

Singleton Church of England Primary School

Mathematics Overview

"Passion for LearningPassion for life"

Governors and school leaders facilitate a reflective and ambitious culture. Constructive challenge and creative ideas are encouraged, valued and used to inform whole school planning. The views of learners, parents, staff, governors, therapists, social workers and other stakeholders inform the evaluation of the quality of our work and provision, which in turn is used to identify areas for improvement.



Curriculum Overview

Intent

The aim of our curriculum is linked to our vision

School Vision

To provide the children with a wide variety of engaging and challenging opportunities enabling them to live life to the full. Developing a growth mind-set, believing that with God everything is possible. To show, love, trust, wisdom and respect, becoming exemplary role models in our community and the wider world.

MATHEMATICS IS THE MOST BEAUTIFUL AND MOST POWERFUL CREATION OF THE HUMAN SPIRIT.

— Stefan Banach, Polish mathematician

The rationale behind this is...

At Singleton Church of England School, we believe that every child must be provided with opportunities to develop socially, emotionally, academically and physically to achieve the highest possible standards.

The sky is the limit for our children. We seek to inspire each other and learn to value greatness, ambition and achievement of all kinds. To belong to Singleton School is an honour. Each of us aspires to reach a potential, which is not limited, but is given wings through the creative curriculum and our Christian Values, which will truly enable us to embrace living our lives without limits.

As such, there is high academic/ vocational / technical ambition for all pupils, and as a school, we do not offer disadvantaged pupils or pupils with SEND a reduced curriculum.

Singleton C of E Primary School is an exciting and innovative Church of England School committed to providing the highest standard of education for every pupil. We share, with parents, the responsibility for teaching our children and preparing them for the future. It is a place where children really matter and every individual's ability is recognised, developed and rewarded. We embrace every child's learning journey and encourage them to be the best they can be.

To support with teacher workload / work life balance we have devised our own scheme of work which uses Unit Plans from the National strategies and Whit Rose Maths as a basis.

- We have developed a curriculum that is ambitious and designed for all pupils. It is coherently planned and sequenced towards cumulatively providing the necessary knowledge and skills for the pupils' future to empower them to take their role as informed and active citizens in the 21st century. Its emphasis is not just on mathematical knowledge but also skills and concepts. It has the same challenging academic ambitions for all pupils. They all work from a shared starting point to answer the same key questions.
- Singletons numeracy scheme of work is a complete curriculum programme for primary mathematics which provides 6 blocks of work to interest pupils and encourage curiosity about the mathematics curriculum, but also provides opportunities for investigation, challenge, using and applying and problem solving. It offers complete coverage of the Programme of Study for Mathematics (2014).
- From starting points suitable for all, pupils develop to tackle appropriate challenges for KS1 and KS2 pupils of varying abilities. The units have key questions to encourage the use of mathematical enquiry, as well as a focus on the acquisition and application of key subject knowledge, concepts and vocabulary throughout.
- There is a consistent approach to mental and written calculations used across school and the planning supports the 'modelling' / direct teach aspect for all staff – to help scaffold teaching and learning experiences.
- Skills, knowledge and understanding in mathematics progress through Year 1 to Year 6, being taught, developed and applied throughout the schemes of work. A range of opportunities are provided to enable all pupils to communicate their knowledge and understanding of the subject. Links are made within and across units to support pupils in making connections.
- In our school we have mixed aged classes and the scheme of work has been developed to support with the teaching and learning of Age Related Expectations for each year group. The

front cover of each unit provides the teaching staff with information for the year group below and above.

MATHEMATICS KNOWS NO RACES OR GEOGRAPHIC BOUNDARIES; FOR MATHEMATICS, THE CULTURAL WORLD IS ONE COUNTRY.

— David Hilbert, German mathematician

Implementation

Our scheme of work is designed to be delivered by non-specialists, with core mathematical knowledge identified and explained throughout. The unit plans are very detailed in terms of the 'how to teach' a strategy / concept. They provide clear models for demonstration that are consistently built upon and developed as the children progress through school. The plans provide flexibility for the staff to plan tasks and activities for their classes taking into account the learning needs of the children.

