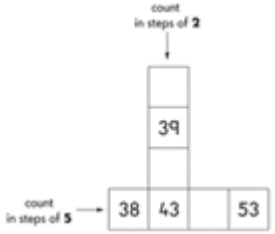
Unit Overview and Guidance

- The exemplification has been taken from the NCETM online 'Resource Toolkit', with additions in order to ensure full coverage.
- Links to the White Rose Maths hubs schemes of work are hyperlinked to each of the objectives. These are numbered by 'steps' to help you plan for progression. Whilst the logistics of a mixed age class may not enable you to work through every step in the correct order for every year group, the steps can help you identify a 'best fit' for your class as a whole. Many thanks go to the White Rose Maths hub for permission to include their resources. A summary of these 'small steps' for each tear group is included in the pink section below.
- The NCETM reasoning questions have also been incorporated into each unit and are identified in pale purple boxes underneath the group of the most relevant objectives.
- The 'big Ideas' sections from the NCETM 'Teaching for Mastery' documents have been included at the start of each unit. Hyperlinks to the full NCETM 'Teaching for Mastery' documents have also been included for easy reference.
- Hyperlinks to NRich activities have also been added to this version. These are found by clicking on the blue buttons like this one 1 at the bottom of relevant objective.
- Some additional content has been added in order to support mixed-aged planning. Any additional content is in *italics*. Occasionally ~~strikethrough~~ has been used to identify when an objective has been altered and this is primarily where an objective has been split between two units or into several small steps.
- Each unit is sub-divided into sections for ease of planning. Sub-categories in this unit are;
    1. Counting
    2. Read, write, order and compare numbers
    3. Place value (see also fractions, decimals and percentages)
    4. Identify, represent, estimate and round
    5. Solve problems

	Yr2	Yr3	Yr4
NCETM Teaching for Mastery Questions, tasks and activities to support assessment	**The Big Idea** The position (place) of a digit in a number determines its value. Hence the term place value.	**The Big Ideas** The value of a digit is determined by its position in a number. Place value is based on unitising, treating a group of things as one 'unit'. This generalises to 3 units + 2 units = 5 units (where the units are the same size).	**The Big Ideas** Imagining the position of numbers on a horizontal number line helps us to order them: the number to the right on a number line is the larger number. So 5 is greater than 4, as 5 is to the right of 4. But –4 is greater than –5 as –4 is to the right of –5. Rounding numbers in context may mean rounding up or down. Buying packets of ten cakes, we might round up to the nearest ten to make sure everyone gets a cake. Estimating the number of chairs in a room for a large number of people we might round down to estimate the number of chairs to make sure there are enough. We can think of place value in additive terms: 456 is 400 + 50 + 6, or in multiplicative terms: one hundred is ten times as large as ten.
	Teaching for Mastery Year 2	Teaching for Mastery Year 3	Teaching for Mastery Year 4

NUMBER: Number and place value (NPV - 4 weeks)

Strand		Yr2	Yr3	Yr4
Counting	Counting	**count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward** **Counting in 2s 5s and 10s** **Counting in 3s** Use their knowledge of counting on from or back to zero in steps of 2, 3, 5 and 10 to answer multiplication and division questions such as 7 × 2 and 40 ÷ 5. They understand that one way to work out 40 ÷ 5, for example, is to find out how many fives make 40. They know that this can be done by counting forwards in fives from zero or backwards in fives from 40. Write the missing numbers in each of these patterns.  1 2	**count from 0 in multiples of 4, 8, 50 and 100;** **Hundreds** **Count in 50s** a) Count on from zero in steps of 2, 3, 4, 5, 8, 50, 100; 1	**count in multiples of 6, 7, 9, 25 and 1000** **Count in 1000s** **Count in 25s** Explain how to work out the 6 times-table from the 3 times-table or the 9 times-table from the 3 times-table. Know that 9 × 8 = 72 so that 72 ÷ 9 = 8 and deduce 720 ÷ 9. Explain the relationship between 8 × 7 = 56, 6 × 7 = 42 and 14 × 7 = 98. **count backwards through zero to include negative numbers** **negative numbers** Create a sequence that includes the number –5 and then describe the sequence to the class. Explain how to find the missing numbers in a sequence eg. _ *–9, –5, –1,* _ and explain the rule. Answer questions eg What number can you put in the box to make this statement true? __ < –2
	More, Less	***count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward and find ten more and ten less*** e.g. Give me the number 10 less than 93.	**find 10 or 100 more or less than a given number** **1, 10, 100 more or less** Give me the number 100 less than 756	**find 1000 more or less than a given number** **1000 more or less** Answer questions such as, what is the missing number in the number sentence and how do you know? 5742 + ≤ = 9742
	NCETM Reasoning	**Spot the mistake**: 45,40,35,25 What is wrong with this sequence of numbers? **True or False?** I start at 3 and count in threes. I will say 13? **What comes next?** 41+5=46, 46+5=51, 51+5=56	**Spot the mistake**: 50,100,115,200 What is wrong with this sequence of numbers? **True or False?** 38 is a multiple of 8 **What comes next?** 936-10= 926, 926 -10 = 916, 916- 10= 906	**Spot the mistake**: 950, 975,1000,1250 What is wrong with this sequence of numbers? **True or False?** 324 is a multiple of 9 **What comes next?** 6706+ 1000= 7706 7706 + 1000 = 8706 8706 + 1000 = 9706

