



# MATHS POLICY

## 2023-4

At St Stephen's CE Primary School, our Christian values run through our school like a golden thread and enable our children to flourish and ASPIRE in life. Our Christian vision: *'for with God, nothing is impossible'* ( Luke 1 : 37), helps support and guide our whole school community in striving to beat our previous best endeavours.

Throughout the year, we re-focus on a Christian Value in order to keep God in the centre of our lives. By linking these to key events within the Christian calendar our children will all take turns in leading key collective worships for our whole school community at St Stephen's Church, once a year.

| Autumn 1     | Autumn 2 | Spring 1 | Spring 2    | Summer 1 | Summer 2 |
|--------------|----------|----------|-------------|----------|----------|
| Thankfulness | Respect  | Hope     | Forgiveness | Love     | Trust    |

**ASPIRE Curriculum** - Key Principles:

**A** whole school curriculum with high expectations and excellence delivered rigorously through well sequenced subjects, progression in generative knowledge, rich vocabulary, concepts and skills,

**S**timulating enquiring minds by providing rich and relevant experiences, purposeful and connected learning, and creative thinking


**P**lacing nurturing, lifelong learning behaviours – resilience, risk taking, independence, perseverance, and pride in success - at the heart of our curriculum

**I**nclusivity and flexibility which allows us to cater for individual needs, abilities and interests

**R**evisiting key knowledge, skills and vocab, so pupils know more and remember more

**E**ncompassing the Whole Child – developing their faith, values, spirituality, health and well-being, and understanding of the world we live in, their future role in our culturally diverse community and country where equality and tolerance is promoted

**Luke 1:37 "For with GOD nothing shall be impossible"**

#ASPIRE 

The key principles of our ASPIRE vision support our decision-making process at St Stephen's CE Primary School for the curriculum. With these principles in place, our children are able to know more and remember more across development of our broad and balanced curriculum.

**Luke 1:37 "For with GOD nothing shall be impossible"**

# Our 'ASPIRE Curriculum' Key Principles:

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## Intent

At St Stephen's we believe that every child should be free to develop and receive encouragement to succeed. There is a clear focus on making fluency, reasoning and problem solving challenges available to all learners regardless of their current ability. Through this approach, all children are given a wide range of challenging tasks which encourage the application of problem skills in real-life contexts. This aligns with the ethos of the Mastery Model of teaching mathematics, which St Stephen's is well along the way to having embedded in the school. This ensures the inclusive value mentioned above as well as utilising clear models, structures and representations to teach key concepts, supported by use of manipulatives where appropriate. Knowledge is taught and modelled by the expert teacher and children are then given a journey to apply this new knowledge with purposeful practice and then given challenges to deepen their understanding.

The national curriculum for mathematics aims to ensure that all pupils:

- 🧐 become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- 🧐 reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- 🧐 can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

The National Curriculum for Maths is very prescriptive and lays out yearly expectations for all children through their experience in primary school. As such, there is little requirement to look beyond this document and deeper into the

concepts. Where some children may meet these objectives before their course of study finishes in that year group, they are challenged with problems that require deeper thinking and application of that objective.

How this looks in maths is detailed in the document 'What your books will look like for Maths' which is stored centrally and available to all staff.

The curriculum ensures academic success, creativity and problem solving, reliability, responsibility and resilience, as well as physical development. Wellbeing and emotional health are key elements that support the development of the whole child and promote a positive attitude to learning.

Each strand in Maths has a clear progression of skills through the Primary school setting. This progression at St Stephen's can be found in the Whole School Maths Progression document which indicates how these strands are focused on at each stage in the children's learning in this subject. Each year group's objectives are key for a child to gain an understanding in before moving on to the next year group. Teachers are made aware of the Progression document and can easily access this to see where their class have come from in the curriculum and what the children's next steps will be when they leave their class in the summer, as well as having access to Key Performance Indicators available for every year group in the curriculum.

The skills and knowledge taught in maths are also addressed in wider subjects in the curriculum. There are links to learning in statistics with Science where children need to engage in data collection to predict and then analyse results for investigations they conduct. Knowledge of shape is required in some units in Art, for example in a study of Kandinsky in Y6. Diagonal links to our school values which run through all our Curriculum are evident such as 'Respect' and 'Love' in the teaching and learning that plays a key role in our Ruler of Reasoning sessions.