- Appropriate discussion is recommended as a means of checking pupils' mathematical learning systematically, identifying misconceptions and providing immediate feedback. With Key questions and discussion points identified within the Unit Plans
- Questions and tasks to stretch and challenge the most able pupils are incorporated where appropriate.
- On the Block overviews – NRICH tasks and their links have been identified for the staff
- The plans are progressive - Revisiting ideas and concepts in different, more challenging, contexts in later units, using varied assessments and the inclusion of quizzes / games, Key questions, warm up games and plenaries all designed to help pupils remember content and integrate new knowledge into their evolving conceptual framework.
- Quality resources and materials are provided to support the mathematics curriculum and are sequenced towards the accumulation of skills, knowledge and understanding for pupils' futures. Each year group has their own planning folder on the server which has a wealth of resources saved for the staff to reduce their workload but to also ensure that consistently high quality resources are used. These include
 - NRICH links
 - Gordon's ITP's models and images
 - Links to White Rose - Maths Hub – mastery support materials
 - Over coming Barriers – Teaching support guides
 - Intervention programmes - Over coming barriers, Wave etc
 - PowerPoints
 - Games
 - Pitch and expectations
 - Maths Knowledge organisers
 - Maths Challenges
- We also have a high level of quality practical resources.

Evidence of impact

- The impact of the Mathematical approach is evidenced through the pupils' use and understanding of the identified mathematical vocabulary and their association of it with relevant learning contexts
- It is evidenced by the use and outcomes of the varied activities, key questions, assessments and quizzes threaded through the learning experiences provided.
- It is also demonstrated by the pupils' ability to show progress along the 'observe, use mathematical vocabulary to describe, compare, give reasons and explain what they are learning about' sequence, and in their acquisition, application and transferability of mathematical skills.
- In particular, it is evidenced by the pupils' ability, willingness and confidence in addressing and discussing each unit's key questions, giving an ability-indicative response focusing on mathematical vocabulary, skills and concepts.
- Our Numeracy curriculum is taught and implemented successfully, with the following strengths:

- Subject knowledge (including content and pedagogy) of teachers is strong – this is supported by an effective scheme of work which includes additional supportive materials for teachers to read around prior to teaching

MATHEMATICS HAS BEAUTY AND ROMANCE. IT IS NOT A BORING PLACE TO BE, THE MATHEMATICAL WORLD. IT IS AN EXTRAORDINARY PLACE; IT IS WORTH SPENDING TIME THERE.

— Marcus du Sautoy, British mathematician

Intent

Why develop our own scheme of work?

We are a small school with mixed aged classes. When the new National Curriculum was introduced in 2014 we found ourselves in a different position to a one form entry school, with the introduction of 'Age Related Expectations,' - milestones to be reached at a specific year group.

With a mixed aged class scenario we could not support our mathematical teaching and learning with an 'off the shelf style scheme of work' as so many primary schools were doing at this time. This became very apparent in the early days, so as such we began in 2014 developing our own approach to the development of a scheme of work for mathematics in our school that also encompassed a strategy for teaching a mixed age class using a teaching carousel.

We devised a complete curriculum programme for primary Mathematics drawing on ready available quality resources such as White Rose, The National Strategies, NRICH which ensures pupils gain a coherent knowledge and understanding of mathematics. It offers complete coverage of the National Curriculum Programme of Study for Mathematics (2014)

From starting points suitable for all, the units develop to provide appropriate challenges for KS1 and KS2 pupils of varying abilities. The units have key questions to develop the use of mathematical enquiry, as well as a focus on the acquisition and application of key subject knowledge, concepts and vocabulary throughout.

How the scheme is organised?

Blocked Plans

- **Blocked Plan** (Medium term plan)– **6 week overview**
 - These identify the National Curriculum coverage for the six-week block.
 - These plans where possible provide for the staff a clear concise overview of the NC for **both age ranges** that they teach and they have been organised to the best of our ability to ensure that we can teach via topic and concept. Although this is not always possible, so for example in Y5/6 the year 6 children are supposed to cover algebra and ratio and proportion where as Y5 do not – but we cannot teach them separately so the Y5 children have to cover these concepts at a differentiated level.
 - The challenge lower down the school in Y1/2 is ensuring that the children in Y1 don't miss out on Key essential learning and that number, the number system and place value are embedded. In light of this we give the staff in this class options of Y1 and Y2 planning – so that within the carousel where staff feel they have to be taught separately as year groups the Teaching assistant will support with delivery and the class teacher will ensure within her target group sessions she teaches specifics to a group.
 - These plans also identify the support plans from the Unit plans that help with planning.
 - The plans also outline the NRICH links to reduce staff workload

- **Statutory and non-statutory guidance** is also outlined on these Block plans for both year groups taught – **it is vital that staff look at this part** of the plan so that they can make sure that they cover all aspects for both age ranges so that there are no gaps.

THE STUDY OF MATHEMATICS, LIKE THE NILE, BEGINS IN MINUTENESS BUT ENDS IN MAGNIFICENCE.