NUMBER: Number and place value (NPV - 4 weeks)

Read, write, order and compare numbers	Arabic (and Roman) Numerals	**compare and order numbers from 0 up to 100; use <, >, and = signs** **comparing objects** **comparing numbers** **ordering numbers** Here are two signs  Use these signs to make these correct 52 ☐ 17 18 ☐ 91 50 ☐ 34 Children should be able to order a set of two-digit numbers, such as 52, 25, 5, 22, 2, 55. They explain their decisions. They understand and use the < and > symbols; for example, they write a two-digit number to make the statement 56 > ☐ true.  **read and write numbers to at least 100 in numerals and in words** **count objects to 100** What numbers can you make using two of these digits: 3, 6, 0? Write down each number you make. Read those numbers to me. Can you write the largest of the numbers in words? **identify, represent and estimate numbers using different representations, including the number line** **Representing numbers** Children should be able to represent numbers using equipment such as bundles of ten and single art-straws, 10p and 1p coins and number lines. Look at the squares of chocolate  There are 16 squares Tick (✔) the sum that matches the picture: 6+2+8=16 5+2+9=16 5+6+5=16 6+6+4=16 8+3+5=16 	**read and write numbers up to 1000 in numerals and words** **Numbers to 1000** Read these numbers 428, 205, 25, 7, 909 **compare and order numbers up to 1000** **comparing objects** **comparing numbers** **compare and order** Sort these numbers into ascending order: 95, 163, 8, 740, 25, 0, 400, 303 **identify, represent and estimate numbers using different representations** **Number line to 1000** Show me 642 on a number line, with Dienes apparatus etc. What number is halfway between 65 and 95? How do you know?	**order and compare numbers beyond 1000** **Compare 4 digit numbers** **Ordering numbers** Children can find numbers that could go in the boxes to make these correct ☐ + ☐ < 2000, 3000 > ☐ – ☐ **identify, represent and estimate numbers using different representations** **Number line to 10 000** which of these numbers is closest to the answer of 342 – 119: 200 220 230 250 300 Identify what the digit 7 represents in each of these amounts: £2.70, 7.35m, £0.37, 7.07m **read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value** **Roman numerals** Convert from Roman numeral to our current system (Arabic) and from Arabic to Roman e.g. 76 = _ *in Roman numerals, CLXIX* = _ Arabic numerals. Know that the current western numeral system is the modified version of the Hindu numeral system developed in India to include the concept of zero & place value.
	Reasoning	**Do, then explain** 37 13 73 33 3 If you wrote these numbers in order starting with the smallest, which number would be third? Explain how you ordered the numbers.	**Do, then explain** 835 535 538 388 508 If you wrote these numbers in order starting with the smallest, which number would be third? Explain how you ordered the numbers.	**Do, then explain** 5035 5053 5350 5530 5503 If you wrote these numbers in order starting with the largest, which number would be third? Explain how you ordered the numbers.

NUMBER: Number and place value (NPV - 4 weeks)