#### Effective maths teaching will:

- use retrieval practice to ensure consolidation of key concepts and skills
- model using clear representations and variation to help children visualise the maths they encounter
- help children to make connections in the learning of core mathematical structures and build chains of reasoning
- Provide children with plenty of opportunities to build their fluency and applying mathematics, think flexibly using these skills and build independence in their work throughout the subject
- Use regular informal assessment to check for understanding at all stages of the lesson in order to identify children who need support in their learning

Best practice in maths, including quality examples of expectations are shared with teaching and support staff, prior to their teaching of maths. The documents 'What does best practice in Maths look like?' and 'What your books look like for Maths,' can be found on the school's central system, always available for teaching and support staff to access.

# Long Term Plan for Maths:

## St Stephen's C.E. Primary Whole School Maths Curriculum

|  | Autumn   |   | Spring  |   | Summer   |  |
|---|--|---|---|---|--|--|
|   | Autumn 1   | Autumn 2  | Spring 1  | Spring 2  | Summer 1   | Summer 2   |
| Year 6  | Place Value to 7 digits<br><br>Four Operations-<br>divide/multiply 4 digit by 2<br>digit | Fractions - add, subtract,<br>multiply, divide<br><br>Measure – convert and<br>calculate with metric and<br>imperial measures | Ratio/Algebra<br><br>Decimals - to 3 decimal places,<br>multiply by 10,000 and 100,000/<br>Percentages - fractions to<br>percentage | Perimeter, Area &<br>Volume<br><br>Statistic(line graphs/pie<br>charts)/Investigations  | Shape (vertically opposite<br>angles/angles in triangles<br><br>Position and Direction - four<br>quadrants, translations,<br>reflections                       | Maths through Context  |
| Year 5  | Place Value to 6 digits<br><br>Addition & Subtraction<br>(more than 4 digits)            | Multiplication & Division<br>(including by 10, 100 & 1,000)<br><br>Fractions (including adding<br>and subtracting)            | Multiplication & Division (3 digits<br>by 2 digits, 4 digits by 1 digit)<br><br>Fractions (multiply and of an<br>amount)            | Decimals and<br>Percentages<br>Measurement<br>(perimeter/area)<br>Statistics (line graphs<br>two way tables)/                 | Shape(lengths and angles in<br>shapes)<br><br>Position & Direction (Position in<br>the first quadrant, Reflection<br>and Translation)                          | Decimals (calculating with<br>decimals)<br>Place Value (negative<br>numbers)<br>Measure (kg, km,<br>mg,m)/Volume                                     |
| Year 4  | Place Value 4<br>digits/Addition and<br>Subtraction 4 digits                             | Measure (area)<br><br>Multiplication & Division<br>(based on times tables)  | Multiplication & Division<br>(multiply 3 numbers,3 digit by 1<br>digit)<br>Measure (length/perimeter)                               | Fractions/Decimals(tenths<br>and hundredths)  | Decimals(compare, order round<br>decimals)<br>Money(ordering, estimating)<br>Time(analogue to digital -24hrs)  | Shape(compare and order<br>angles)<br>Statistics(line graphs)<br>Position & Direction(positions<br>on 2D grid)                                       |
| Year 3  | Place Value to 1000<br><br>Addition and Subtraction<br>3 digits                          | Addition and Subtraction 3<br>digits<br><br>Multiplication and Division 3, 4,<br>and 8 tables                                 | Multiplication & Division (2 digit<br>by 1 digit)<br><br>Measure (Length & Perimeter)   | Fractions (tenths/tenths<br>as decimals, equivalent)<br><br>Measure, Mass &<br>Capacity(measure<br>compare, add,<br>subtract) | Fractions (add, subtract<br>fractions)<br>Money(convert £s and p)<br>Time(seconds, Roman numerals<br>on clocks)  | Shape(turns and angles,<br>parallel and perpendicular)<br><br>Statistics(pictograms,bar<br>charts, tables)   |
| Year 2  | Place Value to 100<br><br>Addition and Subtraction<br>to 100                             | Addition and Subtraction to<br>100<br><br>Shape (properties of 2D/3D<br>shapes)   | Money (notes and coins)<br><br>Multiplication and Division (2, 5,<br>10 tables)   | Length & Height<br>(measure,<br>order,compare)<br>Mass Capacity &<br>Temperature(compare/<br>order)                           | Fractions (half, quarter, thirds, 3<br>quarters)<br>Time(quarter to/ quarter past)<br>Statistics (tally charts,<br>pictograms)                                 | Position & Direction<br>(movement and turns)<br><br>Problem<br>Solving/Investigations  |
| Year 1  | Place Value within<br>10/Addition and<br>Subtraction within 10.                          | Addition and Subtraction<br>within 10/2D 3D shapes  | Place Value within 20/Addition<br>and subtraction within 20   | Place Value within 50<br><br>Length and<br>Height(measure<br>length/height)<br><br>Mass and Volume<br>(measure/compare)       | Multiplication & Division(count in<br>multiples of 2s, 5s, 10s)<br><br>Fractions $\frac{1}{2}$ $\frac{1}{4}$<br><br>Position and Direction<br>(Movement turns) | Place Value within 100<br><br>Money(recognise<br>coins/notes)<br><br>Time(o'clock/half past)   |
| EYFS  | Place Value to 5/subitising<br>up to 5/explore patterns                                  | Place Value to 10/subitising up<br>to 5/Begin to explore length,<br>weight and capacity                                       | Number bonds to 5 (including<br>subtraction facts) some number<br>bonds to 10/copy and create<br>patterns                           | Compare quantities up<br>to 10 in different<br>contexts/verbally count<br>beyond 20/compare<br>measures                       | Verbally count beyond 20<br>recognising the pattern of the<br>counting system/explore and<br>represent patterns within<br>numbers to 10 e.g. odds/evens        | Automatically recount<br>number bonds to<br>10/compare quantities up to<br>10/rotate and manipulate<br>shapes/measure and<br>compare periods of time |