— Charles Caleb Colton, English cleric, writer and collector

Progression in Mathematics –

Overview of annual coverage

- This document was developed alongside the Block Plans – focusing on how we implement the new curriculum. Looking at what we need to teach in terms of statutory requirements – but also the frequency and the whole school approach.
- Research from Ofsted suggests that there is a growing body of evidence that interleaving (teaching a curriculum that revisits strands each term) improves retention. This is something that as a school we have advocated for many years
- This document is used by staff to see the progression throughout the school.
- These also supports the notion that the work given over time across the school match the aims of the NC – is coherently planned and sequenced – building on prior knowledge and skills – providing a pathway for future learning.
- Staff need to be aware that this is a live document and that it should be reviewed annually – so for example if in Y5/6 Chris feels that there is too many lessons on shape and not enough on fractions – we would look to modifying this and the Block Plans over views to facilitate his professional judgements

Progression in skills

Alongside the Curriculum Coverage, assessment and progression grids we also produced for the staff

Curriculum Progression of skills and knowledge grids.

- This is bespoke for our school, to support with planning, teaching and learning.
- This is particularly important with the mixed age classes – as it provides a quick reference point
- It breaks the numeracy curriculum down into the statutory areas e.g. Number and place value and Addition and Subtraction. It then enables staff at a glass to see what was taught prior and what comes next.
- The progression in skills charts uses the Lancashire KLIPs – which we use within teaching and learning and assessment. The KLIPs break learning down in to manageable steps
- This supports with SEN and inclusion as it supports with differentiation for children that are working below Age related expectations. We also use LAPS – which breaks down the learning outlined in KLIPs into even smaller steps
- These also supports the notion that the work given over time across the school match the aims of the NC – is coherently planned and sequenced – building on prior knowledge and skills – providing a pathway for future learning

- Additional charts are available on Twinkl etc – but these although linked to the National curriculum – don't necessarily cross reference with the Klips as easily and the noticeable difference is the fact that the objectives are more generic – e.g. an overall objective without the steps that build upon to achieve the objective . But they are available and do have uses.

Unit Plans – These are our Short term plans

- They support delivery of effective lessons with the focus on mathematical representations, language structures, and the relevant connections to other areas and the expectations set out in the example assessment questions.
- These support assessment of children's learning and inform decisions about when to move on (formative assessment) as well as summative assessment to check whether the learning has been sustained
 - These are a starting point for staff in terms of planning – they ensure that all the NC is taught and they also provide a structure for how it is taught – e.g. how often children are taught place value within a year etc.
 - Not every unit has teaching suggestions – there are a small amount of lessons that teachers need to plan some from scratch – but the vast majority of lessons within the units do have an excellent base for teachers as a starting point.
 - The front sheet of a unit plan identifies the NC coverage for that unit. It also identifies the coverage for the year group below and above. This is necessary for mixed aged planning and teaching. This supports with SEN and inclusion as it supports with differentiation for children that are working below Age related expectations
 - We developed the plans into topic units as we have to teach the class as a whole we cannot teach the year groups separately.
 - The unit plans provide guidance on the 'Direct / Model how teach' aspect of the lesson – ensuring that strategies are consistently taught across school and built upon as children progress. This also ensures that support staff have a clear structure as to how to teach concepts when working with a group. Within this Key questions are identified and also Key Vocab It also has suggestions for Plenary and mental warm ups for the staff to use as well if they feel appropriate
 - Within these plans staff have the flexibility to use their professional judgements to adapt and modify to meet the learning needs of the children.
 - We recommend to the staff that they use WHITE ROSE Maths materials, NRICH and Twinkl to support their teaching / planning
 - These plans do **not contain tasks** – the staff have to add tasks suitable for the children that they are teaching to the plans – they have to look at the front cover and see the expectations for the two year groups that they teach and plan tasks accordingly to ensure that NC for both year groups are covered.
 - The staff cross reference the KLIPs (which are the assessment steps we use within maths) with the NC coverage on the front of the plan
 - We buy in to and have bought a range of supportive materials to help staff **plan the tasks** - White ROSE Maths Hub Resources, Mastery / Mastery with greater depth, Abacus, Test Base, NRICH, Pitch and Expectations, My Maths etc. Reference to task / resources should be added to the plans
 - Expectations in terms of tasks are as follows – over the week the tasks must include
 - Mastery / Mastery with Greater depth
 - NRICH style task

- Reasoning and problem solving
- Varied Fluency tasks
- Staff must have an in depth understanding of the calculations policy and take into account the transitions between Concrete – Pictorial – Abstract – this must be evident within the execution of the task and the type of task

KILPS

- We use LCC KLIPs to support with Assessment without levels – they are key learning indicators that break down the NC into progressive stages
- The Staff use these at the planning stage and cross-reference the NC expectations on the front of the unit plans with the relative KLIPs for tracking of progress.

