



MATHS AT NANCLEDRA

This document has been designed to be the master resource relating to all areas of the Maths Curriculum at Nanchedra School.

- The Intent and Implementation Rationale of our curriculum at Nanchedra School
- Lesson Design
- The Components of our Curriculum

Small Steps Sequencing reflecting the mathematical learning journey pupils undertake through the school.

Guidance relating to how teachers can make adaptations to this, including SEN.

- Stakeholder Feedback
- School Data Headlines (Impact)

INTENT

At Nanchedra, our mathematics curriculum has been developed to ensure our pupils leave us prepared to tackle mathematics at secondary school and beyond. Through our ethos of 'teach, do, secure, and deepen' our pupils are constantly practising and consolidating their understanding of mathematics. Teachers plan a series of bespoke lessons with elements of fluency, problem-solving, and reasoning, whilst also making key links across curriculum areas, meaning pupils are able to apply their understanding to a wide variety of different contexts. Finally, we believe in constantly challenging pupil resilience as well as ensuring they have an understanding of the importance of mathematics in their everyday lives.

IMPLEMENTATION

At Nanchedra School, we understand the importance of developing pupil understanding of place value and number, whilst also instilling pupil confidence in appropriate usages of written methods for the four operations

Times Tables

We also understand how pupils' table knowledge, and fluent application of this table knowledge, empowers pupils to notice and use patterns in their mathematics. Pupils are explicitly taught their tables in the following order from reception onwards:

10, 2, 5, 3, 4, 6, 8, 7, 9, 11, 12

From Year 3 onwards, pupils complete Club 99. Pupils have 10 minutes to complete anything from 33 to 99 multiplication and division calculations, with instant recall being the expectation in order to encourage them to develop their fluency in their understanding of their tables. Pupils also use 'Times Tables Rockstars' to develop their speed and accuracy.



MATHS AT NANCLEDRASCHOOL

PLANNING AND LESSON DESIGN

At Nanclendra School, teachers plan sequences of lessons using the structure of: 'Teach, Do, Secure, Deepen'. This model will be presented within a single lesson or a sequence of lessons.

Teachers plan lessons using the national curriculum objectives in combination with the White Rose small steps. Teachers plan sequences of lessons using a wide range of inputs, including PowerPoint, activities (from websites such as NRICH or NCETM), and puzzles. In Early Years and Key Stage one, teachers ensure this, where possible, begins with practical resources to establish their understanding.

Mathematics



1

COUNTING

Lessons begin with a short counting activity

2

PRIOR LEARNING

Daily formative assessment is used to identify learning which needs rehearsal (Yesterday, this week, last week, last term...)

3

VOCABULARY

Teacher reviews and introduces vocabulary required for learning using a range of short activities.

4

DIRECT INSTRUCTION

Teachers introduce and teach new concept. Children are actively engaged in the teaching and learning.

5

FLUENCY

Fluency task to allow learners to practice (Do)

6

FURTHER DIRECT INSTRUCTION

Teachers introduce applying new skill to variety of situations.

7

REASONING AND PROBLEM SOLVING

Learners apply their new skill (Secure, Deepen)
If more rehearsal needed, pupils have further fluency available until confident to access.

8

PLENARY

Teacher addresses misconceptions and assesses learning with a twist (true/false, odd one out etc)

ROLE OF T AND TA DURING INDEPENDENT TASKS

Live marking
addressing misconceptions
moving children on
support
guidance

PUPILS' MATHS BOOKS

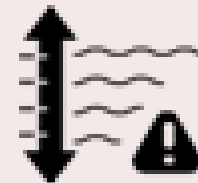
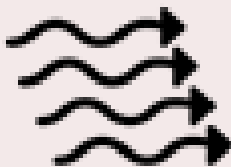
We have a high expectation of presentation within books where children write in one digit per square. Each lesson will begin with a set of recall questions and the Learning Objective (WALT).

