## Pyrford C of E School

 Maths Progression Map|  | Nursery | Reception | YEAR 1 | Year 2 | YeAR 3 | YeAR 4 | YEAR 5 | YEAR 6 |
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| Additive factual fluency | Fluency in EYFS is seen through songs and rhymes and games which require the children to remember and recall the mathematical language that has been used. | Fluency in EYFS is seen through songs and rhymes and games which require the children to remember and recall the mathematical language that has been used. | Addition and subtraction within 10. | Addition and subtraction across 10 | Secure and maintain fluency in addition and subtraction within and across 10, through continued practice |  |  |  |



Place Value

| Counting | - Children are able to count within opportunities in the school day that lends itself to this such as using the language 'one', 'two', 'three', 'lots',' fewer', 'hundreds', 'how many?' and 'count' objects. <br> - Count in everyday contexts (sometimes skipping numbers $1,2,3,4,5$ ) <br> - Count and recognise numerals <br> - Take part in finger rhymes with numbers. <br> - Develop counting-like behaviour such as making sounds, pointing or saying some numbers in sequence. <br> - Recite numbers past 5. | - Count objects, actions and sounds (0-10). <br> - Develop the key skills of counting objects including saying the numbers in order and matching one number name to each item. <br> - Say how many there are after counting - for example, "...6, 7, 8. There are 8 balls" - to help children appreciate that the last number of the count indicates the total number of the group. This is the cardinal counting principle. <br> - Count out a smaller number from a larger group <br> - Build counting into everyday routines such as register time, tidying up, lining up or counting out pieces of fruit at snack time. <br> - Sing counting songs and number rhymes and read stories that involve counting. <br> - Play games which involve counting. | - Count to and across 100, forwards and backwards, beginning with 0 or 1 , or from any given number. <br> - Count number to 100 in numerals; count in multiples of 2,5 and 10. | - Count in steps of 2,3 and 5 from 0 and in tens from any number forwards and backwards. | - 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 <br> - Count backwards through zero to include negative numbers | - Count forwards ir backwards in steps of powers of 10 for any given number up to $1,000,000$ <br> - Count forwards and backwards with positive and negative whole number including through zero |
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|  | - Develop fast recognition of up to 3 objects, without having to count them individually (subitising). <br> - To know the last number reached when counting a small set of objects tells you how many there are in total (cardinal principle). <br> - Link numerals and amount up to 5 . | - Count beyond 10. <br> - Explore the composition of numbers to 10 . <br> - Recognise when there is 0 of something. |  |  |  |  |  |  |
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| Represent | - Show fingers to represent 5. <br> - Say one number for each item. <br> - Experiment with their own symbols and marks as well as numbers. | - Children can subitise; this can be seen by showing a number of fingers 'all at once', without counting. <br> - Put objects into five frames and then ten frames to begin to familiarise themselves with the tens structure of the number system. <br> - Identify representations of 0 . <br> - Find different ways to make number 1-10. <br> - Recognise when an amount is the same. <br> - Use mark making to | - Identify and represent numbers using objects and pictorial representations <br> - Read and write numbers to 100 in numerals <br> - Read and write numbers from 1 to 20 in numerals and words | - Read and write numbers to at least 100 in numerals and words <br> - Identify, represent and estimate numbers using different representations, including the number line | - Identify, represent and estimate numbers using different representation <br> - Read and write numbers up to 1000 in numbers and words | - Identify, represent and estimate numbers using different representations <br> - Read roman numerals to 100 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 <br> - Read roman number to 1000 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. |


|  |  | represent numbers up to 10. |  |  |  |  |  |  |
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| Use place value and compare | - Compare amounts using lots, more, or same. <br> - Compare quantities using more than, fewer than. | - Link the number symbol (numeral) with its cardinal number value. <br> - Compare numbers up to 10 using the language 'more than', 'less than', 'fewer', 'the same as', ‘equal to'. <br> - Understand the 'one more than/one less than' relationship between consecutive numbers. <br> - Make predictions about what the outcome will be in stories, rhymes and songs if one is added, or if one is taken away. <br> - Compare sets of items and say whether they have more, fewer or the same number of items as another set. <br> - Compare items using one to one correspondence by counting. <br> - Explore links between the one more and one less pattern. <br> - Recognise the structure of odd | - Given a number, identify one more and one less | - Recognise the place value of each digit in a 2-digit number <br> - Compare and order numbers from 0 up to 100; use <,> and = | - Recognise the place value of each digit in a 3-digit number <br> - Compare and order numbers up to 1000 | - Find 1000 more or less than a given number <br> - Recognise the place value of each digit in a 4-digit number <br> - Order and compare numbers beyond 1000 | - Read, write, order and compare number to at least 1,000,000 and determine the value of each digit | - Read, write, order and compare number to at least $10,000,000$ and determine the value of each digit |