Teaching

- Quality first teach model implemented across school. The Wave 1 element is about what should be on offer for all children: the effective inclusion of all pupils in high-quality everyday personalised teaching. Such teaching will, for example, be based on clear objectives that are shared with the children and returned to at the end of the lesson; carefully explain new vocabulary; use lively, interactive teaching styles and make maximum use of visual and kinaesthetic as well as auditory/verbal learning. Approaches like these are the best way to reduce, from the start, the number of children who need extra help with their learning or behaviour. Inclusive Quality first teach should include the following:-
 - Highly focused lesson design with sharp objectives
 - High demands of pupil involvement and engagement with their learning
 - High levels of interaction for all pupils
 - Appropriate use of teacher questioning, modelling and explaining
 - An emphasis on learning through dialogue, with regular opportunities for pupils to talk both individually and in groups
 - An expectation that pupils will accept responsibility for their own learning and work independently
 - Regular use of encouragement and authentic praise to engage and motivate pupils.
 - Understand that Students take individual and multiple pathways in their learning
 - Engage students in challenging learning experiences
 - High expectations for their students and encourage risk taking
- Staff use Unit plans that are specific to our school, they supplement and personalise these plans with WHITE ROSE MATHS materials, twinkle NRICH, and the calculations policy etc.
- Teaching assistants should have access to a white board throughout a maths session and should stop learning to consolidate or move learning on further by 'modelling' throughout the maths lesson.
- **All staff should** use the calculations policy and be very aware of the process of concrete, pictorial and abstract. Support staff should use this to reference resources that they may need for a lesson.
- All support staff have a copy of the plan prior to the lesson so that they know what they are teaching – especially with their target groups in the follow up lesson to the teacher.

Support staff use the calculations policy as a guide to practical equipment that they may need on hand to support with learning

- It is Vital that all staff ensure that the direct teaching aspect of their plan for addition, subtraction, multiplication and division is directly linked to the calculations policy – so that there are no gaps in learning. Images from the calculations policy can also be copied and pasted on to the plans to support staff.
- The calculation policy also has guidance for 'In greater depth' and this should be referenced by staff when planning.
- Mental maths – should play a part in the maths lesson / curriculum from oral quick fire games to keep skills sharp – to mental maths tests and times table tests as the children move up the school

- **Calculations policy**

- All staff have a copy of this and should use this constantly – staff are responsible for ensuring that they have a good understanding of the process of learning- 'Concrete – pictorial – Abstract'
- Staff have had training on this and should go to Chris if they are unsure about anything.
- It is vital that there is consistency in approach and that the staff 'model' strategies correctly and know what the next step is to challenge and what the previous step is.
- Staff need to get the balance and ensure that they don't jump to abstract too soon – but also that they don't spend too long at the pictorial stage.

- **Carousel for teaching / marking within a mixed age class – see below for example**

- The class teacher always delivers a 5 – 10 min directed teach to the whole class bar one group that is in targeted support with the TA.
- We have introduced a carousel for **teaching and marking** that runs across the school
- The challenge with teaching mixed age classes is the fact that the year groups have **different Age related expectations** and as a teacher, it is physically impossible to teach different concepts at the same time.
- Within our planning, we have developed a carousel that focus on **target teaching** as well as whole class. This enables us to address specific learning for each age range within the mixed age class.
- The planned tasks for the targeted groups – 2 sessions a week are **vitaly important** as they are the opportunity to make sure that they are meeting Age related expectations based on the KLIPS relevant to their age range. These sessions should also ensure that there are no gaps within learning
- Each class has five groups and during the week, each group will be taught a **targeted session** by the class teacher. During this session, the teacher sets tasks that are ambitious and challenges learning. This group are then supported by the teacher for approx. 80% of the lesson to ensure that learning potential is maximised. This session is quality marked.
- The following lesson the same group are in a **target follow up session** with the Teaching Assistant – this enables further challenge of consolidation based on prior learning.
- In the week, all 5 groups have 2 targeted sessions.
- The teacher and the TA – also monitor two other groups for approx. 20 – 25% of the lesson – this is identified on the carousel grid.
- The carousel has been developed in such a way that the highest attaining groups receive their targeted support on the Monday and Tuesday – the expectation is that they can

then be independent learners throughout the rest of the week – so they have 3 independent lessons in which Lead Learners are allocated.