# Implementation

St Stephen's follows the general structure given by White Rose Maths. However, this is flexible and adapted with discussion between the class teacher and Maths Lead to suit the context and needs of each class and staff team. We use the NCETM Prioritisation Documents to identify what the key prerequisites are for each year group and which knowledge needs to be gained by each cohort before moving on to the next year group.

Early Bird Maths forms an integral part of our approach to embed learning further into long-term memory. As our curriculum is blocked into topics to give time to dive deeper into concepts, this does mean that there is not opportunity to review previous topics. In Early Bird Maths, teachers give children questions about what they have learnt last lesson, last week, last term and last year. In doing so, children get invaluable practice in key skills and concepts by revisiting them which helps to embed it in the long-term memory.

At the school we follow a mastery approach which supports this transference of knowledge. Using small, scaffolding steps in the learning process as well as a concrete-pictorial-abstract approach aids children's understanding and linking of key concepts in mathematics.

All teachers have access to progression documents which enables them to identify key learning that is learnt in the previous year group as well as what will be covered in the following year after.

The Early Years Foundation Stage (EYFS) follows the 'Development Matters in the EYFS' guidance which aims for all children in Reception to have a clear understanding of early mathematics by the end of the academic year.

Maths is taught discretely across the school from Y1 upwards.

Maths will be taught for every day each year. The objectives are taken directly from the national curriculum. The subject leader, class teachers and the curriculum development group, have developed a bespoke curriculum to ensure breadth and coverage.

Teachers annotate their plans and refer to them from lesson to lesson. Specific annotation will include personalised adaptations for all SEN and Disadvantaged children, a plan for the TA and their role, an evaluation and next steps by the teacher and TA from their observations of the lesson- for every lesson. Each lesson follows this structure:

- Early Bird Maths – a selection of questions based on learning from last lesson, last week, last term and last year as well as supporting arithmetic questions
- Review and Do – a period where children can reflect on and respond to marking in their individual books from the previous lesson
- Hook – a question which hooks the children's curiosity possibly using concrete materials, a visual representation or an open-ended question to lead to mathematical discussion
- Guided Practice – a core element of the lesson which the teacher has adapted from any materials which is bespoke to the children in their class to give opportunities to model and then practice together the concept being taught
- Independent Practice – about half the lesson time to giving children an opportunity to apply the knowledge and skills learnt to relevant questions which will be adapted to their understanding

Ruler of Reasoning sessions take place once a fortnight. These sessions follow the same 5-part structure as above and ensure appropriate challenge is evident for all learners but the difference is that children will not record learning in their books. Instead, the focus will be on the mathematical oracy, vocabulary and reasoning that takes place in mixed ability pairings and the maths work will be recorded on graffiti paper, iPads or some other medium to draw some focus away from presentation and more on the key mathematical discussion. Teachers choose a 'Ruler of Reasoning' after the session and this is recorded, celebrated and shared on the school newsletter.

The exemption is the 99 Club and Arithmetic lesson on a Wednesday. The learning objective for that lesson will always be 'I can apply my x tables facts and arithmetic skills'. The children will complete a challenge from the 99 Club which

helps to track which times tables children are working on and their progress. The outcome of individual times tables/number bonds is recorded and monitored to inform assessment of basic skills. This is logged on class log sheet in the intervention wallet found in every classroom. Following that, key maths concepts from mixed practice assessment will be the teacher focus to be modelled showing the most efficient strategies. These are found in the Rising Stars planning from which the Arithmetic tests are sourced. Children will apply this to practice questions set by the teacher and then the arithmetic test itself. Raw score from the test to be logged and recorded by teacher.

