, pupils have lots of opportunities to work together as a pair, a group or as a whole class. This develops pupils’ social skills where they learn from each other, demonstrating respect for others and themselves.
P	<i>Practically: children access a wide range of memorable learning through play, the power of stories pictures and print and through problem-solving activities.</i>	<ul style="list-style-type: none"> • All pupils have opportunities to access learning through stories, play and the use of manipulatives, especially in EYFS. • In EYFS, pupils create patterns of repeated behaviour which allow them to explore and express developing ideas and thoughts through play and exploration. • In EYFS and Years 1 – 6, pupils use a range of manipulatives to support their learning and understanding. Classes are well resourced in this area. • Problem-solving is integral to maths and where appropriate, pupils are provided with clear models and scaffolds to support their development of this pivotal part of the curriculum.
I	<i>Internalisation of learning through interaction, instruction, imitation and integration aids the movement of thoughts to long term memory.</i>	<ul style="list-style-type: none"> • Pupils need to have a conceptual understanding of maths strands to understand what they need to do during an activity. They do this by imitating the teacher after the modelling of a concept, using worked examples where appropriate. • Pupils find it easier to internalise the maths when they use manipulatives at the start of a new concept before they move on to pictorial representations and then abstract learning.
R	<i>Retrieval of knowledge through repetition, revision, recycling and routine prompts memory “muscle” to work, making knowledge “stick”.</i>	<ul style="list-style-type: none"> • Pupils continually revisit learning, whether that be from the day before, week before or prior to this. • Connections between mathematical concepts and previously taught content is integral to maths lessons to embed and deepen understanding, freeing the working memory for newly taught concepts. • Retrieval practice at the start of lessons also supports this.
E	<i>Special experiences linked to learning objectives and opportunities in specific environments can enhance the probability of long-term memory retaining key messages.</i>	<ul style="list-style-type: none"> • Pupils attend competitions at the Secondary schools and take part in World Maths Day.

The Maths curriculum is divided into specific concepts of knowledge; successful learning requires the child to understand and know each concept within the subject to ensure their experience is a rounded and robust one. Understanding a single area in isolation will not develop the broad knowledge needed to acquire the cultural capital maths can offer.

In KS1 these are:

Focus	Intention	SMSC
<ul style="list-style-type: none"> • To recognise coins and notes • To count coins • To add totals • To give change • To recall the days of the week and months of the year • To tell o’clock times • To tell half past times • To tell the time to the nearest 5 minutes • To compare duration of time • To solve problems and investigate numbers. • To solve problems involving measures. 	<ul style="list-style-type: none"> • To enable pupils to begin to see the value of money • To be able to use own money in role play and real-life situations • To enable pupils to understand the concept of time of how these are linked • To enable pupils to apply knowledge taught and begin simple trial and error processes • To enable pupils to read scales in real-life situations. 	<ul style="list-style-type: none"> • Interpersonal skills - financial awareness • Personal skills – attendance and punctuality • Personal skills – resilience and perseverance

In KS2 these are:

Focus	Intention	SMSC
<ul style="list-style-type: none"> • To recognise coins and notes. • To add and subtract money . • To count and record money using decimal notation. • To apply knowledge of all four operations to money problems. • To use negative numbers in context. • To tell the time to the nearest minute. • To compare durations of time. • To accurately read time to include 24-hour clocks. • To convert between different units of time in order to solve problems using the timetables. • To read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit. • To solve a range of problems, including one step, two step and multi-step problems. 	<ul style="list-style-type: none"> • To develop and extend pupils knowledge of money and how this can be presented using decimal notation. • To take real like calculations with money such as totals and change. • To extend pupils knowledge of telling time and how this can be presented in different ways to include analogue, 12- and 24-hour clocks. • To enable pupils to apply their knowledge of time to real-life situations such as transport timetables. • To develop and extend pupils understanding of a range of standard units and convert accurately between these where necessary. • To enable pupils to apply knowledge taught and develop systematic approaches to problems using a range of skills. 	<ul style="list-style-type: none"> • Interpersonal skills - financial awareness. • Personal skills – attendance and punctuality. • Personal skills – resilience and perseverance. • Become self-reflective and make improvements. • Building self-esteem through sense of achievement.

Teaching Maths

- We follow the National Curriculum in conjunction with White Rose.

Ensuring consistency and pace of progress

- Every teacher is inspired to teach first-quality, well-prepared lessons ensuring that the needs of the class are met.
- White Rose small steps are followed.
- White Rose Premium resources are used purposely.
- Times Tables Rock Stars are used to practise times tables.
- The subject leader ensures consistency of pace and progress by:
- Sharing good practice
- Evaluate effective teaching and learning through learning walks, planning and book looks and pupil voice.
- Delivering high-quality CPD where appropriate to all staff.
- Analysing end of term data.
- Monitoring groups of children – PP, EAL, SEND

Impact

- Pupils are reasoning with increased confidence and accuracy.
- End of key stage attainment is in line, or above, national average.
- Pupils’ progress is tracked each half term using PiXL and pupil progress meetings.
- Book audits evidence fluency across the four operations and increasingly improved application of skills through reasoning and problem solving.
- Well-planned sequences of learning support children to develop and refine their maths skills.
- Pupils are able to independently apply their knowledge to a range of increasingly complex problems.
- Pupils are reasoning with increased confidence and accuracy.

Assessment

Assessment is used to monitor progress and to identify any child needing additional support as soon as they need it.

- **Assessment for learning** is used:
 - Daily, in each lesson
 - Weekly through Cold Maths activities to assess prior learning.
 - Before each strand is taught to assess prior knowledge.
 - At the end of each strand in Maths.
- **Summative assessment** is used:
 - Every t term.
 - Analysed and used to inform planning.

Statutory assessment

- At the end of the year for KS 1 (Year 2) and KS 2 (Year 6)
- MTC for Year 4 pupils

Ongoing assessment for catch-up

- Years 2 and 6

This policy was most recently updated in:
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