Mathematics Curriculum Map

At Howard Primary School we take a **mastery approach** to teaching mathematics. This involves:

- spending longer on each topic using a combination of practical, pictorial and written representations to develop an understanding of concepts and calculation methods.
- building on prior learning through making strong connections.
- developing fluency in key facts, such as number bonds and times tables, through regular practise underpinned by secure understanding. To achieve this, teachers use daily fluency activities, revisiting prior learning to support children's retention of learning over time.
- regular 'keep up' intervention groups, led by the teacher, to ensure that children do not fall behind their peers.

To support the learners in our context and meet their needs, we have reorganised some of the objectives within the National Curriculum for England slightly. This has included moving some content to other year groups, most notably removing most of the objectives relating to telling the time and finding fractions of shapes into lower Key Stage 2. This decision has been made to ensure that children can spend longer focussing on essential early learning concepts, such as comparison, composition, number sense and measurement in Key Stage 1 – which will provide a sound basis for the children's future learning.

Throughout every unit of work, teachers make explicit connections to prior learning and to learning in other topic areas. This provides opportunities for children to build on what they already know. For example, when learning about measurements, children revisit and deepen their understanding of place value and calculations. Making connections is a crucial part of maths and a key feature of how we plan for learning over time.

In Early Years and Key Stage 1, children's understanding of number is supported by daily *Number Sense* sessions, which systematically support children's learning of the core concepts of number and counting. Children's learning is also supported by a series of intentionally chosen digital applications, including *Teach Your Monster Number Sense* (which supports number sense in the Early Years and Key Stage 1), *Times Tables Rockstars* (which supports children's recall of known multiplication tables facts), and a digital tutoring and intervention tool called *TUTOR* (which is used in Key Stage 2).

Assessment and monitoring:

- At the end of Reception: children are assessed against the Early Learning Goals, which can be found in the early years framework.
- Year 1: teachers meet to discuss the children's progress and next steps against key performance indicators relating to core concepts and number bonds.
- Year 2: there is no statutory teacher assessment as of 2023-24, therefore children will be assessed using key performance indicators and a number bond check.
- At the end of Year 3: children are assessed against key performance indicators, including number bonds and multiplication tables facts (1, 2, 4, 5, 8 and 10).
- Year 4: statutory assessment for multiplication facts (up to 12x12); and teacher assessment using key performance indicators.
- Year 5: children are assessed against key performance indicators, including the recall of division facts, which is recorded as teacher assessment on FFT.
- Year 6: statutory assessment at the end of Key Stage 2; and end of upper-key stage 2 intra-school moderation against key performance indicators.
- At the start and end of the year, children in Years 2-6 will take part in standardised PUMA assessment tests.

Early Mathematics Overview

NOTE: Each bullet point represents a topic, big idea, core concept or process to be taught and revisited.

