

Christ Church CE & Lewis Street Primary Schools

Maths Intent (March 2019)



Aims

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.

Intent

What are we trying to achieve for our children in maths?

- We want our children to be problem solvers
- The skills they develop and learn at Lewis Street should be transferable to other aspects of the curriculum and their lives
- We aim to provide sufficient challenge to all our learners
- We aim to create and embed a current to develop resilience, whilst also being underpinned by the desire for our children to enjoy learning mathematical processes
- Reasoning skills should be developed as part of the maths curriculum
- We aim to develop the confidence of all children whilst focussing on providing the opportunity of mastery within the subject
- We want to increase number fluency across the school

Implementation

How is the curriculum delivered?

- Through the use of 'Maths No Problem' textbooks and workbooks
- Using staff meetings
- Fluency focussed activities beyond the usual maths lessons
- Through steps of progression across year groups
- Usage of a TRG to observe teaching in other settings
- Parental sessions/workshops in EYFS
- By provided high quality CPD including the maths lead attending a Mastery CPD course
- Whole class differentiation through questioning and journaling with additional pre/post teaching tasks for individual children
- Providing opportunities through cross-curricular links

Impact

What difference is the curriculum making?

- Achieved 'Area of Excellence' in maths during quality assurance review

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- Through maths observations, evidence of resilience and increased enjoyment has been observed
- Impact of EYFS data has been monitored
- Book scrutiny used to monitor progress over year and effective use of journaling
- Using PIXL to deliver additional pre/post teaching support.

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Fluency

Mathematical
Thinking

Variation

Problem-
Solving

Coherence

Theme interwoven
throughout the 4
drivers above.

Representation
and Structure

Theme interwoven
throughout the 4
drivers above.

Resilience

Theme interwoven
throughout the 4
drivers above.

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Threshold Concept	EYFS	Milestone 1 Years 1 and 2	Milestone 2 Years 3 and 4	Milestone 3 Years 5 and 6
<p><u>Fluency</u></p> <ul style="list-style-type: none"> • Number Facts • Times Tables • Making Connections 	<ul style="list-style-type: none"> • Counting objects, actions and sounds. • Counting beyond 10. • Understanding 1 more and 1 less. • Recalling number bonds for numbers up to 10. 	<ul style="list-style-type: none"> • Secure understanding of place value up to hundreds, tens and ones. • Recall number bonds for all numbers up to 20. • Identify and describe patterns in number sequences. • Rapid recall of times tables for 2s, 5s and 10s. • Use number facts to calculate efficiently with addition and subtraction. 	<ul style="list-style-type: none"> • Secure understanding of place value up to and beyond 1000. • Knowledge of place value of decimals up to hundredths. • Apply knowledge of number bonds to calculate efficiently. • Rapid recall of all times tables up to 12 x 12. • Make links between fractions and decimals for fractions that they have met so far. 	<ul style="list-style-type: none"> • Identify common factors, common multiples and prime numbers. • Apply knowledge of place value to multiply and divide using tens, hundreds and thousands. • Knowledge of place value of decimals up to hundredths. • Apply knowledge of number bonds to calculate efficiently. • Rapid recall of all times tables up to 12 x 12 to apply to calculation strategies. • Apply knowledge of fractions, decimals and percentages to calculate efficiently.

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Threshold Concept	EYFS	Milestone 1 Years 1 and 2	Milestone 2 Years 3 and 4	Milestone 3 Years 5 and 6
<p><u>Mathematical Thinking</u></p> <ul style="list-style-type: none"> Chains of Reasoning Making Connections 	<ul style="list-style-type: none"> Subitising up to 5. Comparing numbers. Able to say one more and one less than a given number. Able to use mathematical vocabulary to explain one more and one less. Select/rotate/manipulate shapes in order to develop spatial reasoning skills. Compose and decompose shapes. Explain patterns and approve outcomes. 	<ul style="list-style-type: none"> Can explain connections with number facts to 20 and derive new facts using known facts. E.g. $2+8=10$ so $20+80=100$. Can explain connections with multiplication facts for 2, 5 and 10 and derive new facts using known facts. E.g. $5 \times 4=20$ so $4 \times 5=20$. Applying mathematical understanding to explain new methods to solve one and two step problems. Understand and use correct vocabulary. Presenting solutions using their preferred mathematical method. Begin to estimate the answer to problems. 	<ul style="list-style-type: none"> Can explain connections with number facts beyond 1000 and derive new facts using known facts. E.g. using inverse operations Combine knowledge of number facts and rules of arithmetic to solve mental and written calculations. E.g. $2 \times 6 \times 5 = 10 \times 6$ Explaining the links between fractions and known number facts. E.g. division facts or decimals. Explaining how an answer is incorrect through reasoning. Understand and use correct vocabulary as outlined in the NC. Applying mathematical understanding to explain new methods to solve one and two step problems. Presenting solutions using a variety of methods. 	<ul style="list-style-type: none"> Embed and consistently apply number relationships to explain how to solve complex word problems involving all four operations. Securely explaining the links between fractions, decimals and percentages. Using FDP as different ways to express proportions. Solve problems involving unequal quantities in ratio and proportion. Explore and make conjectures about converting a simple fraction to a decimal fraction. E.g. $3 \div 8 = 0.375$. Explaining how an answer is incorrect