Place value	Place Value	**recognise the place value of each digit in a two-digit number (tens, ones) (1)** **Tens and ones (1)** **Tens and ones (2)** Look at these numbers. **37 12 45 60 72 27** Which of these numbers is the largest? Which of these numbers is between 10 and 20? What is the value of …? (point to digits in the list above) 1 2 3	**recognise the place value of each digit in a three-digit number (hundreds, tens, ones)** **100s, 10s and 1s (1)** **100s, 10s and 1s (2)** For each of these numbers: 428, 205, 130, 25, 7, 909, tell me: How many hundreds? How many tens it has? How many ones? 1 2	**recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)** **1000s, 100s, 10s and 1s** **Partitioning** Give the value of a digit in a given number e.g. the 7 in 3 274 Write in figures a given number e.g. four thousand and twenty. Recognise a number partitioned like this: 4 000 + 200 + 60 + 3 and be able to read and write the number. Create the biggest and smallest whole number given four digits eg. 3, 0, 6, 5 Find missing numbers in a number sentence e.g. _ +_ = 1249 1 2 3 4
	Multiplying and dividing by powers of ten		***(Year 4 objective) 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*** *e.g. 73 ÷ 10 = 7.3 and 7 ÷ 10 = 0.7* *Respond to oral or written questions such as:* *How many times larger is 260 than 26?* *How many £1 notes are in £120?* *Divide 390 ninety by ten.* *Write in the missing number* ☐ *÷ 10 = 0.6*	**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** **Divide 1 digit by 10** **Divide 2 digits by 10** **Divide 1 or 2 digits by 100** Describe the pattern. 26, 2.6, 0.26, 0.026 Respond to oral or written questions such as: How many times larger is 2600 than 26? How many £1 notes are in £120, £1200? Divide three hundred and ninety by ten.
	NCETM Reasoning		**Do, then explain** Show the 3 value of the digit 3 in these numbers? 341 503 937 Explain how you know. **Make up an example** Create numbers where the digit sum is three. Eg 120, 300, 210 What is the largest/smallest number?	**Do, then explain** Show the value of the digit 4 in these numbers? Explain how you know. 3041 4321 5497 **Make up an example** Create four digit numbers where the digit sum is four and the tens digit is one. E.g. 1210, 2110, 3010. What is the largest/smallest number? **Undoing** I divide a number by 100 and the answer is 0.3. What number did I start with?

Rounding	Rounding		***(Year 4 objective) round any number to the nearest 10*** *Children should be able to explain tips to give someone who is learning how to round numbers to the nearest 10.* *I rounded a number to the nearest 10. The answer is 50. What number could I have started with?* *Know what to look for first when you order a set of numbers and know which part of each number to look at to help you.* *Know which multiple of 10 is closest to a number.*	**round any number to the nearest 10, 100 or 1000** **round to the nearest 10** **round to the nearest 100** **round to the nearest 1000** Children should be able to explain tips to give someone who is learning how to round numbers to the nearest 10, 100 or 1000. I rounded a number to the nearest 10. The answer is 340. What number could I have started with? Know what to look for first when you order a set of numbers and know which part of each number to look at to help you. 1 **round decimals with one decimal place to the nearest whole number** **Round decimals** Round these to the nearest whole number: 9.7, 25.6, 148.3 Round these lengths to the nearest metre: 1.5m, 6.7m, 4.1m, 8.9m Round these costs to the nearest £: £3.27, £12.60, £14.05, £6.50 1
	NCETM Reasoning		**Possible answers** A number rounded to the nearest ten is 540. What is the smallest possible number it could be? **What do you notice?** Round 296 to the nearest 10. Round it to the nearest 100. What do you notice? Can you suggest other numbers like this?	**Possible answers** A number rounded to the nearest ten is 540. What is the smallest possible number it could be? **What do you notice?** Round 296 to the nearest 10. Round it to the nearest 100. What do you notice? Can you suggest other numbers like this? **Do, then explain** Circle each decimal which when rounded to the nearest whole number is 5. 5.3 5.7 5.2 5.8 Explain your reasoning **Top tips** Explain how to round numbers to one decimal place?

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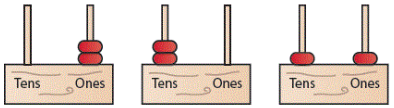
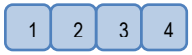
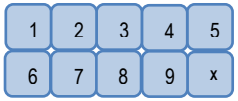
Solving problem	Solving Problems	**use place value and number facts to solve problems** **Place value charts** Can you find an even number more than 30 and less than 50, how many can you find? If you put 2 beads onto a tens/ones abacus you can make the numbers 2, 20 and 11.  Do the same with 3 beads. How many different numbers can you make? How many different numbers can you make using 4 beads?  	**solve number problems and practical problems involving these ideas** a) Jack walks 645 metres to school. Suzy walks 100 metres less. How far does Suzy walk? b) What is 1 more than 485? Than 569? Than 299? c) What number needs to go into each triangle? Explain why? 642 = 600 + Δ + 2 967 = Δ + 60 + 7  	**solve number and practical problems that involve all of the above and with increasingly large positive numbers** Children should be able to sort problems into those they would do mentally and those they would do with pencil and paper and explain their decisions. There are 70 children on a camping trip. Each tent can accommodate up to 6 children. What is the smallest number of tents they will need? The distance to the park is 5 km when rounded to the nearest kilometre. What is the longest/shortest distance it could be?