# Maths Progression of Skills

| | Nursery | Reception | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
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| Number and Place Value | Displays fast recognition of up to 3 objects, without having to count them individually ('subitising'). Recites numbers past 5. Can say one number for each item in order: 1,2,3,4,5 Knows that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). Can show 'finger numbers' up to 5. Can link numerals and amounts: e.g. showing the right number of objects to match the numeral, up to 5. Is experimenting with his/her own symbols and marks as well as numerals. Is able to solve real world mathematical problems with numbers up to 5. Can compare quantities using language such as; 'more than', 'fewer than'. | Counts objects, actions and sounds Is able to subitise (recognise how many objects there are in a small group without counting) Is able to link the number symbol (numeral) with its cardinal number value Can count beyond ten Is able to compare numbers Understands the 'one more than/one less than' relationship between consecutive numbers Is able to explore the composition of numbers to 10 Automatically recalls number bonds for numbers 0–5 and some to 10. Automatically recalls (without reference to rhymes, counting or other aids) number bonds up to 5 (including | Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count and read numbers to 100 in numerals Count and write numbers to 100 in numerals Count in multiples of twos, fives and tens from 0 Identify one more and one less of a given number Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least Read and write numbers from 1 to 20 in numerals Read and write numbers from 1 to 20 in words Count in twos, fives and tens to solve problems e.g. count the number of chairs in a diagram when the chairs are organised in 7 rows of 5 by counting in fives Partition and combine numbers using apparatus if required e.g. partition 76 into tens and ones; combine 6 tens and 4 ones | count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward recognise the place value of each digit in a two-digit number (tens, ones) identify, represent and estimate numbers using different representations, including the number line compare and order numbers from 0 up to 100; use <, > and = signs read and write numbers to at least 100 in numerals read and write numbers to at least 100 in words use place value and number facts to solve problems | count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number recognise the place value of each digit in a three-digit number (hundreds, tens, ones) compare and order numbers up to 1000 identify, represent and estimate numbers using different representations read and write numbers up to 1000 in numerals read and write numbers up to 1000 in numerals in words solve number problems and practical problems involving these ideas | count in multiples of 6 ,7, 9, 25 and 1000 find 1000 more or less than a given number count backwards through zero to include negative numbers recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones) order and compare numbers beyond 1000 identify, represent and estimate numbers using different representations including measures round any number to the nearest 10, 100 or 1000 solve number and practical problems that involve all of the above and with | read, write, order and compare numbers to at least 1000000 and determine the value of each digit count forwards or backwards in steps of powers of 10 for any given number up to 1000000 interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000 solve number problems and practical problems that involve ordering and comparing numbers to 1000000, counting forwards or backwards in steps, interpreting negative numbers and rounding read Roman numeral 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. E.g. Find the difference between the largest and smallest whole numbers that can be made of three digits. 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 ordering and comparing numbers to 10 000 000 rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero Demonstrate an understanding of place value including decimals e.g. 28.13 = 28 + ? + 0.03 Demonstrate an understanding of place value including decimals e.g. 28.13 = 28 + ? + 0.03 |

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| | | subtraction facts) and some number bonds to 10, including double facts (ELG)<br>Has a deep understanding of number to 10, including the composition of each number (ELG)<br>Is able to subitise (recognise quantities without counting) up to 5 (ELG)<br>Can compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity (ELG)<br>Is able to explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally (ELG)<br>Verbally counts beyond 20, recognising the pattern of the counting system (ELG) | | | | increasingly large positive numbers<br>read roman numerals to 100 (I-C) and know that over time, the numerical system changed to include the concept of zero and place value | | |
| Addition and Subtraction | | | read and interpret mathematical | solve problems with addition | add and subtract numbers | add numbers with up to four | add and subtract whole numbers with more than 4 | Perform mental calculations with |

| | | | statements involving addition (+), subtraction (-) and equals (=) signs write mathematical statements involving addition (+), subtraction (-) and equals (=) signs represent and use number bonds within 20 represent and use subtraction facts within 20