Class	Autumn 1st Half Term	Autumn 2nd Half Term	Spring 1st Half Term	Spring 2nd Half Term	Summer 1st Half Term	Summer 2nd Half Term
Reception	**Themes: Counting and Comparison**		**Themes: Composition and Measuring**		**Themes: Patterns and Shapes**	
	Early Years Number Sense: Cardinality Books1-5		*Early Years Number Sense: Composition Books 6-11*		*Early Years Number Sense: Num. Pattern B12-13*	
	★ Subitising to 5 ★ Numbers & words ★ CP: Comparing and sorting objects (WRM)	★ Subitising to 10 ★ Comparing quantity ★ CP: Position(WRM) ★ CP: More/less (WRM)	★ Partitioning 2-5 ★ Partitioning 10 ★ CP: Measuring mass and capacity (WRM)	★ Composition 6-10 ★ CP: Measuring length and distance (WRM)	★ Comparison to 10 ★ CP: 3D shape (WRM) ★ CP: Shape patterns (WRM)	★ Number patterns ★ CP: No.s to 20 (WRM) ★ CP: Number and shape patterns (WRM)
	Frequently used representations and resources: *Number Blocks, Teach Your Monster Number…* 5-frames, counters, dot patterns,		Frequently used representations and resources: *Number Blocks, Teach Your Monster Number…* 10-frames, Numicon, number tracks		Frequently used representations and resources: *Number Blocks, Teach Your Monster Number…* Number tracks, pattern blocks	
Year 1	**Comparison and Composition**		**Composition and Counting**		**Measurement and Geometry**	
	Daily fluency: then NSNF Stage 2		Daily fluency NSNF Stage 3		Daily fluency NSNFacts Stage 4 and 5	
	Units of work (WRM): ★ Position & direction ★ Place value to 10	Units of work: ★ Comparison of quantity (NCETM) ★ Place value to 20 (WRM)	Units of work (NCETM): ★ Understanding addition - aggregation ★ Understanding + - augmentation and reduction (NCETM)	Units of work (NCETM): ★ Multiples of 10 ★ Numbers 20 - 100	Units of work: ★ Counting in 2, 5, 10s and unitising (NCETM) ★ Money (WRM)	Units of work (WRM): ★ Measuring lengths and height ★ Measuring mass and volume
	Frequently used representations and resources: Number tracks, balance scales, 10-frames		Frequently used representations and resources: 10-frames, Numicon, number tracks, coins		Frequently used representations and resources: Number tracks, measuring tools, model shapes	
Continuous provision	CP: Properties of 3D and 2D shapes	CP: Comparison words for length, mass & capacity (-er, -est)	CP: Equal, unequal	CP: Solving problems with missing numbers	CP: Shop role play	CP: Measuring
Year 2	**Position and Direction and Place Value**	**Additive structures**	**Multiplicative structures**	**Division and Fractions**	**Measurement**	**Statistics and Geometry**
	Daily fluency: NSNFacts Stage 4 and 5		Daily fluency NSNF Stage 6		Daily fluency: *Times Tables Rockstars*	
	★ Position and direction, including repeating pattern (WRM) ★ Additive bonds ★ Place value with 2-digit numbers (WRM)	★ Add and subtract 1s and 10s (WRM) ★ Additive bonds ★ Adding and subtracting 2-digit numbers (WRM) ★ Equal groups (NRICH)	★ Groups of 2 (NRICH) ★ Groups of 5 and 10 (NRICH) ★ Using multiplication facts and arrays to solve problems (WRM)	★ Division structures (NCETM) ★ Intro to fractions ★ Finding unit fractions of amounts by division	★ Measuring, recording length and mass (WRM) ★ Measuring and recording time	★ Presenting and Interpreting data (WRM) ★ Composition and comparison of 3D and 2D shapes (WRM)
	Frequently used representations and resources: Numicon, number track, 10-frame, 0-99 square		Frequently used representations and resources: Numicon, arrays, 0-99 square		Frequently used representations and resources: Number lines, measuring tools, model shapes	

Junior Mathematics Overview

This table outlines the key themes and intentions for each term of study. Each bullet point represents a concept or process to be taught and revisited.