In each classroom, there will be a maths working wall. This will be kept relevant and up-to-date with what is being learnt in maths. Modelled examples from Guided Practice will be displayed to support children's understanding as well as key mathematical vocabulary (with examples) and questions to further understanding.

'Examples and best practice exemplars in maths' including quality examples of annotated work are shared with teaching staff, prior to their teaching of maths. A copy of this document can be found on the school's central system.

### Special educational needs & disabilities (SEND)

The bottom 20% of children at St Stephen's continue to be a priority to teaching staff. Aside from their individualised learning targets, children who fall into this bottom 20% will also be supported by quality-first teaching, targeted intervention in lessons and use of concrete and pictorial representations to scaffold small step learning. Children working below age-related expectations should have targets to work towards at the year group they are working on and may require supporting tasks or questions to then begin to access the challenges that the main group of the class are working on.

The Mastery Approach will support children who grasp concepts more quickly to deepen their understanding. They should no longer be accessing learning outside of their age group but rather be deepening their understanding of the concepts they are taught with their peers, preparing them for more challenging problems. This will be provided through developing more problem solving skills in these children, encouraging them to reason and give evidence for their answers as well as teaching others in their peer group.

### Equal Opportunities

Positive attitudes towards history are encouraged, so that all children, regardless of race, gender, ability or special needs, including those for whom English is a second language, develop an enjoyment of history.

The aim is to ensure that everyone makes progress and gains positively from lessons and to plan inclusive lessons where all children are exposed to the different levels within a lesson. This will help develop the expected standard as well as greater depth learning.

At St Stephen's, our school community is continuously becoming more diverse. As such, the drive on talk, vocabulary and language has taken more priority. As this subject moves forward, it will become even more important to involve more strategies on developing the progress and attainment of children who speak English as an Additional Language. The power of mathematics transcends various languages and all children at St Stephen's will be given the tools to succeed in this area no matter where they go on to in later life.

EAL children will be supported by a drive on using Talk4Maths strategies in the classroom, ensuring that language and vocabulary are being modelled and taught clearly in Maths lessons, helping these children reach their potential.

### Pupils' Records of work

Pupils will record all their work (daily) in their Maths/Arithmetic book. Some outcomes may be in the form of photographic and/or video evidence; these will be stored in the relevant folder for that topic on the shared drive area and sign posted in the Maths book.

### Resources

Children in both key stages have access to a wide range of concrete resources to support them in their development of mathematical understanding. Resources are kept both in a central store and within each class teacher's general

resource areas for use when appropriate. All classrooms should have the relevant concrete materials that their curriculum requires to hand in the classroom to provision a quality maths curriculum.

### Classroom Support

Teaching Assistants are used in Maths to assist:

- in the classroom by working with groups and individuals
- in providing targeted and positive support to those pupils identified with difficulties
- in preparation of resources and display work

### Rewards

Children's work will be rewarded using praise, stickers and/or house points in line with the school behaviour policy. Staff may also recognise individual talents in Maths and celebrate this in our whole school celebration assembly. The children will be rewarded with a certificate, outlining their achievement.

### Monitoring and Review

The Maths Lead contributes to the development plan each year. Monitoring and review will take place according to current school practice. This policy document will be reviewed every 12 months to assess its value as a working document.

## **Impact:**

The teaching of Maths at St Stephen's will enable children to have a wider and deeper understanding of key mathematical knowledge and skills. These objectives are outlined in the National Curriculum and on our Progression documents

### Assessment and Reporting

We assess children's work in maths by making informal judgements as we observe them during each maths lesson.

Assessment for learning is continuous throughout the planning, teaching and learning cycle. Assessment is supported by use of the following strategies:

- Observing children at work, individually, in pairs, in a group and in class during whole class teaching
- Using differentiated, open-ended questions that require children to explain and unpick their understanding
- Teacher/pupil conversations about their ideas and understanding; facilitating and listening to discussions
- Providing effective feedback to engage children with their learning and to provide opportunities for self-assessment
- Book moderation and monitoring of outcomes of work, to evaluate the range and balance of work and to ensure that tasks meet the needs of different learners, with the acquisition of the pre-identified key knowledge of each topic being evidenced through the outcomes
- Analysing errors and picking up on misconceptions

On completion of a piece of work, the teacher marks the work and comments as necessary. Marking of books will focus primarily on using mathematical skills and identifying gaps in mathematical knowledge.