## Addition and Subtraction

| Recall, represent and use | - React to changes of amounts in a group of up to 3 items. | - Automatically recall number bonds for numbers 0-5 and some to 10 . | read, write and interpret mathematical statements involving addition ( + ), subtraction (-) and equals ( $(=)$ signs <br> - represent and use number bonds and related subtraction facts within 20 | recall and use <br> addition and <br> subtraction facts to <br> 20 fluently, and <br> derive and use related <br> facts up to 100 <br> - show that addition of <br> two numbers can be <br> done in any order <br> (commutative) and <br> subtraction of one <br> number from another <br> cannot - <br> recognise and use the cannot inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems |
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|  |  | - Combine two |  | - add and subtract |  |  |  |  |
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| Calculations | - Explore number problems involving 'how many altogether?' | - Combine two groups to calculate how many are altogether. | - add and subtract onedigit and two-digit numbers to 20, including zero | - add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TrTT] two-digit number and ones TीTT] two-digit number and tens [0]two two-digit numbers [2]? 2 ading three one-digit numbers | - add and subtract numbers mentally, including: <br> ? ??? <br> and ones <br> ? ?]? <br> and tens <br> ? ???a three-digit number <br> and hundreds <br> - add and subtract <br> 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 <br> whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) <br> - 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 |
| Solve Problems |  |  | solve one-step <br> problems that involve <br> addition and <br> subtraction, using <br> concrete objects and <br> pictorial <br> representations, and <br> missing number <br> problems such as $7=$ $\square-9$ | solve problems with addition and subtraction: TीT子using concrete objects and pictorial representations, including those involving numbers, quantities and measures [0]leapplying 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 multi-step problems in contexts, deciding which operations and methods to use and why <br> - 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 multi-step problems in contexts, deciding which operations and methods to use and why |

## Multiplication and Division

| Recall, represent and use |  | - Recognise that a pair is 2 . <br> - Arrange small quantities into pairs and recognise when one is left over. |  | recall and use <br> multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers <br> - 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 $12 \times 12$ <br> - 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 <br> - 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 <br> - know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers <br> - establish whether a number up to 100 is prime and recall prime numbers up to 19 <br> - 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 <br> - use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. |
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| Calculations |  | - Make doubles <br> - Sort doubles and nondoubles <br> - Arrange small quantities into equal groups <br> - Share a small quantity equally <br> - Recognise that some quantities can be shared equally and some can't. |  | calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( x ), division ( - ) and | - write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times onedigit numbers, using mental and progressing to formal | multiply two-digit and three-digit numbers by a one-digit number using formal written | multiply numbers up to 4 digits by a oneor two-digit number using a formal written method, including long multiplication for two-digit numbers - multiply and divide numbers mentally drawing upon known facts <br> - 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 <br> - multiply and divide whole numbers and those involving | multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication <br> - 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 <br> - divide numbers up to 4 digits by a two-digit number using the formal written method of short |


|  |  |  |  | equals ( $)$ signs | written methods | layout | decimals by 10,100 and 1000 | division where appropriate, interpreting remainders according to the context - perform mental calculations, including with mixed operations and large numbers |
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## Fractions

| Recognise and write |  |  | recognise, find and name a half as one of two equal parts of an object, shape or quantity <br> - recognise, find and name a quarter as one of four equal parts of an object, shape or quantity | recognise, find, name and write fractions $\frac{1}{3} \frac{1}{4} \frac{2}{4}$ and $\frac{3}{4}$ of a 3 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 <br> - recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators <br> - 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, $\frac{2}{5}+\frac{4}{5}=\frac{6}{5}=$ $\begin{array}{ll}\frac{1}{5} & 1]\end{array}$ |  |
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| Compare |  |  |  | Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ | recognise and show, using diagrams, equivalent fractions with small denominators - compare and order | recognise and show, using diagrams, families of common | 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 |


|  |  |  |  |  | unit fractions, and fractions with the same denominators | equivalent fractions |  | - compare and order fractions, including fractions > 1 |
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| Calculations |  |  |  | - write simple fractions for example, $\frac{1}{2}$ of $6=$ 3 | add and subtract fractions with the same denominator within one whole [for example, $\left.\frac{5}{7}+\frac{1}{7}=\frac{6}{7}\right]$ | add and subtract <br> fractions with the same denominator | add and subtract <br> fractions with the same denominator and denominators that are multiples of the same number <br> - multiply proper <br> fractions and mixed numbers by whole numbers, supported by materials and diagrams | add and subtract <br> fractions with <br> different <br> denominators and mixed numbers, using the concept of equivalent fractions multiply simple pairs of proper fractions, wititing the answer in its simplest form [for example $\left.\frac{1}{4} \times \frac{1}{2}=\frac{1}{8}\right]$ <br> divide proper fractions by whole numbers ffor example, $\frac{1}{3} \div 2=\frac{1}{6}$ ] |
| Solve problems |  |  |  |  | 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 and write |  |  |  |  |  | recognise and write decimal equivalents of any number of tenths or hundredths recognise and write decimal equivalents | read and write <br> decimal numbers as fractions [for example, $\left.0.71=\frac{71}{100}\right]$ <br> - recognise and use thousandths and relate them to tenths, hundredths and | identify the value of each digit in numbers given to three decimal |