add one-digit and two-digit numbers to 20, including zero solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations subtract one-digit and two-digit numbers to 20, including zero | and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures solve problems with addition and subtraction applying his/her increasing knowledge of mental and written methods recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 add and subtract numbers using concrete objects, pictorial representations, and mentally, including a two-digit number and tens add and subtract numbers using concrete objects, pictorial representations, and mentally, including two two-digit numbers

add and subtract numbers using | mentally, including a threedigit number and ones add numbers with up to three digits using the formal method of columnar addition subtract numbers with up to three digits using the formal method of columnar subtraction add and subtract numbers mentally, including a three digit number and tens add and subtract numbers mentally, including a three digit number and hundreds estimate the answer to a calculation and use inverse operations to check answers solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction | digits using the formal method of columnar addition subtract numbers with up to four digits using the formal method of columnar subtraction estimate and use inverse operations to check answers to a calculation solve addition and subtraction to – step problems in contexts deciding which operations and methods to use and why | digits, including using formal written methods (columnar addition and subtraction) add and subtract numbers mentally with increasingly large numbers use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy solve addition and subtraction multi-step problems in contexts deciding which operations and methods to use and why | mixed operations to carry out calculations involving the four operations. Solve multi-step problems in contexts, deciding which operations and methods to use and why e.g. find the change from £20 for three items that cost £1.24, £7.2 and £2.55; a roll of material is 6m long: how much is left when 5 pieces of 1.15m are cut from the roll?; a bottle of drink is 1.5 litres, how many cups of 1275ml can be filled from the bottle, and how much drink is left? Solve problems involving addition and subtraction. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy |

| Multiplication and Division | | | | | | | | |
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| | | | | concrete objects, pictorial representations, and mentally, including adding three one- digit numbers

show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems | | | | |
| Multiplication and Division | | | solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher solve one-step problems involving division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher | recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers calculate mathematical statements for multiplication and division within the multiplication tables and write | recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables write and calculate mathematical statements for multiplication and division using the multiplication tables that he/she knows, | recall multiplication and division facts for multiplication tables up to 12 x 12 use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying | 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 (non-prime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 multiply numbers up to 4 digits by a one- or two- digit number including a formal | 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 |

| | | | | them using the multiplication (×), division (÷) and equals (=) signs show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot solve problems involving multiplication and division, using concrete materials and mental methods solve problems involving multiplication and division, using arrays, repeated addition and multiplication and division facts, including problems in contexts | including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods 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 | together three numbers recognise and use factor pairs and commutativity in mental calculations multiply two-digit and three-digit numbers by a one-digit number using formal written layout 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 | written method, including long multiplication for two-digit numbers multiply and divide numbers mentally drawing upon know 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 recognise and use square numbers and the notation for squared (2) recognise and use cube numbers and the notation for cubed (3) solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes solve problems involving addition, subtractions, multiplication and division and a combination of these, including understanding the meaning of the equals sign solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates | 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. Use formal written methods to solve multi-step problems. Identify common factors, common multiples and prime numbers. Use his/her knowledge of the order of operations to carry out calculations involving the four operations Solve addition and subtraction multi-step problems in contexts, deciding which operation and methods to use and why. Solve problems involving addition, subtraction, multiplication and division Use estimation to check answers to calculations and |
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| | | | | | | | determine, in the context of a problem, an appropriate degree of accuracy |
| Fractions. Decimals, Proportion and Ratio | | | 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 3/4 of a length, shape, set of objects or quantity write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2 | 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 recognise and show, using diagrams, equivalent fractions with small denominators add fractions with the same denominator within one | recognise and show, using diagrams, families of common equivalent fractions count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten 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 add and subtract fractions with the same denominator recognise and write decimal equivalents of any number of tenths and hundredths | compare and order fractions whose denominators are all multiples of the same number identify and name equivalent fractions of a given fraction, represented visually, including tenths and hundredths write equivalent fractions, 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 e.g. 2/5 + 4/5 = 6/5 =1 1/5 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 read and write decimal numbers as fractions e.g. 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 | Use common factors to simplify fractions; use common multiples to express fractions in the same denomination Read and write decimal numbers as fractions e.g. 0.71 = 71/100 8.09 = 8 and 9/? Compare and order fractions, including fractions > 1 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 e.g. ¼ x ½ = 1/8. Divide proper fractions by whole numbers e.g. 1/3 ÷ 2 = 1/6 Associate a fraction with division and calculate decimal fraction equivalents e.g. know that 7 divided by 21 is the same as 7/21 and that this is equal to 1/3 and e.g. 0.375 is equivalent to 3/8 |