To understand percentages

S G P I

Last lesson	Arithmetic feedback	Last week	Last term
Convert to a decimal $\frac{3}{20}$	$4\frac{1}{7} - 2\frac{5}{14}$	$12 \times 3\frac{1}{2}$	$\frac{1}{6} + \frac{2}{5}$
$\frac{7}{50}$	$\frac{1}{6} \times 5$	Simplify $\frac{84}{100}$	Which digit is in the hundredths column? 123.456

Where numbers have been reversed or written incorrectly, this will be highlighted within marking (KS1) and children will rewrite the number several times to practise. Where a mistake has been made, this will be shown when marked and pupils will rectify these with a purple pen. Teachers will explicitly demarcate activities that were Do (fluency), Secure (reasoning) or Deepen (problem-solving-based) with the following symbols:



In Key Stage Two, pupils will often self-mark using purple pen. Where they have made an error, they are also encouraged to self-correct using a purple pen. Teachers may also include additional questions or challenges to consolidate, or extend pupil learning.

ASSESSMENT

Pre-unit assessments are used to enable teachers to tailor the learning to the needs of the class. These can be from a variety of sources: teacher made, White Rose, maths.co.uk. Pupils are then assessed at the end of the unit to ensure gaps in skills and knowledge are addressed on a 1:1 or in small groups.



MATHS AT NANCLEDRA

SEQUENCING

At Nanclendra, we have a bespoke sequence of learning which meets the requirements of teaching mathematics whilst working within a mixed-age school setting. We teach using a mastery approach, in which all pupils are expected to make progress within their dual-year group classrooms.

Our expectations on pupil progress within mathematics are end of class or Key Stage (KS1/LKS2/UKS2), rather than end of year (e.g. Year 3 or Year 5).

Essentially, we believe that teachers of mixed-age classes possess a unique opportunity to establish and embed foundational knowledge in Year A of a two-year cycle, which can then be built on and developed in Year B. Teachers therefore do not have an explicit year group or blended year group overview of their curriculum, but rather a singular thread of coherence in which our focus is on ensuring all our pupils move through securely.

Teachers use a sequencing document and use professional judgment to edit and adjust according to the needs of the children. A pre-block assessment ensures teaching begins with the needs of the pupils, with pre-teaching and interventions planned as appropriate.

Year 3 and 4 - Spring 2						
Term 4 2022-23	Week 1 Wb 20/2/23	Week 2 Wb 27/2/23	Week 3 Wb 6/3/23	Week 4 Wb 13/3/23	Week 5 Wb 20/3/23	Week 6 (four days) Wb 27/3/23
Topic: Fractions			Topic: Decimals A			
NC End Points	<ul style="list-style-type: none"> recognise and show, using diagrams, families of common equivalent fractions count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number add and subtract fractions with the same denominator recognise and write decimal equivalents of any number of tenths or hundredths recognise and write decimal equivalents to $\frac{1}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ solve simple measure and money problems involving fractions 				<ul style="list-style-type: none"> find the effect of dividing a one- or two-digit number by 10 and 100; identifying the value of the digits in the answer as ones, tenths and hundredths round decimals with one decimal place to the nearest whole number compare numbers with the same number of decimal places up to two decimal places solve simple measure and money problems involving decimals to two decimal places 	
Planned	<ul style="list-style-type: none"> Understand the whole Count beyond 1 Partition a mixed number Number lines with mixed numbers 	<ul style="list-style-type: none"> Compare and Order mixed numbers Fractions and Scales Understand improper fractions Convert mixed numbers to improper fractions 	<ul style="list-style-type: none"> Convert improper fractions to mixed numbers Equivalent fractions on a number line Equivalent fractions families Add 2 or more fractions 	<ul style="list-style-type: none"> Add fractions and mixed numbers Subtract two fractions Subtract from whole amounts Subtract from mixed numbers End of block assessment Fractions B 	<ul style="list-style-type: none"> Assessment Week Plus two days of outdoor activities in the half term. 	<ul style="list-style-type: none"> Tenths as fractions Tenths as decimals Tenths on a place value chart Tenths on a number line

ADAPTATIONS

Wherever possible, teachers should aim for their pupils to all move through the curriculum at broadly the same pace. Where pupils are unable to do this, teachers should make adaptations to their lessons/pupil activities to support pupils to access the learning. This could be through the use of:

- Manipulatives (and even a variety of manipulatives to suit the pupil);
- Resources, such as a 12 x 12 times table chart, tens frames, place value grids;
- Steps to Success to support pupils through a process (a scaffolding);
- The support of an adult, such as a Teaching Assistant;
- Additional input (such as 1:1 with a Teacher/TA);
- Small group pre-teach work.