Class	Autumn 1st Half Term	Autumn 2nd Half Term	Spring 1st Half Term	Spring 2nd Half Term	Summer 1st Half Term	Summer 2nd Half Term
Year 3	**Geometry and Place Value** ★ Geometry: shapes ★ Place value within 1000 ★ Money	**Addition, Subtraction, Length and Perimeter** ★ Addition and Subtraction ★ Length and Perimeter	**Multiplication** ★ Multiplication tables ★ Multiplying 2-digit by 1-digit numbers, practically	**Division & Fractions** ★ Dividing 2-digit by 1-digit numbers ★ Unit and non-unit fractions (Unit A)	**Fractions and Measurements** ★ Calculating with fractions (Unit B) ★ Measuring mass and capacity	**Time and Statistics** ★ Telling the time ★ Statistics – reading and interpreting charts and graphs
Year 4	**Geometry and Place Value** ★ Position & direction ★ Place value with four digits ★ Rounding	**Addition & Subtraction** ★ Complements to 100 ★ Add and subtract ones, tens & hundreds ★ Mental calculation ★ Multiplication tables	**Perimeter, Area & Multiplication** ★ Length & perimeter ★ Multiplying tens ★ Multiplying two-digit numbers ★ Area problems	**Division & Fractions** ★ Dividing by 1-digit ★ Non-unit fractions ★ Improper fractions and mixed numbers ★ Decimal fractions	**Decimals and Money** ★ Decimal place value ★ Decimal fractions ★ Money - decimals	**Statistics, Angles and Time** ★ Y4 ASSESSMENT ★ Geometry: Angles and drawing shapes ★ Interpreting charts ★ Converting analogue time, incl. 24-hour clock
Year 5	**Place Value and Addition** ★ Place value with four and five digits ★ Mental strategies & checking strategies ★ Column addition	**Subtraction and Decimals 1** ★ Column subtraction ★ Decimal place value ★ Compare, order and round decimals ★ Decimal money	**Multiplication and Measurement** ★ Factors and multiples ★ Multiplying x10s/100s ★ Grid multiplication ★ Area of shapes ★ Converting units	**Division & Fractions** ★ Division by grouping ★ Equivalence ★ Improper fractions ★ Fraction calculations	**Decimals 2 and Percentages** ★ Decimal fractions ★ Percentages ★ Interpreting graphs	**Geometry** ★ Angle complements ★ Classifying shapes ★ Coordinate geometry
Year 6	**Place Value, Addition and Subtraction** ★ Integers and decimal place value ★ Addition and subtraction, including decimals with money	**Division and Multiplication** ★ Converting units of measurement ★ Formal multiplication ★ Short division ★ Inverse & estimates	**Fractions, Decimals & Percentages with Measurements** ★ Equivalence and simplifying fractions ★ Improper fractions and mixed numbers ★ Fraction calculations	★ Decimal fractions ★ Percentages ★ Ratio and proportion measurement problems	**Geometry and Algebra** ★ Transforming shapes ★ Solving problems using four operations ★ KS2 ASSESSMENT ★ Algebra: Substitution	**Algebra and Statistics** ★ Algebra: Formula ★ Statistics: pie charts and mean average ★ Properties of circles

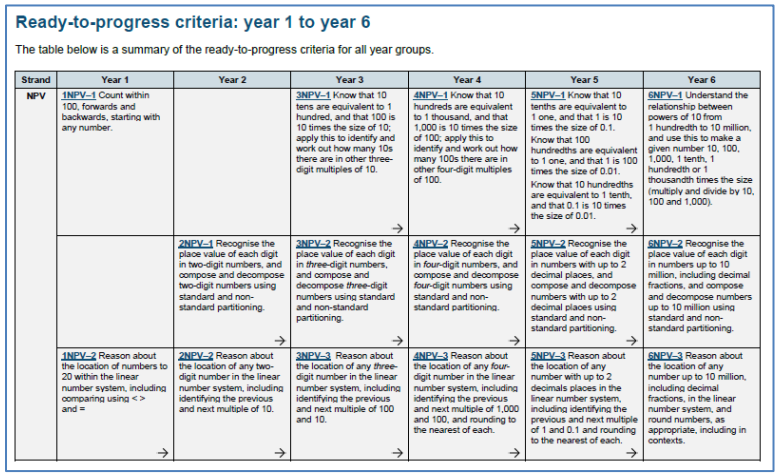
Supporting Documentation

DFE Guidance

In July 2020, the Department for Education (DfE) and the NCETM released new guidance to support the teaching of mathematics for years 1 - 6. This guidance outlines key content so that teachers can identify which concepts are most important in each year group. When introducing the guidance the DfE explained that "pupils who have successfully mastered all of the ready-to-progress criteria (RTPs) for a year group will have the foundations they need to make good progress in the following year group".