## Ratio and Proportion

|  |  |  |  |  |  |  | solve problems <br> involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts <br> - solve problems <br> involving the calculation of percentages [for example, of measures, and such as $15 \%$ of 360 ] and the use of percentages for comparison <br> - solve problems involving similar shapes where the scale factor is known or can be found <br> - solve problems involving unequal sharing and grouping using knowledge of fractions and |
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Algebra
Please note - although algebraic notation is not introduced until Year 6, algebraic thinking starts much earlier


## Measurement



|  | bigger, little, smaller, high, low, tall, heavy. |  | full/empty, more than, less than, half, half full, quarter] ? ? ? <br> quicker, slower, earlier, later] <br> - measure and begin to record the following: [ ? ? ? ?]mass/weight ?T? ${ }^{2}$ capacity and volume ? ?? ${ }^{2}$ time (hours, minutes, seconds) | lengths, mass, <br> volume/capacity and record the results using $>,<$ and $=$ | (1/ml) | different measures | pounds and pints <br> - use all four <br> operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling | and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places <br> - convert between <br> miles and kilometres |
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| Money | - Exploring the introductory concept of money through role play. |  | recognise and know the value of different denominations of coins and notes | recognise and use symbols for pounds ( $£$ ) and pence (p); combine amounts to make a particular value <br> - find different combinations of coins that equal the same amounts of money <br> - solve simple <br> problems in a practical context involving addition and subtraction of money of the same unit, including giving change | add and subtract amounts of money to give change, using both $£$ and $p$ in practical contexts | estimate, compare <br> and calculate <br> different measures, including money in pounds and pence | use all four <br> operations to solve problems involving measure [for example, money] |  |
| Time | - Begin to describe a sequence of events, real or fictional using language such as 'first' | - Name the days of the week and discuss the events that happen in a week. <br> - Talk about day and night. | - sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon | compare and <br> sequence intervals of time <br> - tell and write the time to five minutes, including quarter past/to the hour and | tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12hour and 24-hour clocks | read, write and convert time between analogue and digital 12 - and 24-hour clocks <br> - solve problems involving converting | solve problems involving converting | use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a |


|  | and 'then', 'soon', 'after'. |  | and evening] <br> - recognise and use language relating to dates, including days of the week, weeks, months and years <br> - tell the time to the hour and half past the hour and draw the hands on a clock face to show these times | draw the hands on a clock face to show these times <br> - know the number of minutes in an hour and the number of hours in a day | - estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight <br> - know the number of seconds in a minute and the number of days in each month, year and leap year - compare durations of events [for example to calculate the time taken by particular events or tasks] | from hours to minutes; minutes to seconds; years to months; weeks to days | between units of time | larger unit, and vice versa |
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| Perimeter, area and volume | - Explore comparisons between objects relating to size, length, capacity and weight; this can be seen through role playa and continuous provision. | - Compare length, weight and capacity using language such as 'than'. <br> - Make comparisons between objects using language such as heavy, heaviest, light or lightest. <br> - Recognise when a container is full, nearly full, half full, nearly empty and empty. <br> - Use mathematical language to describe length and height. |  |  | measure the perimeter of simple 2-D shapes | measure and <br> calculate the <br> perimeter of a rectilinear figure (including squares) in centimetres and metres <br> - find the area of rectilinear shapes by counting squares | measure and <br> calculate the <br> perimeter of <br> composite rectilinear <br> shapes in centimetres <br> and metres <br> - calculate and <br> compare the area of rectangles (including squares), and including using standard units, square centimetres ( $\mathrm{cm}^{2}$ ) and square metres ( $\mathrm{m}^{2}$ ) and estimate the area of irregular shapes <br> - estimate volume [for example, using $1 \mathrm{~cm}^{3}$ blocks to build cuboids (including cubes)] and capacity | recognise that shapes with the same areas can have different perimeters and vice versa <br> - recognise when it is possible to use formulae for area and volume of shapes <br> - calculate the area of parallelograms and triangles <br> - calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ( $\mathrm{cm}^{3}$ ) and cubic metres $\left(\mathrm{m}^{3}\right)$, and extending to other units [for example, $\mathrm{mm}^{3}$ and |