- All other groups receive adult monitoring support for 2 additional lessons – so they have 2 targeted support lessons and 2 monitored lessons a week. They then only have one independent session. This ensures that learning potential is maximised and that the mixed aged related expectations are addressed to the best of our ability.
- All teachers should ensure that the carousel is in place in their classroom and that it is understood by all other adults in the room. When there are additional adults such as student teachers – they should be added to the carousel to support with moving learning on the 'blue independent' session - this will mean that a more challenging activity can be planned and this group can receive additional adult 'modelling' of learning and coaching throughout the session.

Marking Structure Year5/6 for Numeracy					
Group	Monday	Tuesday	Wednesday	Thursday	Friday
1 Year 6 GD Group 1	<p>Quality Mark - Chris CG does 10 min intro with rest of class – then goes to work with this group</p> <p>This group is the Target group today – so they get 80% support / challenge But Chris to work 2 groups throughout the lesson – Group 1 and Group 2</p>	<p>Marking = ✓• Andrea takes the children off straight away ensure this group respond to quality mark – Then Andrea – direct teaches this group for 10 mins – This group is the Target group today – so they get 75% support / challenge - AM work throughout lesson moving between Group 1 and Group 4</p>	<p>Marking Self-mark ✓• - Children to be given answers</p> <p>Independent – straight off with a task at beginning of lesson (if you have additional adults they can support this group)</p>	<p>Independent – straight off with a task at beginning of lesson</p> <p>Marking Andrea to ✓• within the last 5 mins of the lesson the lesson but to also include an open ended marking prompt – to assess understanding – see Appendix 4</p>	<p>Independent – straight off with a task at beginning of lesson</p> <p>Marking Peer / self-assessment</p>
2 Year 6 ARE Group 2	<p>Chris to support this group as well</p> <p>Marking Peer / self-assessment</p>	<p>Quality Mark - Chris CG does 10 min intro with rest of class – then goes to work with this group</p> <p>This group is the Target group today – so they get 80% support / challenge But Chris to work 2 groups throughout the lesson – Group 2 and Group 3</p>	<p>Marking = ✓• Andrea takes the children off straight away ensure this group respond to quality mark – Then Andrea – direct teaches this group for 10 mins – This group is the Target group today – so they get 75% support / challenge - AM work throughout lesson moving between Group 2 and Group 5</p>	<p>Working independently – if you have additional adults in the room they can support this group</p> <p>Marking Self-mark ✓• - Children to be given answers</p> <p>Andrea – to trouble shoot and oversee</p>	<p>Marking ✓• Andrea throughout the lesson but to also include an open ended marking prompt – to assess understanding – see Appendix 4</p> <p>AM work throughout lesson moving between Group 4 and Group 2</p>
3 Year 5/6 SEN / LA Group 3	<p>Marking ✓• Andrea throughout the lesson but to also include an open ended marking prompt – to assess understanding – see Appendix 4</p> <p>AM work throughout lesson moving between Group 5 and Group 3</p>	<p>Chris to support this group as well</p> <p>Marking Peer / self-assessment</p>	<p>Quality Mark - Chris CG does 10 min intro with rest of class – then goes to work with this group</p> <p>This group is the Target group today – so they get 80% support / challenge But Chris to work 2 groups throughout the lesson – Group 3 and Group 4</p>	<p>Marking = ✓• Andrea takes the children off straight away ensure this group respond to quality mark – Then Andrea – direct teaches this group for 10 mins – This group is the Target group today – so they get 75% support / challenge - AM work throughout lesson moving between Group 3 and Group 2</p>	<p>Working independently – if you have additional adults in the room they can support this group</p> <p>Marking Self-mark ✓• - Children to be given answers</p> <p>Chris - to trouble shoot and oversee</p>
4 Year 5 GD Group 4	<p>Working independently – if you have additional adults in the room they can support this group</p> <p>Marking Self-mark ✓• - Children to be given answers</p>	<p>Marking ✓• Andrea throughout the lesson but to also include an open ended marking prompt – to assess understanding – see Appendix 4</p> <p>AM work throughout lesson moving between Group 1 and Group 4</p>	<p>Chris to support this group as well</p> <p>Marking Peer / self-assessment</p>	<p>Quality Mark - Chris CG does 10 min intro with rest of class – then goes to work with this group</p> <p>This group is the Target group today – so they get 80% support / challenge But Chris to work 2 groups throughout the lesson – Group 4 and Group 5</p>	<p>Marking = ✓• Andrea takes the children off straight away ensure this group respond to quality mark – Then Andrea – direct teaches this group for 10 mins – This group is the Target group today – so they get 75% support / challenge - AM work throughout lesson moving between Group 4 and Group 2</p>
5 Year 5 ARE	<p>Marking = ✓• Andrea takes the children off straight away ensure this group respond to quality mark – Then Andrea – direct teaches this group for 10 mins – This group is the Target group today – so they get 75% support / challenge - AM work throughout lesson moving between Group 5 and Group 3</p>	<p>Working independently – if you have additional adults in the room they can support this group</p> <p>Marking Self-mark ✓• - Children to be given answers</p>	<p>Marking ✓• Andrea throughout the lesson but to also include an open ended marking prompt – to assess understanding – see Appendix 4</p> <p>AM work throughout lesson moving between Group 2 and Group 5</p>	<p>Chris to support this group as well</p> <p>Marking Peer / self-assessment</p>	<p>Quality Mark - Chris CG does 10 min intro with rest of class – then goes to work with this group</p> <p>This group is the Target group today – so they get 80% support / challenge But Chris to work 2 groups throughout the lesson – Group 5 and Group 3</p>