Each year group has between 8 and 16 RTPs which make up the essential knowledge for that year group. However, the RTPs do not cover all of the national curriculum and it is important to make sure that the statutory guidance for curriculum coverage is followed. The full guidance, can be downloaded from this website: www.gov.uk/government/publications/teaching-mathematics-in-primary-schools including chapters for each year group.

This image (right) is taken from the guidance, showing some of the RTPs for Number and Place Value. The arrows (pointing right➔) indicate that some RTPs are developed over time. It is important that these ideas and concepts are thoroughly understood by children before they move on.



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
NPV	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 non-standard partitioning. →	3NPV–2 Recognise the place value of each digit in *three*-digit numbers, and compose and decompose *three*-digit numbers using standard and non-standard partitioning. →	4NPV–2 Recognise the place value of each digit in *four*-digit numbers, and compose and decompose *four*-digit numbers using standard and non-standard 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 non-standard 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 non-standard 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 two-digit number in the linear number system, including identifying the previous and next multiple of 10. →	3NPV–3 Reason about the location of any three-digit 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 four-digit 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.

Planning resources

All of the core concepts identified on the pages above are hyperlinked directly to planning tools; however is recommended that teachers carry out pre-topic Diagnostic Assessments and refer to Mastery and GDS assessment on NCETM before planning. Useful resources for supporting include:

- **NCETM –** Curriculum Resource Tool
- **NCETM –** Progression and Reasoning
- **NCETM –** Primary Mastery PD Spines
- **White Rose Maths –** Schemes of Learning
- **NRICH –** Primary Curriculum Mapping
- **Daily Fluency –** Corbett Primary Maths 5-a-Day , Fluent in Five (Third Space)
- **Digital manipulative** applications, visit Maths Bot; and ITPs on Maths Frame
- Vocabulary guide and Glossary

Additional advice for supporting planning

- Identify connections in topics – think about how learning can be linked and revisited later. The **NCETM** website has a useful **National Curriculum Planning Tool** which can help identify connections within maths and to other subject areas.
- Think about which 'simmering skills' you would like children to periodically practise each term. If there is a skill children haven't used for a while, think about meaningful opportunities to interleave these into the plan. The old National Numeracy Strategy (2000) was very good at outlining things to keep practising regularly, such as: telling the time, converting units of measure, rounding, and learning number bonds and times table facts.
- For mixed-age classes, identify 'common content' and year-group-specific content to know which objectives can be taught together or need to be taught separately. **The White Rose Maths schemes of learning** help to identify this at the start of each block.
- Use the **DfE guidance** to find out more about the 'ready-to-progress' criteria for the key concepts you will teach this term/topic.
- Be sure to check the calculation policy, so that you know which resources and representations to use so that children can best access new calculation methods.
- Take a look at digital interactives, such as those on **Mathsbot.com**, and see how you can use them to model concepts and methods.
- When planning for daily fluency tasks, choose questions which revisit learning from *this week, last week, last topic and last term*. There are helpful daily fluency resources on **Corbett Primary Maths 5-a-day**, but be sure to choose the most useful questions to make the most of the opportunity for retrieval practice.
- If you are planning to teach content which you are unfamiliar with you can find excellent support from the **NCETM's Primary Mastery PD Spines**. These are highly detailed and very useful for helping you to explain key ideas in granular detail, with well-chosen examples.
- If you are looking for ways to include problem solving activities and investigations into a topic, the **NRICH** website has a helpful **curriculum mapping tool** so that you can see which of their activities are best suited to your year group and topic. Before using any of their activities or investigations, be sure to read the information for teachers in the top left-hand corner of the page and pay close attention to their 'getting started' advice.
- When choosing activities to use within lessons, think first about what you want the children to think about instead of what you want them to do. It can be tempting to choose a question that 'looks good' on the surface, but only use it if it directs children's thinking in the way that best serves your learning intention. Try not to use too many different types of question in one activity, variation of question (think: deliberate small changes) is better than variety of question when learning something new; whereas variety is more helpful for revision.