THE CAREY FEDERATION

# Number: Number and Place Value with Reasoning

National Centre for Excellence in the Teaching of Mathematics

| | | COUNTING | | | | | |
|---|---|---|---|---|---|---|---|
| Nursery 3 and 4 year olds | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Recite numbers past 5.<br><br>Say one number name for each item in order, 1,2,3,4<br><br>Know the last number reached when counting a small set of objects tells you how many there are in total.<br><br>Link numerals and amounts. | Count to and across 20, recognising the pattern of the counting system.<br><br>**Verbally count beyond 20, recognising the pattern of the counting system.** | count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number | | | count backwards through zero to include negative numbers | interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero | use negative numbers in context, and calculate intervals across zero |
| Develop fast recognition of up to 3 objects. | Children will be able to subitise. | count, read and write numbers to 100 in numerals; count in multiples | count in steps of 2, 3, and 5 from 0, and in tens from any number, | count from 0 in multiples of 4, 8, 50 and 100; | count in multiples of 6, 7, 9, 25 and 1 000 | count forwards or backwards in steps of powers of 10 for any given number up to 1000 000 | |

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| Recite numbers past 5.<br><br>Experiment with their own symbols and marks as well as numerals. | Children will be able to link the number symbol (numeral) with its cardinal value. | of twos, fives and tens | forward or backward | | | | |
| Compare quantities using language, 'more than', 'fewer than'. | Children will understand the 'one more than/one less than' relationship between consecutive numbers. | given a number, identify one more and one less | | find 10 or 100 more or less than a given number | find 1000 more or less than a given number | | |
| | | **Spot the mistake:**<br>5,6,8,9<br>What is wrong with this sequence of numbers?<br><br>**True or False?**<br>I start at 2 and count in twos. I will say 9 | **Spot the mistake**:<br>45,40,35,25<br>What is wrong with this sequence of numbers?<br><br>**True or False?**<br>I start at 3 and count in threes. I will say 13? | **Spot the mistake**:<br>50,100,115,200<br>What is wrong with this sequence of numbers?<br><br>**True or False?**<br>38 is a multiple of 8?<br><br>**What comes next?** | **Spot the mistake**:<br>950, 975,1000,1250<br>What is wrong with this sequence of numbers?<br><br>**True or False?**<br>324 is a multiple of 9?<br><br>**What comes next?** | **Spot the mistake**:<br>177000,187000,197000,217000<br>What is wrong with this sequence of numbers?<br><br>**True or False?**<br>When I count in 10's I will say the number 10100?<br><br>**What comes next?**<br>646000-10000= 636000 | **Spot the mistake**:<br>-80,-40,10,50<br>What is wrong with this sequence of numbers?<br><br>**True or False?**<br>When I count backwards in 50s from 10 I will say -200 |

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| | | **What comes next?**<br>10+1 = 11<br>11+1= 12<br>12+1 = 13<br>…….. | **What comes next?**<br>41+5=46<br>46+5=51<br>51+5=56<br>…… | 936-10= 926<br>926 -10 = 916<br>916- 10= 906<br>……. | 6706+ 1000= 7706<br>7706 + 1000 = 8706<br>8706 + 1000 = 9706<br>…… | 636000 –10000 = 626000<br>626000- 10000 = 616000<br>……. | **True or False?**<br>The temperature is -3. It gets 2 degrees warmer. The new temperature is -5? |

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| | | COMPARING NUMBERS | | | | | |
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| **Nursery** | **EYFS** | | | | | | |
| Compare quantities using language such as, more than, fewer than. | Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.<br><br>Children will be able to compare numbers. | use the language of: equal to, more than, less than (fewer), most, least | compare and order numbers from 0 up to 100; use <, > and = signs | compare and order numbers up to 1000 | order and compare numbers beyond 1 000<br><br>*compare numbers with the same number of decimal places up to two decimal places* (copied from Fractions) | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) | read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) |
| | | **Do, then explain**<br>Look at the objects. (in a collection). Are there more of one type than another? How can you find out? | **Do, then explain**<br>37 13 73 33 3<br>If you wrote these numbers in order starting with the smallest, which number would be third?<br>Explain how you ordered the numbers. | **Do, then explain**<br>835 535 538 388 508<br>If you wrote these numbers in order starting with the smallest, which number would be third?<br>Explain how you ordered the numbers. | **Do, then explain**<br>5035 5053 5350 5530 5503<br>If you wrote these numbers in order starting with the largest, which number would be third?<br>Explain how you ordered the numbers. | **Do, then explain**<br>747014 774014 747017 774077 744444<br>If you wrote these numbers in order starting with the smallest, which number would be third?<br>Explain how you ordered the numbers. | **Do, then explain**<br>Find out the populations in five countries.<br>Order the populations starting with the largest. Explain how you ordered the countries and their populations. |