Assessment / Provision Map

Summative Assessment:

We use assessment grids (APP system with use of Lancashire KLIPS statements to highlight which children (against the science assessment focus's and NC coverage) are below/meeting/exceeding age-related expectation. This feeds into our own 'Assessment without Levels system which tracks progress against Age related expectations and incorporates a # system to indicate depth of learning. The process is as follows:-

- Teachers monitor and track using the KLIPs (Key Learning Indicators of Progression) these are a set of skills / knowledge that have been devised through breaking down the national curriculum into progressive steps
 - Each lesson has been cross referenced with the KLIPs as well as the National Curriculum. Teachers highlighted the KLIPS coverage and understanding as they teach. The KLIP grids form a continuous record of progress.
- Alongside the KLIPs tracking we use assessment tasks / questions / games / quizzes/ plenaries etc. within the scheme.
- These have been supplemented by the development of **Block Assessment** tasks / questions that are linked directly to the National Curriculum and have been developed using the **DfE Mathematics guidance Key Stages 1 and 2 June 2020 document**. This document gives clear guidance and support with the criteria for knowing when a child is 'ready to progress'
 - Staff can use these Block Assessments in any way they wish – formally or informally (e.g a quiz) , at the end of the BLOCK or throughout the block.
 - The pitch of the questions set in these booklets indicate whether the child is meeting Age Related Expectations
 - The DfE guidance then also gives information for staff in terms of what the conceptual prerequisite is that needs to be revisited if the child has not met the expectation – or what the future application will be if the child easily meets the expectation.
 - The questions are written in ways that allow for both varied fluency and reasoning.
 - AS we have a spiral approach to numeracy – staff use the outcomes of these tests to inform future teaching and learning – the outcomes also feed into future planning
- For SEN children – where appropriate we use LAPs and PIVATs to support teaching and learning – work is differentiated and any additional WAVE 3 provision is very specific
- Quality First teach – implemented across school
- We use our own Assessment without levels system – to track and monitor pupil progress. The children are formally tested on 3 occasions throughout the year. (once a term)
- The data is then analysed and discussed with the classroom teacher. From this, we develop a WAVE 2 provision map. Which is a short term usually 12 weeks of provision (a term)
- A range of interventions are used to provide consolidation, address gaps in skills and knowledge or provide catch up. We currently use the following;-
 - Overcoming barriers
 - Securing levels
 - Wave
 - Springboard

- CGP
- Bonds
- Whilst we recognise that some of these interventions are not recent interventions – our evaluations indicate that, they are effective. The teaching assistants find them useful and like the structure – its supports them with their understanding as to how to break down learning and move learning on. The models and images within the interventions are a very useful tool that give specifics. We also feel that it is very important to reduce workload and use resources
- Interventions in our school are used as a resource to meet a particular need. We don't necessarily use the intervention as a whole programme in its entirety. For example when a 'need' is identified we then go to the interventions and look and see which intervention programme addresses the need and pick out that element / lesson plan. Within a Wave 2 intervention additional provision, one or more intervention programmes may be used to address a need. The staff ensure that elements of the intervention programmes used address the need in line with the new national curriculum and our calculations policy.