MATHS AT NANCHEDRA

STAKEHOLDER FEEDBACK

There are many stakeholders that work with leaders throughout Nanchedra School including:

Pupils

Teachers

Parents

Leaders in School (such as the Maths Lead or Headteacher)

Governors

Trust Leaders (such as the Director of Education)

At Nanchedra, we have a Mathematics Lead, and a Governor dedicated to objectively monitoring the subject alongside the whole governing body. The Maths Governor attends Curriculum Meetings in which the teaching of Maths is discussed, as well as visiting lessons to observe mathematics being taught.

Pupils are regularly conferenced by school and trust leaders.

Parents are supported by the school to support their children through regular Progress Meetings and ongoing dialogue with teachers.

IMPACT

(NB: 1 pupil is approximately 7%)

FOUNDATION STAGE

	Met Early Learning Goal
2024	80%
2023	79%
2022	92%

END OF KS1

	Expected Standard	Greater Depth within the Expected Standard
2024	70%	8%
2023	81 %	12.5%
2022	61%	11%

END OF KS2

	Expected Standard	Greater Depth within the Expected Standard
2024	87%	26%
2023	81%	31%
2022	88%	29%



CALCULATION AT NANCLENDRA

At Nanclendra we believe that the curriculum is a powerful tool that promotes a love of learning, a willingness to explore and time to have fun. We use the National Curriculum (2014) as a starting point for a wide and varied learning experience for our children.

We integrate the Mastery Approach to teaching Maths, which will ensure a structured conceptual progression to understanding numbers and calculations. By utilising this approach, we will provide a progression through concrete, pictorial, and abstract representations of numerical concepts.

AIMS

- To teach children how to calculate accurately and fluently, recognising that the ability to calculate mentally lies at the heart of numeracy.
- To teach children to use practical resources to help structure conceptual understanding
- To teach children written recording strategies to help clarify thinking and support mental calculation strategies.
- To teach children written calculation methods (algorithms) to ensure accuracy and reliability when making complex calculations.

The long-term aim is for children to select an efficient method of their choice appropriate for a given task. They should do this by asking themselves;

“Can I do this in my head?”

“Can I do this in my head using practical resources, drawings or jottings?”

“Do I need to use a written method?”

RECEPTION

In Reception class, calculation is introduced through engaging activities that help children develop a strong foundation in number sense. The 'Mastering Number' program is central to this, focusing on building a deep understanding of numbers, particularly through subitising—recognising quantities without counting. This approach is complemented by the White Rose small steps framework, which provides structured guidance to help embed key concepts like addition, subtraction, and understanding number relationships as well as measure, shape and statistics.

Children are given opportunities to apply and embed their learning through continuous provision—hands-on activities and play that allow them to explore mathematical ideas in real-life contexts, ensuring that their grasp of numbers becomes more secure and intuitive.



CALCULATION AT NANCLEDRA

KEY STAGE 1

Children in Years 1 and 2 will be given a solid foundation in the basic building blocks of mental and written arithmetic. Through being taught place value, they will develop an understanding of how numbers work, so that they are confident in 2-digit numbers and beginning to read and say numbers above 100.

A focus on number bonds, first via practical hands-on experiences and subsequently using memorisation techniques, enables a good grounding in these crucial facts, and ensures that all children leave Y2 knowing the pairs of numbers which make all the numbers up to 10 at least. They will also have experienced and been taught pairs to 20. Their knowledge of number facts enables them to add several single-digit numbers, and to add/subtract a single digit number to/from a 2-digit number.

Another important conceptual tool is their ability to add/subtract 1 or 10, and to understand which digit changes and why. This understanding is extended to enable children to add and subtract multiples of ten to and from any 2-digit number. The most important application of this knowledge is their ability to add or subtract any pair of 2-digit numbers by counting on or back in tens and ones. Children may extend this to adding by partitioning numbers into tens and ones.