These ongoing assessments inform future planning and teaching. Lessons are adapted readily and short-term planning evaluated in light of these assessments.



There is a clear structure and process outlined for summative assessment in the core subjects (Reading, Writing and Maths). This is outlined in full in the Assessment Policy. The policy outlines the use of Key Performance Indicators, target setting, how summative assessment is gathered using nationally recognised, reliable tests and how results are logged and discussed in regular Pupil Progress Meetings.

Assessment data is analysed by the subject leader who identifies the percentage of children who are working at ARE and at a greater depth. This information is fed back to the Head Teacher and class teachers to inform future planning.

Any photographic and video evidence should be saved in the shared area as evidence for assessment.

### The Aspire Curriculum in Maths

#### What do you aim to achieve in your curriculum?

- 🌟 become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- 🌟 reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- 🌟 can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

**A**-whole school curriculum with high expectations and excellence delivered rigorously through well sequenced subjects, progression in generative knowledge, rich vocabulary, concepts and skills

**S**-timulating enquiring minds by providing rich and relevant experiences, purposeful and connected learning, and creative thinking

**P**-lacing nurturing, lifelong learning behaviours – resilience, risk taking, independence, perseverance, and pride in success - at the heart of our curriculum

**I**-nclusivity and flexibility which allows us to cater for individual needs, abilities and interests

**R**-evisiting key knowledge, skills and vocab, so pupils know more and remember more

**E**-ncompassing the Whole Child – developing their faith, values, spirituality, health and well-being, and understanding of the world we live in, their future role in our culturally diverse community and country where equality and tolerance is promoted

#### How Maths Aspires

**A**-whole school curriculum with high expectations and excellence delivered rigorously through well sequenced subjects, progression in generative knowledge, rich vocabulary, concepts and skills

- The Maths curriculum at St Stephen's aims is well-designed using the White Rose Education structure as a basis which teachers then adapt to the needs of their children but ensure rigour in helping learning learn through small steps
- The 5-part lesson structure in Maths is research-informed and provides children with the best chance of retaining key knowledge and skills which will build the schema for future learning opportunities
- Displays, content and models are delivered and used to emphasise key mathematical language and vocabulary so that children become more proficient in their oracy during Maths
- Teachers are able to use Key Performance Indicators from all years of the curriculum so they can target the key objectives that children must have understood before learning the content in their planning and know where to pitch their teaching so all learners are challenged in their lessons

**S**-timulating enquiring minds by providing rich and relevant experiences, purposeful and connected learning, and creative thinking

- Ruler of Reasoning sessions are implemented to give a wider experience of applying mathematical knowledge and skills as well as make connections with previous learning
- The Maths curriculum is taught using the Mastery approach which requires learners to make connections between concepts they have learnt previously and new knowledge they are being taught
- Practice in Maths is purposeful and productive during the 5-part lesson structure and all learning is adapted to learners' needs giving them the opportunity to be more independent

- Interleaving is recommended when setting questions for children so they can apply other mathematical concepts to objectives they are working on e.g. finding the fraction of an amount in a problem related to m and cm
- Wider opportunities to experience Maths are explored and encouraged by all teaching staff in this subject area

### **P-lacing nurturing, lifelong learning behaviours – resilience, risk taking, independence, perseverance, and pride in success - at the heart of our curriculum**

- Maths uses real life contexts and creative hooks to engage children's interest and highlight the importance of maths for future life
- Mistakes and misconceptions are seen as opportunities for learning to take place. Children are given the opportunity to correct mistakes and reason why a misconception is incorrect using the correct mathematical vocabulary
- Neat presentation in Maths is an expectation and children will be given feedback when they need to take more pride in their learning presented in their Maths books

### **I - Inclusivity and flexibility which allows us to cater for individual needs, abilities and interests.**

- Maths is delivered in 'small steps' of learning to allow all pupils success.
- Mixed ability seating encourages support and modelling for children throughout the lessons.
- Our teaching structure is designed to be stimulating and encourage children to ask lots of questions and seek answers. We want to encourage them to be inquisitive about the world around them and beyond and to develop independent research skills when they may ask questions that we may not have immediate answers to.
- Children who are working below age-related expectations are given an adapted approach to ensure they make the best progress possible


### **R-evisiting key knowledge, skills and vocab, so pupils know more and remember more**

- Introducing subject-specific vocabulary that they can use in other areas.
- Early Bird Maths every single day which is designed to revisit key knowledge consistently
- Use of low stakes quizzing to encourage children to recall what they have learned, particularly to develop number bond, repeated addition, times tables and arithmetic skills
- History encourages children to develop skills in synthesising taught content and considering what it means to them (interpretation).
- Assessment tasks give children the opportunity to show what they have learned and remembered.