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| | | **IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS** | | | | | |
| Experiment with their own symbols and marks as well as numerals. | | identify and represent numbers using objects and pictorial representations including the number line | identify, represent and estimate numbers using different representations, including the number line | identify, represent and estimate numbers using different representations | identify, represent and estimate numbers using different representations | | |

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| | | **READING AND WRITING NUMBERS** (including Roman Numerals | | | | | |
| Experiment with their own symbols and marks as well as numerals. | | read and write numbers from 1 to 20 in numerals and words. | read and write numbers to at least 100 in numerals and in words | read and write numbers up to 1000 in numerals and in words<br><br>*tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks* (copied from Measurement) | 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. | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers)<br><br>read Roman numerals to 1000 (M) and recognise years written in Roman numerals. | read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value) |
| | | **UNDERSTANDING PLACE VALUE** | | | | | |
| Know that the last number reached when counting a small set of objects tells you how many there are in total. | | | recognise the place value of each digit in a two-digit number (tens, ones) | recognise the place value of each digit in a three-digit number (hundreds, tens, ones) | recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)<br><br>*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 units, tenths and hundredths* | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)<br><br>*recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents* | read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)<br><br>*identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the* |

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| | | | | | (copied from Fractions) | (copied from Fractions) | *answers are up to three decimal places* (copied from Fractions) |
| | | | **Do, then explain**<br>Show the value of the digit 2 in these numbers?<br>32 27 92<br>Explain how you know.<br><br>**Make up an example**<br>Create numbers where the units digit is one less than the tens digit. What is the largest/smallest number? | **Do, then explain**<br>Show the3 value of the digit 3 in these numbers?<br>341 503 937<br>Explain how you know.<br><br>**Make up an example**<br>Create numbers where the digit sum is three.<br>Eg 120, 300, 210<br>What is the largest/smallest number? | **Do, then explain**<br>Show the value of the digit 4 in these numbers?<br>3041 4321<br>5497<br>Explain how you know.<br><br>**Make up an example**<br>Create four digit numbers where the digit sum is four and the tens digit is one.<br>Eg 1210, 2110, 3010<br>What is the largest/smallest number? | **Do, then explain**<br>Show the value of the digit 5 in these numbers?<br>350114 567432<br>985376<br>Explain how you know.<br><br>**Make up an example**<br>**Give further examples**<br>Create six digit numbers where the digit sum is five and the thousands digit is two.<br>Eg 3002000<br>2102000<br>What is the largest/smallest number? | **Do, then explain**<br>Show the value of the digit 6 in these numbers?<br>6787555<br>95467754<br>Expalin how you know.<br><br>**Make up an example**<br>Create seven digit numbers where the digit sum is six and the tens of thousands digit is two.<br>Eg 4020000<br>What is the largest/smallest number? |
| | | | | **ROUNDING** | | | |
| | | | | | round any number to the nearest 10, 100 or 1 000 | round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000 | round any whole number to a required degree of accuracy |
| | | | | | *round decimals with* | *round decimals with* | *solve problems which* |

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| | | | | | *one decimal place to the nearest whole number* (copied from Fractions) | *two decimal places to the nearest whole number and to one decimal place* (copied from Fractions) | *require answers to be rounded to specified degrees of accuracy* (copied from Fractions) |
| | | | | | **Possible answers** A number rounded to the nearest ten is 540. What is the smallest possible number it could be?<br><br>**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 thousand is 76000 What is the largest possible number it could be?<br><br>**What do you notice?** Round 343997 to the nearest 1000. Round it to the nearest 10000. What do you notice? Can you suggest other numbers like this? | **Possible answers** Two numbers each with two decimal places round to 23.1 to one decimal place. The total of the numbers is 46.2. What could the numbers be?<br><br>**What do you notice?** Give an example of a six digit number which rounds to the same number when rounded to the nearest 10000 and 100000 |

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| | | PROBLEM SOLVING | | | | | |
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| **Nursery 3 and 4 year olds** | **EYFS** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Solve real world mathematical problems with numbers up to 5. | Explore and represent patterns, within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. | | use place value and number facts to solve problems | solve number problems and practical problems involving these ideas. | solve number and practical problems that involve all of the above and with increasingly large positive numbers | solve number problems and practical problems that involve all of the above | solve number and practical problems that involve all of the above |

EYFS and Nursery outcomes have been added in using the Development Matters Publication.