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| 2-D Shapes | - Complete inset puzzles. <br> - Make arrangements using shapes. <br> - Talk about and explore 2D shapes using informal and mathematical language. <br> - Build with a range of resources; select shapes appropriately such as flat surfaces for building, a triangular prism for a roof. <br> - Combine shapes to make new ones such as arch or a bigger triangle. | - Select, rotate and manipulate shapes to develop spatial reasoning skills. <br> - Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. <br> - Investigate how shapes can be combined to make new shapes. <br> - Recognise that squares and rectangles of different sizes and orientations have four straight sides and four corners. | recognise and name common 2-D shapes [for example, rectangles (including squares), circles and triangles] | identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line <br> - identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] <br> - compare and sort common 2-D shapes and everyday objects | Draw 2-D shapes | compare and classify <br> geometric shapes, <br> including <br> quadrilaterals and triangles, based on their properties and sizes <br> - identify lines of symmetry in 2-D shapes presented in different orientations | distinguish between regular and irregular polygons based on reasoning about equal sides and angles. <br> - use the properties of rectangles to deduce related facts and find missing lengths and angles | draw 2-D shapes using given dimensions and angles <br> - compare and classify geometric shapes based on their properties and sizes <br> - illustrate and name <br> parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius |
| 3-D Shapes | - Complete inset puzzles. <br> - Combine objects like blocks and cups and put objects inside others and take them out again. | - Select, rotate and manipulate shapes to develop spatial reasoning skills. <br> - Compose and decompose shapes so that children recognise a | recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] | recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]. <br> - compare and sort common 3-D shapes and everyday shapes | make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them |  | identify 3-D shapes, including cubes and other cuboids, from 2-D representations | recognise, describe and build simple 3-D shapes, including making nets |


|  | - Talk about and explore 3D shapes using informal and mathematical language. <br> - Build with a range of resources; select shapes appropriately such as flat surfaces for building, a triangular prism for a roof. <br> - Combine shapes to make new ones such as arch or a bigger triangle. | shape can have other shapes within it, just as numbers can. <br> - Investigate how shapes can be combined to make new shapes. |  |  |  |  |  |  |
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| Angles and Lines | - Describe a familiar route. <br> - Notice patterns and arrange things in patterns. <br> - Talk about and identify the patterns around them such as pointy, spotty, blobs. <br> - Extend and create ABAB patterns. <br> - Notice and create an error in repeating patterns. | - Continue, copy and create repeating patterns. <br> - Make and describe patterns with varying rules (including AB, $A B B$ and $A B B C$ ) and objects |  |  | recognise angles as a property of shape or a description of a turn <br> - identify right angles, <br> recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle <br> - identify horizontal and vertical lines and pairs of perpendicular and parallel lines | identify acute and obtuse angles and compare and order angles up to two right angles by size <br> - identify lines of symmetry in 2-D shapes presented in different orientations <br> - complete a simple symmetric figure with respect to a specific line of symmetry | know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles <br> - draw given angles, and measure them in degrees <br> - identify: <br> ? ?]angles at a point and one whole turn (total 360ㅇ) <br> [?]\|]angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180ㅇ) [ ㅈT쥬other multiples of $90^{\circ}$ | - find unknown angles in any triangles, quadrilaterals, and regular polygons <br> - recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles |


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| Position and direction | - Climb and squeeze themselves into different types of space. <br> - Understand position through words alone. <br> - Discuss routes and locations using words like 'in front of' and 'behind', 'on', 'in' and 'under'. | - Use and understand positional direction. <br> - Talk about maps and plans. <br> - Create a map describing a simple route. <br> - Create a symmetrical arrangement. <br> - Use positional language to describe where objects are in relation to other objects. | describe position, direction and movement, including whole, half, quarter and three-quarter turns | order and arrange combinations of mathematical objects in patterns and sequences <br> - use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise) |  | describe positions on a 2-D grid as coordinates in the first quadrant <br> - describe movements between positions as translations of a given unit to the left/right and up/down <br> - plot specified points and draw sides to complete a given polygon | identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed | describe positions on the full coordinate grid (all four quadrants) <br> - draw and translate simple shapes on the coordinate plane, and reflect them in the axes |
| Statistics |  |  |  |  |  |  |  |  |
| Present and interpret |  |  |  | - interpret and <br> construct simple pictograms, tally charts, block diagrams and simple tables | interpret and present data using bar charts, pictograms and tables | interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs | - complete, read and interpret information in tables, including timetables | interpret and <br> construct pie charts and line graphs and use these to solve problems |


| Solve problems |  |  |  | ask and answer <br> simple questions by <br> counting the number <br> of objects in each <br> category and sorting <br> the categories by <br> quantity <br> - ask and answer <br> questions about <br> totalling and <br> comparing <br> categorical data | solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables | solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs | solve comparison, sum and difference problems using information presented in a line graph | calculate and interpret the mean as an average |
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