### **E - Encompassing the whole child- developing their faith, values, spirituality, health and well-being and understanding the world we live in, their future in our culturally diverse community and country where equality and tolerance is promoted.**

- Talk and discussion is an important part of Maths teaching and learning at St Stephen's so the values of 'Respect' and 'Love' play a vital role in Maths
- Children are able to trust that when they make a mistake in their working that Maths in the school are safe lessons to make those mistakes and allow these mistakes to be our friends
- There is a drive to develop well-rounded citizens and help our children become excellent members of society and a strong grounding in a quality Maths curriculum will support them in going on to achieve what they desire
- This is the passion with which we aspire to bring the best we can as a school in the teaching and learning of Maths.

Appendix 2 – How the Maths ASPIRE curriculum meets the National Curriculum

| St Stephen's C.E. Primary Whole School Progression in Maths                       |  |   |  |  |   |  |   |  |
|---|--|---|--|--|---|--|---|--|
|  | Place Value  | Addition and Subtraction  | Multiplication and Division  | Fractions  | Measurement   | Geometry   | Statistics  | Decimals   |
| Year 6  | Order and compare numbers up to 10,000,000. Round any whole number. Use negative numbers in context, and calculate intervals across 0.   | Solve addition and subtraction multi-step problems in context. Perform mental calculations including with mixed operations.   | Identify common factors, common multiples and prime numbers. Multiply and divide numbers up to 4 digits by 2 digits. Perform mental calculations including with mixed operations.  | Use common factors to simplify fractions. Add and subtract fractions with different denominators and mixed numbers. Multiply simple pairs of proper fractions. Divide proper fractions by whole numbers.   | Use, read, write and convert between standard units. Calculate, estimate and compare volumes of cubes and cuboids using standard units including cubic centimetres and cubic metres. Convert measurements of time from a smaller unit of measure to a larger unit.  | Illustrate and name parts of circles including radius, diameter and circumference. Recognise, describe and build simple 3D shapes. Find unknown angles in triangles. Draw and translate simple shapes on the coordinate plane. | Interpret and construct pie charts and line graphs. Calculate and interpret the mean.   | Identify the value of each digit in numbers to 3 decimal places. Multiply numbers with up to 2 decimal places by whole numbers.                |
| Year 5  | Read, write, order and compare numbers to 1, 000, 000. Read roman numeral to 1000. Interpret negative numbers. Round numbers to the nearest 10, 100, 1000, 10,000 and 100,000                    | Use rounding to check answers. Add and subtract whole numbers with more than 4 digits. Add and subtract mentally with increasingly large numbers.   | Identify multiples and factors. Know and use vocabulary of prime numbers. Recognise and use square numbers and prime numbers. Multiply numbers up to 4 digits by a 1 digit or 2-digit number. Divide numbers up to 4 digits by a 1-digit number. | Recognise mixed numbers and improper fractions and convert from one form to the other. Compare, order, add and subtract fractions whose denominators are all multiples of the same number. Multiply proper fractions and mixed numbers by whole numbers. | Convert between different units of metric measure. Use approximate equivalence between metric units and common imperial units such as inches, pounds and pints. Calculate and compare the area of rectangles, using standard units, square centimetres and square metres and estimate the area of irregular shapes. | Distinguish between regular and irregular polygons. Draw given angles and measure them in degrees. Identify, describe and represent the position of a shape following the reflection or translation.                           | Complete, read and interpret information in tables and timetables. Solve comparison, sum and difference problems using information from a line graph.                       | Read and write decimal numbers as fractions. Round decimals with two decimal places to the nearest whole number.                               |
| Year 4  | Count backwards through 0 to include negative numbers. Read Roman numerals to 100. Recognise the place value of each digit in a 4-digit number. Round any number to the nearest 10, 100 or 1000. | Estimate and use inverse calculations to check answers. Add and subtract numbers with up to 4 digits. Solve addition and subtraction two-step problems in context, deciding with operations to use and why. | Recall multiplication and division facts for multiplication facts up to 12x12. Recognise and use factor pairs and commutativity in mental calculations. Multiply 2-digit numbers and 3-digit numbers by a 1-digit number.                        | Count up and down in hundredths. Recognise and use families of common equivalence fractions. Add and subtract fractions with the same denominator.   | Convert between different units of measure. Read, write and convert time between analogue and digital 12 and 24 hour clocks. Measure and calculate the perimeter of a rectilinear figure. Find the area of rectilinear shapes by counting squares.  | Compare and classify geometric shapes. Identify lines of symmetry in 2D shapes presented in different orientations. Identify acute and obtuse angles. Plot specified points and draw sides to complete a given polygon.        | Solve comparison, sum and difference problems using information from a bar charts, pictograms, tables and other graphs.   | Recognise and decimal equivalents to $\frac{1}{4}$ 's and $\frac{1}{2}$ 's. Round decimals with one decimal place to the nearest whole number. |
| Year 3  | Read and write numbers in numerals and words to 1000. Recognise the place value of each digit in a 3-digit number. Compare and order numbers to 1000.  | Estimate the answer to a question and use the inverse to check answers. Add and subtract numbers with up to 3 digits. Solve problems involving more complex addition and subtraction.                       | Recall and use multiplication facts for the 3, 4 and 8 times tables. Write and calculate multiplication and division statements using the multiplications facts they know.   | Count up and down in tenths. Compare and order unit fractions, and fractions with the same denominators. Add and subtract fractions with the same denominators.  | Measure, compare, add and subtract lengths, mass, volume and capacity. Add and subtract amounts of money to give change. Estimate and read time to the nearest minute. Measure the perimeter of simple 2D shapes.   | Draw 2D shapes. Make 3D shapes using modelling equipment. Identify right angles, recognise that two right angles make a half turn, 3 make a three quarter turn and 4 a complete turn.  | Interpret and present data using bar charts, pictograms and tables. Solve one step and two step questions using information presented in bar charts, pictograms and tables. |  |
| Year 2  | Read and write numbers to at least 100 in numerals and words. Recognise the  | Recall and use addition and subtraction facts to 20 and use related facts to 100. Understand that   | Recall and use multiplication facts for the 2, 5 and 10 times tables. Show that multiplication   | Recognise, name, find and write fractions $\frac{1}{2}$ , $\frac{1}{4}$ and $\frac{1}{3}$ of a length, shape, set of objects or quantity.  | Compare and order lengths, mass, volume/capacity and record using $<$ , $=$ , $>$ . Find different combinations of coins that equal   | Identify and describe the properties of 2D shapes. Identify 2D shapes on the face of 3D shapes.  | Interpret and construct simple pictograms, tally charts, block  |  |

