Duddon St Peter’s CE Primary School

Mathematics Progression Map - Number

EYFS

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| --- | --- | --- | --- | --- | --- |
| Cardinality and Counting | | Comparison | | Composition | |
| Nursery | Reception | Nursery | Reception | Nursery | Reception |
| Recite numbers past 5.  Say one number for each item in order: 1, 2, 3, 4, 5.  Subitises 1, 2 and 3 objects.  Counts up to 5 items recognising that the last number said represents the total so far (cardinal principle)  Links numerals with amounts up to 5 and maybe beyond.  Know and use number names from 6-10.  Show finger numbers up to five.  Count objects 1- 5, pointing to individual objects to demonstrate knowledge of 1:1 correspondence.  Know the total number when counting a group of objects. | Count beyond ten including crossing boundaries 19/20, 29/30.  Verbally count numbers in order between 1 – 10, forwards and backwards.  Verbally count numbers between 1 - 10, forwards and backwards, with different starting points.  Subitise  Link the number symbol (numeral) with its cardinal number value.  Verbally count beyond 20 identifying multiples of 10.  Count concrete, pictorial and abstract representations of up to 10 objects with accuracy. | Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.  Experiment with their own symbols and marks as well as numerals.  Compare two small groups up to 5 objects saying when there are the same number of objects in each group.  Compare quantities using language (more than, fewer than). | Count objects, actions and sounds.  Use vocabulary to compare numbers: more than, less than, fewer, the same as, equal to.  Recognise groups that are equal.  Reason about their number choices. | Begin to learn that numbers are made up of smaller numbers.  Solve real world mathematical problems with numbers up to 5.  Begin to recognise that each counting number is one more than the one before.  Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same. | Explore the composition of numbers to 10: number bonds, doubles, odd and even numbers.  Understand the one more than/one less than relationship between consecutive numbers.  Automatically recall number bonds for numbers 0-5 and some to 10.  Demonstrate the composition of number using a range of practical resources.  Use subitising skills to count and identify groups within numbers (number bonds, doubles, repeating patterns).  Verbally describe composition to explain patterns and relationships with number (number bonds, doubles, odd/even numbers). |

Place Value Years 1-6

Counting

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.  Count numbers to 100 in numerals; count in multiples of twos, fives and tens. | Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward. | Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number. | Count in multiples of 6, 7, 9, 25 and 1000.  Count backwards through zero to include negative numbers. | Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. Count forwards and backwards with positive and negative whole numbers, including through zero. |  |

Represent Number

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Identify and represent numbers using objects and pictorial representations. Read and write numbers to 100 in 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. Identify, represent and estimate numbers using different representations, including the number line. | Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words. | Identify, represent and estimate numbers using different representations. 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.  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. |

Use and Compare

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Given a number, identify one more and one less. | Recognise the place value of each digit in a two-digit number (tens, ones) Compare and order numbers from 0 up to 100; use and = signs. | Recognise the place value of each digit in a three-digit number (hundreds, tens, ones.) Compare and order numbers up to 1000. | Find 1000 more or less than a given number.  Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones.)  Order and compare numbers beyond 1000. | (Read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit. | (Read, write), order and compare numbers up to 10 000 000 and determine the value of each digit. |

Problems/Rounding

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  | Use place value and number facts to solve problems. | Solve number problems and practical problems involving these ideas. | Round any number to the nearest 10, 100 or 1000.  Solve number and practical problems that involve all of the above and with increasingly large positive numbers. | Interpret negative numbers in context. Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.  Solve number problems and practical problems that involve all of the above. | Round any whole number to a required degree of accuracy.  Use negative numbers in context, and calculate intervals across zero Solve number and practical problems that involve all of the above. |