| | | | | | | whole e.g. 5/7 + 1/7 = 6/7 subtract fractions with the same denominator within one whole e.g. 6/7 - 1/7 = 5/7 compare and order unit fractions, and fractions with the same denominators solve fraction problems | recognise and write decimal equivalents to ¼, ½ and ¾. 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 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, write, order and compare numbers with up to three decimal places solve problems involving number up to three decimal places recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fractions 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 solve simple measures and money problems involving fractions and decimals to two decimal places | Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.

Multiply one-digit numbers with up to two decimal places by whole numbers. Use written division methods in cases where the answer has up to two decimal places. Solve problems which require answers to be rounded to specified degrees of accuracy.

Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts e.g. one piece of cake that has been cut into 5 equal slices can be expressed as 1/5 or 0.2 or 20% of the whole cake. Recognise the relationship between fractions, decimals and percentages and can express them as equivalent quantities. Solve problems involving the relative sizes of two quantities |

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| | | | | | | | | where missing values can be found by using integer multiplication and division facts e.g. find 7/9 of 108

Solve problems involving the calculation of percentages e.g. of measures, and such as 15% of 360 and the 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 | | Is able to continue, copy and create repeating patterns | | | | | | Use simple formulae e.g. perimeter of a rectangle or area of a triangle

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 |
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| Measurement | Can make comparisons between objects relating to size, length, weight and capacity. (Numerical Patterns) | Can compare length, weight and capacity | compare, describe and solve practical problems for lengths and heights e.g. long/short, longer/shorter, tall/short, double/half compare, describe and solve practical problems for mass/weight e.g. heavy/light, heavier than, lighter than compare, describe and solve practical problems for capacity and volume e.g. full/empty, more than, less than, half, half full, quarter compare, describe and solve practical problems for time e.g. quicker, slower, earlier, later measure and begin to record mass/weight measure and begin to record capacity and volume measure and begin to record time (hours, minutes, seconds) measure and begin to record length/height recognise and know the value of different denominations of coins and notes sequence events in chronological order using language e.g. before and after, next, first, today, yesterday, tomorrow, | choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels compare and order lengths, mass, volume/capacity and record the results using >, < and = recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value find different combinations of coins that equal the same amounts of money | measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) measure the perimeter of simple 2-D shapes add and subtract amounts of money to give change, using both £ and p in practical contexts tell the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks write the time using an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks estimate and read time with increasing accuracy to the nearest minute; record | convert between different units of measure e.g. kilometre to metre; hour to minute measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting squares estimate, compare and calculate different measure, including money in pounds and pence read, write and convert time between analogue and digital 12-24-hour clocks solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days | Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes estimate volume e.g. using 1 cm² blocks to build cuboids (including cubes) and capacity e.g. using water solve problems involving converting between units of time use all four operations to solve problems involving measure e.g. length, mass, volume, money using decimal notation, including scaling | Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places. Convert between miles and kilometres Recognise that shapes with the same areas can have different perimeters and vice versa Recognise when it is possible to use formulae for area and volume of shapes Calculate the area of parallelograms and triangles Calculate, estimate and compare volume of cubes and cuboids using standard units, |