DfE Mathematics guidance Key Stages 1 and 2 June 2020 document

Ready to Progress criteria: year 1 to year 6

The table below is a summary of the ready to progress criteria for all year groups

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number Place Value	1NPV-1 Count within 100, forwards and backwards, starting with any number.		3NPV-1 Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three digit multiples of 10.	4NPV-1 Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.	5NPV-1 Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01.	6NPV-1 Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).
		2NPV-1 Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and nonstandard partitioning.	3NPV-2 Recognise the place value of each digit in <i>three</i> -digit numbers, and compose and decompose <i>three</i> -digit numbers using standard and non-standard partitioning.	4NPV-2 Recognise the place value of each digit in <i>four</i> -digit numbers, and compose and decompose <i>four</i> -digit numbers using standard and nonstandard partitioning.	5NPV-2 Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and nonstandard partitioning.	6NPV-2 Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and nonstandard partitioning.
	1NPV-2 Reason about the location of numbers to 20 within the linear number system, including comparing using < > and =	2NPV-2 Reason about the location of any twodigit number in the linear number system, including identifying the previous and next multiple of 10.	3NPV-3 Reason about the location of any <i>threedigit</i> number in the linear number system, including identifying the previous and next multiple of 100 and 10.	4NPV-3 Reason about the location of any <i>fourdigit</i> number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.	5NPV-3 Reason about the location of any number with up to 2 decimals places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.	6NPV-3 Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number Place Value			3NPV-4 Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts. →	4NPV-4 Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts. →	5NPV-4 Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts. →	6NPV-4 Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.
					5NPV-5 Convert between units of measure, including using common decimals and fractions.	
NF	1NF-1 Develop fluency in addition and subtraction facts within 10. →	2NF-1 Secure fluency in addition and subtraction facts within 10, through continued practice. →	3NF-1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice.			
	1NF-2 Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers. →		3NF-2 Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number. →	4NF-1 Recall multiplication and division facts up to 12×12 , and recognise products in multiplication tables as multiples of the corresponding number. →	5NF-1 Secure fluency in multiplication table facts, and corresponding division facts, through continued practice.	
				4NF-2 Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context.		
			3NF-3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10). →	4NF-3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100). →	5NF-2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth).	

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
AS + -	1AS-1 Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers.	2AS-1 Add and subtract across 10.	3AS-1 Calculate complements to 100.			6AS/MD-1 Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).
	1AS-2 Read, write and interpret equations containing addition (+), subtraction (−) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.	2AS-2 Recognise the subtraction structure of ‘difference’ and answer questions of the form, “How many more...?”.	3AS-2 Add and subtract up to three-digit numbers using columnar methods.			6AS/MD-2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.
		2AS-3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two digit number.	3AS-3 Manipulate the additive relationship: Understand the inverse relationship between addition and subtraction, and how both relate to the part-part-whole structure. Understand and use the commutative property of addition, and understand the related property for subtraction.			6AS/MD-3 Solve problems involving ratio relationships.
		2AS-4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two digit numbers.				6AS/MD-4 Solve problems with 2 unknowns.

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
MD		<u>2MD-1</u> Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.	<u>3MD-1</u> Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.	<u>4MD-1</u> Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size. →	<u>5MD-1</u> Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.	For year 6, MD ready-to-progress criteria are combined with AS ready-to-progress criteria (please see above).
		<u>2MD-2</u> Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).		<u>4MD-2</u> Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.	<u>5MD-2</u> Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	
				<u>4MD-3</u> Understand and apply the distributive property of multiplication. →	<u>5MD-3</u> Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	
					<u>5MD-4</u> Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
F			<u>3F-1</u> Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.			<u>6F-1</u> Recognise when fractions can be simplified, and use common factors to simplify fractions.
			<u>3F-2</u> Find unit fractions of quantities using known division facts (multiplication tables fluency). →		<u>5F-1</u> Find non-unit fractions of quantities.	<u>6F-2</u> Express fractions in a common denomination and use this to compare fractions that are similar in value.
			<u>3F-3</u> Reason about the location of any fraction within 1 in the linear number system. →	<u>4F-1</u> Reason about the location of mixed numbers in the linear number system.		<u>6F-3</u> Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.
				<u>4F-2</u> Convert mixed numbers to improper fractions and vice versa.	<u>5F-2</u> Find equivalent fractions and understand that they have the same value and the same position in the linear number system.	
			<u>3F-4</u> Add and subtract fractions with the same denominator, within 1. →	<u>4F-3</u> Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.	<u>5F-3</u> Recall decimal fraction equivalents for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$, and for multiples of these proper fractions.	