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				<p>through reasoning and being able to explain how to correctly answer it.</p> <ul style="list-style-type: none">• Understand and use correct vocabulary as outlined in the NC.• Generalisation of number patterns through algebraic thinking.
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Threshold Concept	EYFS	Milestone 1 Years 1 and 2	Milestone 2 Years 3 and 4	Milestone 3 Years 5 and 6
<p><u>Variation</u></p> <ul style="list-style-type: none"> Procedural Conceptual Making Connections 	<ul style="list-style-type: none"> Counting and making models of different number facts including tens frames and the part, part whole model. Using representation and structures to represent different number facts. Understanding and represent cardinal numbers. Compose numbers up to 10 in different ways and journal findings. Show the inverse calculations to make numbers up to 10, including inverse operations. 	<ul style="list-style-type: none"> Ordering numbers as cardinal and ordinal Comparing numbers Starting counting at different points. Varying structure of equations. E.g. $7=?-9$ and $?=?+?$ Making connections between arrays, number patterns and step counting. Making connections with inverse to create fact families for number bonds to 20 and for $2x$ $5x$ and $10x$ table. Images to support understanding of concepts. 	<ul style="list-style-type: none"> Counting in steps starting from alternative numbers instead of 0. E.g. 1,6,11,16 Comparing more than two numbers Ordering numbers involving units of measure Varying equations Investigating sharing and grouping using knowledge times tables to efficiently calculate 	<ul style="list-style-type: none"> Investigating unequal sharing and grouping in varying contexts. E.g perimeter, area. Generalisation of number patterns for algebra Missing numbers, lengths, coordinates and angles Provide children with opportunities to investigate non-examples of the procedure or concept. E.g. how can they not be correct? How this not correct?

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Threshold Concept	EYFS	Milestone 1 Years 1 and 2	Milestone 2 Years 3 and 4	Milestone 3 Years 5 and 6
Problem-Solving	<ul style="list-style-type: none"> • Problem solving involving numbers to 10 and number bonds up to 10. • Can use stories and rhymes to identify and remember number bonds. • Identify one more and one less, including in word problems. • Solve one step problems in real life scenarios involving addition and subtraction, by using concrete objects to support. • Discuss and solve problems in a familiar/practical concept during role play activities. • Copy, create and continue repeating patterns. • Compose and decompose shapes so 	<ul style="list-style-type: none"> • Children in Years 1 and 2 solve problems using their knowledge of number, addition subtraction, division and multiplication, fractions, measurement, geometry (properties of shape), geometry (position and direction). • Solve one-step problems and problems involving addition and subtraction, multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher where needed, and missing number problems. • Applying their increasing knowledge of mental and written methods. • Discuss and solve problems in familiar practical context. • Solving problems in fractions using shapes, objects and quantities. • Using their understanding of numbers of at least to 100 	<ul style="list-style-type: none"> • Pupils solve number problems practical situations involving numbers up to 1000 (including counting from 0 in multiples of 4, 8, 50 and 100.) • Pupils solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction, with answers up to 1000. • Solving number problems which have a number of possible outcomes using a systematic approach. • Discuss and solve problems in a range of contexts. E.g. measuring and scaling. • Solve problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. 	<ul style="list-style-type: none"> • Solve multi-step problems involving all four operations in contexts, deciding which operations and methods to use and why. • Solve number and practical problems involving numbers to at least a million and include negative numbers. • Solve problems involving converting measures including units of time. • Expressing missing number problems algebraically. • Solve problems which require answers to be rounded to specified degrees of accuracy.

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	that children recognise a shape can have other shapes within it, just like numbers can.	pupils solve a variety of related problems.		E.g. making a decision about what to do with remainders.
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