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| | | | morning, afternoon and evening recognise and use language relating to dates, including days of the week, weeks, months and years tell the time to the hour and half past the hour and draw the hands on a clock face to show these times | solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change  compare and sequence intervals of time tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times remember the number of minutes in an hour and the number of hours in a day | 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 know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events e.g. to calculate the time taken by particular events or tasks | | | including cubic centimetres (cm³) and cubic metres (m³, and extending to other units e.g. mm³ and km³ |
| Properties of Shape | Can talk about and explore 2D and 3D shapes (e.g. circles, rectangles, triangles and cuboids) using informal and mathematical language; 'sides', 'corners', 'straight', 'flat', 'round'.  Selects shapes appropriately; flat surfaces for building, a triangular prism for a roof etc. | Can select, rotate and manipulate shapes in order to develop spatial reasoning skills  Investigates composing and decomposing shapes and recognises a shape can have other shapes within it, just as numbers can | recognise and name common 2-D shapes e.g. rectangles (including squares), circles and triangles recognise and name common 3-D shapes e.g. cuboids (including cubes), pyramids and spheres | identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces | draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them recognise angles as a property of shape or a description of a turn identify right angles and | compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes identify acute and obtuse angles and compare and order angles up to two right angles by size | identify 3-D shapes, including cubes and other cuboids, from 2-D representations know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles draw given angles, and measure them in degrees (°). identify angles at a point and one whole turn (total 360°) identify angles at a point on a straight line and ½ a turn (total 180°) | Draw 2-D shapes using given dimensions and angles Recognise, describe and build simple 3-D shapes, including making nets  Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons |

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| | (Numerical Patterns) Combines shapes to make new ones; an arch, a bigger triangle etc. (Numerical Patterns) | | | identify 2-D shapes on the surface of 3-D shapes e.g. a circle on a cylinder and a triangle on a pyramid<br><br>compare and sort common 2-D and 3-D shapes and everyday objects | identify whether other angles are greater or less than a right angle recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn identify horizontal and vertical lines and pairs of perpendicular and parallel lines | identify lines of symmetry in 2-D shapes presented in different orientations complete a simple symmetric figure with respect to a specific line of symmetry begin to recognise where angles are greater that two right angles and know the term straight angle referring to two right angles together begin exploring line symmetry with two lines of symmetry | identify other multiples of 90° use the properties of rectangles to deduce related facts and find missing lengths and angles distinguish between regular and irregular polygons based on reasoning about equal sides and angles | Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius Recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles |
| Position and Direction | Can describe a familiar route. Is able to discuss routes and locations, using words like 'in front of' and 'behind'. (Numerical Patterns) Understands position through words alone, e.g. "The bag is under the table," - with no pointing. (Numerical Patterns) | | | order and arrange combinations of mathematical objects in patterns and sequences use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a | | describe positions on a 2-D grid as coordinates in the first quadrant describe movements between positions and translations of a given unit to the left/right and up/down plot specified points and draw sides to complete a given polygon | use the properties of rectangles to deduce related facts and find missing lengths and angles distinguish between regular and irregular polygons based on reasoning about equal sides and angles | Describe positions on the full coordinate grid (all four quadrants) Draw and translate simple shapes on the coordinate plane, and reflect them in the axis |

| | | | | turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise) | | | | | |
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| Statistics | | | | interpret and construct simple pictograms, tally charts, block diagrams and simple tables<br>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity<br>ask and answer questions about totalling and comparing categorical data | interpret and construct simple pictograms, tally charts, block diagrams and simple tables<br>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity<br>ask and answer questions about totalling and comparing categorical data | interpret and present data using bar charts, pictograms and tables<br>solve one-step and two-step questions e.g. 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables | interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs<br>solve comparison, sum and difference problems using information presented in bar graphs, pictograms, tables and other graphs | solve comparison, sum and difference problems using information presented in a line graph<br>complete, read and interpret information in tables, including timetables | Interpret and construct pie charts and line graphs and use these to solve problems<br>Calculate and interpret the mean as an average |