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
G	<u>1G-1</u> Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another. →	<u>2G-1</u> Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties. →	<u>3G-1</u> Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations.		<u>5G-1</u> Compare angles, estimate and measure angles in degrees ($^{\circ}$) and draw angles of a given size.	
G					<u>5G-2</u> Compare areas and calculate the area of rectangles (including squares) using standard units.	
	<u>1G-2</u> Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations. →		<u>3G-2</u> Draw polygons by joining marked points, and identify parallel and perpendicular sides. →	<u>4G-1</u> Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant. →		<u>6G-1</u> Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.
				<u>4G-2</u> Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. Find the perimeter of regular and irregular polygons.		
				<u>4G-3</u> Identify line symmetry in 2D shapes presented in different orientations. Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry.		

Maths Formal Assessments

We use formal assessment tests 3 times a year at the end of each term. In our school we use Lancashire Mathematics Assessment tests

The Lancashire Mathematics Assessment Tests are designed to support teachers in confirming their teacher assessments at the end of each term.

We use particular tests these because they complement the Lancashire KLIPs Assessment system which we use within our 'Assessment Without Levels' tracking process.

The staff use the supplementary analysis tools to identify the impact of teaching and learning and to identify key areas for action. The information from the analysis feeds into future planning, teaching and learning (generic area for future focus) and provision maps. (personalised targeted learning needs)

The end of Autumn term tests questions are pitched against a realistic expectation of what children should have achieved up to that point in time. The assessments for the end of Autumn and Spring terms are not against end of year expectations.

The tests will only measure whether a child is on track to achieve the end of year expectations or whether they are not on track. The results will not give a precise attainment score for children working outside of the year group expectations, however, if a child in Year 4 is suspected of achieving in line with a child beginning to learn the Year 3 curriculum, then they could sit the Year 3 tests to confirm a teacher assessment of 'Entering' Year 3.

The end of Spring term tests will assess whether a child is on track to achieve the end of year expectations at that point in time.

The end of Summer term tests will assess whether a child has achieved the end of year expectations for that year.

The tests are designed to resemble the national SATs, that children in Years 2 and 6 take, in appearance, structure and question design. Therefore, they support children in becoming familiar with the national end of Key Stage tests.

LCC do not produce a threshold of a certain number of marks for children to achieve as the tests are to be used to support the teacher's professional judgement of the children's abilities, linked to our Assessment without levels system.

IMPACT

- The impact of our Mathematics curriculum is evidenced through the pupils' use and understanding of the knowledge, skills, concepts and specialist vocabulary.
- It is evidenced by the use and outcomes of the varied activities, assessments and quizzes provided.
- The broad range of approaches for pupils to communicate their knowledge ensures that everyone can demonstrate progression and impact. In particular, it is evidenced by the pupils' ability, willingness and confidence in addressing and discussing each unit's key question, giving a response focusing on mathematical vocabulary, skills and concepts.
- Pupils understand and can clarify to others what mathematics is and the importance and value of studying the subject. They can explain to others how they are progressing and what they can do to get better in the subject.

MILLIONS SAW THE APPLE FALL, BUT NEWTON ASKED WHY.

— Bernard Baruch, American financier, philanthropist and statesman

Subject knowledge for teachers

The Singleton Mathematics Scheme focuses on the subject as an individual discipline and it sets high expectations for the quality of teaching within the subject. However, the structure and levels of support within the scheme especially with the direct teaching take into account that most primary teachers and many Mathematic subject leads are not subject specialists.

The core mathematical knowledge needed by each teacher is provided in the Block plan overview and in greater depth in the Unit plans. Sample responses / diagrams and visual aids are provided to questions posed to guide non-specialist teachers on expectations. A resource list / links with useful quality websites are available on the Block Plans and a wealth resources are included in the individual class planning folders to support further teacher research.

We believe that this vital to support with workload and also quality teaching and learning experiences.

Pupil Voice:



We believe strongly in giving our pupils a real voice in decision-making and our Junior Leadership Team (JLT) include two representatives for Maths and STEM. Pupils work with the Maths Subject Lead, our governors and HT to look at ways in which to improve Maths across school in terms of resources ideas/ideas for trips and lesson delivery! Pupils monitor floor books and evidence and take pride in seeing their ideas implemented across school!

Educational Visits and Cultural Capital

In order to develop a broad, rich and deep mathematical education we believe children learn through experience. It is therefore considered essential to provide the children with hands on experiences, through educational visits. We aim to address this with suggestions on the two-year cycle with Educational visits, trips and real experience.

As a school, we also see the non-statutory requirements of the National Curriculum as an opportunity to further enrich our children's learning and life experiences and developed these as Cultural Capital enhancements that very much make up the foundation of our schools vision. In school we have STEM clubs, annual X factor completion, Science, Maths & STEM week & maths-based visits both in and out of school. We have excellent links with our local high schools and colleges who offer a variety of sessions for our pupils throughout the year including maths competitions.