Children will be taught to count in 2s, 3s, 5s and 10s, and will have related this skill to repeated addition. They will have met and begun to learn the associated 2x, 3x, 5x and 10x tables. Engaging in a practical way with the concept of repeated addition and the use of arrays enables children to develop a preliminary understanding of multiplication, and asking them to consider how many groups of a given number make a total will introduce them to the idea of division. They will also be taught to double and halve numbers, and will thus experience scaling up or down as a further aspect of multiplication and division. Fractions will be introduced as numbers and as operators, specifically in relation to halves, quarters and thirds.

LOWER KEY STAGE 2

In lower KS2, children build on the concrete and conceptual understandings they have gained in KS1 to develop a real mathematical understanding of the four operations, in particular developing arithmetical competence in relation to larger numbers.

In addition and subtraction, they are taught to use place value and number facts to add and subtract numbers mentally and will develop a range of strategies to enable them to discard the 'counting in ones' or fingers-based methods of KS1.

In particular, they will learn to add and subtract multiples and near multiples of 10, 100 and 1000, and will become fluent in complementary addition as an accurate means of achieving fast and accurate answers to 3-digit subtractions. Standard written methods for adding larger numbers are taught, learned and consolidated, and written column subtraction is also introduced.

This key stage is also the period during which all the multiplication and division facts are thoroughly memorised, including all facts up to the 12 x 12 table. Efficient written methods for multiplying or dividing a 2-digit or 3-digit number by a single-digit number are taught, as are mental strategies for multiplication or division with large but friendly numbers, e.g. when dividing by 5 or multiplying by 20.

Children will develop their understanding of fractions, learning to reduce a fraction to its simplest form as well as finding non-unit fractions of amounts and quantities. The concept of a decimal number is introduced and children consolidate a firm understanding of one-place decimals, multiplying and dividing whole numbers by 10 and 100.

UPPER KEY STAGE 2

Children move on from dealing mainly with whole numbers to performing arithmetic operations with both decimals and fractions. They will consolidate their use of written procedures in adding and subtracting whole numbers with up to 6 digits and also decimal numbers with up to two decimal places.

Mental strategies for adding and subtracting increasingly large numbers will also be taught. These will draw upon children's robust understanding of place value and knowledge of number facts.

Efficient and flexible strategies for mental multiplication and division are taught and practised, so that children can perform appropriate calculations even when the numbers are large, such as $40,000 \times 6$ or $40,000 \div 8$.

It is in Y5 and Y6 that children extend their knowledge and confidence in using written algorithms for multiplication and division.

Fractions and decimals are also added, subtracted, divided and multiplied, within the bounds of children's understanding of these more complicated numbers, and they will also calculate simple percentages and ratios. Negative numbers will be added and subtracted.

CALCULATION SPINE

At Nancledra, we have carefully chosen key concrete, pictorial, and abstract representations to ensure that children understand number concepts securely.

The diagram illustrates the 'Calculation Spine' across three levels: Reception, Year 1, and Year 3 and 4. Each level is represented by a key icon and a list of mathematical concepts and their corresponding visual representations.

- RECEPTION** (orange key):
 - real life objects
 - numicon
 - number lines
 - 5/10 framesVisuals include: a numicon for 5+3=8, a number line from 5 to 8 with a jump from 5 to 8, and a 5/10 frame with 5 red dots and 3 black dots.

- YEAR 1** (teal key):
- real life objects
- numicon
- number lines
- part - part - whole models
- number sentences
- 5/10 framesVisuals include: a numicon for 5+3=8, a number line from 5 to 8 with a jump from 5 to 8, a part-part-whole model for 5 (3 part, 2 part), a number sentence $5 + 3 = 8$, and a 5/10 frame with 5 red dots and 3 black dots.
- YEAR 3 AND 4** (yellow key):
- Base 10
- Column addition
- incl. decimals and moneyVisuals include: a base 10 block representing 146, a column addition problem $146 + 527 = 673$, and a money problem $57 + 45 = 102$ with a diagram showing 100 + 12 = 112 and 112 + 10 = 122.

A full breakdown of these can be found in our calculation spine document.

When children require additional support, teachers will provide alternative representations to aid understanding.