Addition and Subtraction

Calculations

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Add and subtract one-digit and two-digit numbers to 20, including zero. | Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:   * a two-digit number and ones. * a two-digit number and tens. * two two-digit numbers. * adding three one-digit numbers. | Add and subtract numbers mentally, including:   * a three-digit number and ones. * a three-digit number and tens. * a three-digit number and hundreds.   Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. | Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. | Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction.)  Add and subtract numbers mentally with increasingly large numbers. | Perform mental calculations, including with mixed operations and large numbers.  Use their knowledge of the order of operations to carry out calculations involving the four operations. |

Problems

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9. | Solve problems with addition and subtraction:   * using concrete objects and pictorial representations, including those involving numbers, quantities and measures. * applying their increasing knowledge of mental and written methods. | Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. | Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. | Solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why.  Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. | Solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why. |

Multiplication and Division

Recall/Use

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  | Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.  Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. | Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. | Recall multiplication and division facts for multiplication tables up to 12 × 12.  Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.  Recognise and use factor pairs and commutativity in mental calculations. | Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.  Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers.  Establish whether a number up to 100 is prime and recall prime numbers up to 19.  Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3.) | Identify common factors, common multiples and prime numbers.  Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. |

Calculations

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  | Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. | Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. | Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. | Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.  Multiply and divide numbers mentally drawing upon known facts.  Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.  Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. | Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.  Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.  Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.  Perform mental calculations, including with mixed operations and large numbers. |

Problems

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. | Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. | Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects. | Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. | Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.  Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. | Solve problems involving addition, subtraction, multiplication and division. |

Combined

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  |  |  |  | Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. | Use their knowledge of the order of operations to carry out calculations involving the four operations. |

Fractions

Recognise and Write

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Recognise, find and name a half as one of two equal parts of an object, shape or quantity.  Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. | Recognise, find, name and write fractions 1/3 , 1/4 , 2/4 and ¾ of a length, shape, set of objects or quantity. | Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.  Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.  Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. | Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. | Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.  Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5.] |  |

Compare

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  | Recognise the equivalence of 2/4 and ½. | Recognise and show, using diagrams, equivalent fractions with small denominators.  Compare and order unit fractions, and fractions with the same denominators. | Recognise and show, using diagrams, families of common equivalent fractions. | Compare and order fractions whose denominators are all multiples of the same number. | Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.  Compare and order fractions, including fractions > 1 |

Calculations

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  | Write simple fractions for example, ½ of 6 = 3 | Add and subtract fractions with the same denominator within one whole [for example, 5/7+ 1/7 = 6/7 | Add and subtract fractions with the same denominator. | Add and subtract fractions with the same denominator and denominators that are multiples of the same number.  Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. | Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × 1/2 = 1/8]  Divide proper fractions by whole numbers [for example 1/3 ÷ 2 = 1/6] |

Solve Problems

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  |  | Solve problems that involve all of the above. | 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. |  |  |

Decimals

Recognise, Write and Compare

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  |  |  | Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to 1/4 , 1/2 , ¾  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. | Read and write decimal numbers as fractions [for example, 0.71 = 71/100  Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.  Round decimals with two decimal places to the nearest whole number and to one decimal place.  Read, write, order and compare numbers with up to three decimal places. | Identify the value of each digit in numbers given to three decimal places. |

Fractions, Decimals and Percentages

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  |  |  | Solve simple measure and money problems involving fractions and decimals to two decimal places. | Recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per hundred’, and write percentages as a fraction with denominator 100, and as a decimal.  Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25. | Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/6}  Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. |

Ratio and Proportion

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  |  |  |  |  | Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.  Solve problems involving the calculation/use of percentages for comparison.  Solve problems involving similar shapes where the scale factor is known or can be found.  Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. |

Algebra – Formal algebraic notation is not introduced until Y6. Algebraic thinking is introduced much earlier in Years 1/2/3 when focusing on the missing number objectives.

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| *Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9* | *Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.* | *Solve problems, including missing number problems*. |  |  | Use simple formulae. Generate and describe linear number sequences.  Express missing number problems algebraically.  Find pairs of numbers that satisfy an equation with two unknowns.  Enumerate possibilities of combinations of two variables. |