|        |   |   |  |   |   |  |   |  |
|--------|---|---|--|---|---|--|---|--|
|        | place value of each digit in 2 digit number. Compare and order number using < > and =   | addition can be done in any order and that subtraction cannot. Add and subtract numbers with up to 2 digits.  | can be done in any order and division cannot. Calculate and write multiplication and division statements.  | Recognise the equivalence of $\frac{1}{2}$ and $\frac{2}{4}$ . Write simple fractions e.g. $\frac{1}{2}$ of 6 = 3.  | the same amount. Tell and write the time to five minutes, including quarter to/past.  | Compare and sort common 3D shapes. Use mathematical language to describe position, direction and movement.   | diagrams and simple tables. Answer simple questions by counting the number of objects in each category. |  |
| Year 1 | Count to and across 100 forwards and backwards. Read and write numbers to 100 in numerals. Read and write numbers from 1 to 20 in numerals and words. | Represent and use number bonds and related subtraction facts within 20. Add and subtract one-digit and two-digit numbers to 20. Solve one-step problems involving addition and subtraction. | Solve one step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. | Recognise, find and name a half as one of two equal parts of an object, shape or quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. | Compare, describe, measure and begin to record lengths, mass, capacity/volume and time. Recognise and know the value of different denominations of coins and notes. Tell the time to the hour and half past the hour. | Recognise and name common 2D shapes. Recognise and name common 3D shapes. Describe position, direction and movement, including whole, half, quarter and three-quarter turns. |   |  |
| EYFS   | Children count reliably with numbers from one to 20, place them in order.   | Say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.         | They solve problems, including doubling, halving and sharing.  |   | Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems.  | They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.                    |   |  |

#### ELG: Number

Children at the expected level of development will:

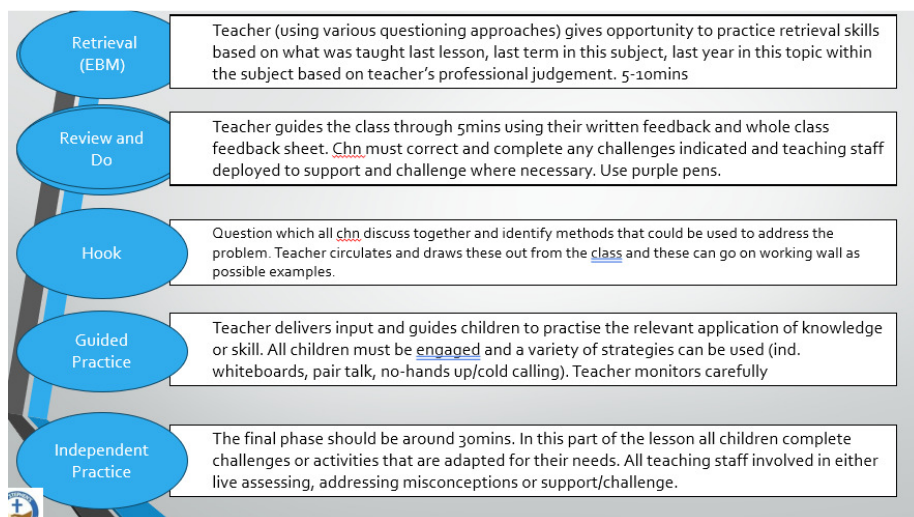
- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

#### ELG: Numerical Patterns

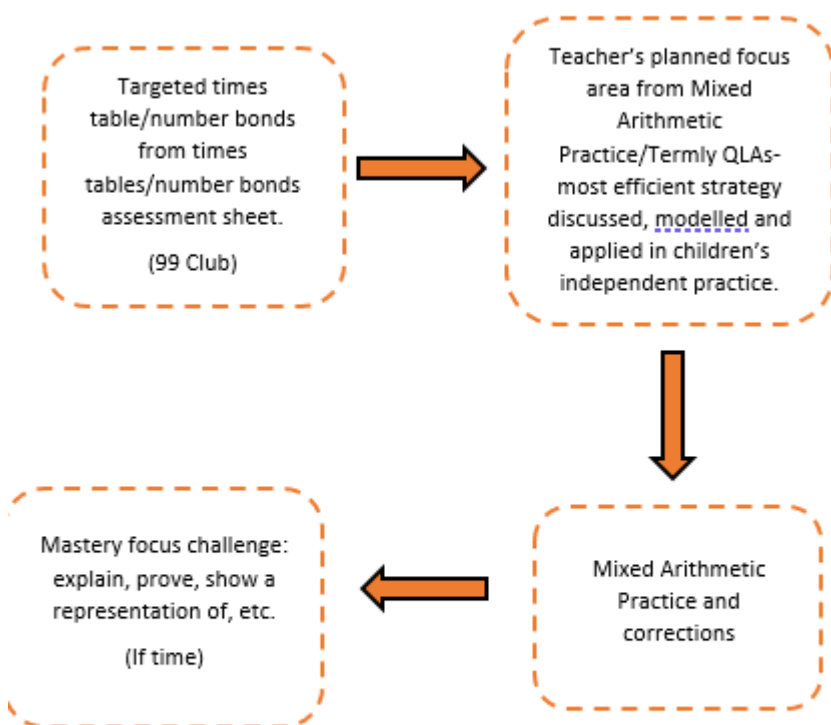
Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

## Appendix 3 – Best practice for Teaching and Learning in Maths



**Y1- Y6 Arithmetic Lesson Structure Diagram:**



**LO: I can apply my x tables facts and arithmetic skills**

Outcome of individual times tables/number bonds is recorded and monitored to inform assessment of basic skills (see 99 Club). Logged on class log sheet in intervention wallet.

Key maths concepts from mixed practice assessment can be teacher focus to be modelled showing most efficient strategies. Children will apply this to consolidate and extend their learning. Raw score to be logged and recorded by teacher.

## Appendix 4 – EYFS in Maths

### Number ELG

Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

### Numerical Patterns ELG

Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

## Expectations in Books

DUMTUM(S) – expectation across all curriculum books

### D.U.M.T.U.M

**Date**



**Underline**

**Miss a line**

**Title**

**Underline**

**Miss a line**

**1 Set high expectations which inspire, motivate and challenge pupils**

- establish a safe and stimulating environment for pupils, rooted in mutual respect
- set goals that stretch and challenge pupils of all backgrounds, abilities and dispositions
- demonstrate consistently the positive attitudes, values and behaviour which are expected of pupils.



## Expectations in Books

### Layout in Maths books

- 🕒 Hook and tasks clearly indicated
- 🕒 Chn do not write on sheet (unless a space for answer provided)
- 🕒 All working shown in book (whiteboards away after guided practice)
- 🕒 To save time, consider having Task 1, 2 etc on a single sheet (chn can then move on if progressing through concept well)

