Sheep Dip Lane Academy

Mathematics Curriculum Intent

Contents

Introduction

Introduction

This document outlines the knowledge, skills and strategies that should be taught in Mathematics. It includes:

- A knowledge progression document to show key declarative knowledge children should learn throughout their education at Sheep Dip Lane Academy
- Foundation stage knowledge and skills yearly overview
- Arithmetic progression document
- Progression of vocabulary throughout each area of Mathematics

Other documents to support include:

- A calculation policy that outlines the procedural and conditional knowledge should learn throughout their education at Sheep Dip Lane Academy.
- Key Performance Indicators document which outlines the knowledge children should learn as matched to the National curriculum and Ready-To-Progress criteria
- Foundation stage yearly progression document

It is influenced by documents and research, including:
National curriculum in England: mathematics programmes of study - GOV.UK (www.gov.uk)
Teaching mathematics in primary schools - GOV.UK (www.gov.uk)
Research review series: mathematics - GOV.UK (www.gov.uk)

Intent

Our intent in Mathematics is to provide a sound foundation for the development of mathematics skills throughout school with depth of learning through the use of White Rose Maths scheme of learning. This includes showing pupils how the different areas of Maths are interconnected, linked to real life and allow them to explore these links fully.

We recognise that a good mathematician needs fluency and automaticity in number work which is achieved through varied and frequent practice including - but not limited to – place value/number facts, times tables, calculation skill and the ability to apply these quickly and accurately

They also require the ability to apply these skills in reasoning and problem solving tasks which become increasingly progressive as children move through the academy. Children need the skills to break down these problems into small steps and persevere in seeking solutions.

At Sheep Dip Lane Academy, we recognise that all learners can achieve and we expect all learners to move through the curriculum at roughly the same pace. Children who grasp concepts quickly should be challenged in their learning, not through acceleration through content, but by broadening their experiences and deepening

their understanding with problem-solving tasks and application. Children who are yet to be fully confident with a concept must first secure their understanding through additional practise before moving on. They may require concrete models or same day intervention to build confidence with mathematical concepts.

Inclusion is at the heart of our Mathematics teaching and all children are given the support and opportunities they need to thrive in this subject and grant them the necessary skills and knowledge to be successful in later life.

Knowledge is taught through the three key knowledge strands:

Content categories	Type I	Type II
Declarative	Facts, formulae	Knowledge of *relationships* between facts/concepts
Procedural	Methods, algorithms	Knowledge of *relationships* between facts, steps and missing facts/principles & mechanisms
Conditional	Strategies (PK + DK)	Knowledge of *relationships* between known information, strategy choices and unknown information/reasoning

- Declarative knowledge is the knowing of this or that, e.g. knowing double 5 is 10 or 2 and 8 is a number bond that is equal to 10.
- Procedural knowledge is the knowing how to do things or the steps/strategies involved in how to do things, e.g. the steps involved in multiplying mixed numbers or the best ways to make a tuna sandwich.
- Conditional knowledge involves knowing the when and the why to apply the other two types of knowledge, e.g. readers skim newspapers to get the gist, but apply close reading to literature or difficult texts to develop deeper understandings.

At Sheep Dip Lane Academy, we adapt and enrich maths to ensure our high quality maths curriculum details the core facts, concepts, methods and strategies that give pupils the best chance of developing proficiency in the subject. To be able to develop this proficiency we nurture the different types of knowledge and aim to have mathematicians that are able to explain what they know, how they use it and when they use it.

Implementation

Our staff implement this through following the White Rose Maths curriculum, supported by carefully chosen additional resources including NCETM, Classroom Secrets, Reflex, Mathletics and Times Table Rockstars. Staff focus on quality first teaching and having the highest expectations of all learners. This is achieved through a

progression of understanding from concrete to pictorial and, finally, abstract thinking. Mathematical concepts are introduced using concrete apparatus (manipulatives) and pictures to allow all learners to fully grasp key learning points of those concepts. Only when children are confident using manipulatives and pictorial representations do they move to the abstract way of working. This allows for fluid differentiation in classes where all learners can work on the same learning but use different methods to complete it.

Children are assessed regularly in lessons to adapt support and at summative termly points throughout their time at Sheep Dip Lane. This allows for any gaps to be filled swiftly through same day interventions. This ensures that all children have their needs met for the mathematics curriculum.

Impact

The impact of our mathematics curriculum is that children understand the relevance and importance of what they are learning in relation to real world concepts. Children have a positive view of maths due to learning in an environment where maths is promoted as being an exciting and enjoyable subject in which they can investigate and ask questions; they know that it is reasonable to make mistakes because this can strengthen their learning through the journey to finding an answer. Children are confident to 'have a go' and choose the equipment they need to help them to learn along with the strategies they think are best suited to each problem. Our children have a good understanding of their strengths and targets for development in maths and what they need to do to improve. Our maths books evidence work of a high standard of which children clearly take pride; the components of the teaching sequences demonstrate good coverage of fluency, reasoning and problem solving. Our feedback and interventions support children to strive to be the best mathematicians they can be, ensuring a high proportion of children are on track or above.

Our pupils will have:

- Become fluent, competent and efficient mathematicians.
- The ability to recall facts and procedures, including the recollection of times tables.
- The ability to recognise relationships and make connections in maths.
- The ability to clearly explain their reasoning and justify their thought processes.
- The flexibility to move between different contexts and representations of maths.
- High aspirations, which will see hem through to further study, work and a successful adult life.

Mathematics – Knowledge progression

Progression overview

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number, Counting and Place Value	Have a deep understanding of number to 10, including the composition of each number Subitise (recognise quantities without counting) up to 5 Verbally count beyond 20, recognising the pattern of the counting system Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity Explore and represent patterns within numbers up to 10, including evens and odds	♣ count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number ♣ count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens ♣ given a number, identify one more and one less ♣ 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 and words.	♣ 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 and 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 and 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 ♣ 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 ♣ 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 ♣ count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 ♣ interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero ♣ 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 ♣ 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 ♣ 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	Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	♣ read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs ♣ represent and use number bonds and related subtraction facts within 20 ♣ add and subtract one-digit and two-digit numbers to 20, including zero ♣ 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 ♣ 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:	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 ♣ estimate the answer to a calculation and use inverse operations to check answers ♣ solve problems, including missing number problems, using number facts, place	♣ add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate ♣ estimate and use inverse operations to check answers to a calculation ♣ solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	♣ 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 ♣ 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	♣ 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 addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why ♣ solve problems involving addition, subtraction, multiplication and division

			♣ a two-digit number and ones ♣ a two-digit number and tens ♣ two two-digit numbers ♣ 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.	value, and more complex addition and subtraction.		and methods to use and why.	♣ use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
Multiplication and Division	Understand double facts and how quantities can be distributed equally.	♣ 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.	♣ 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 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 materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	♣ 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 they know, 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.	♣ 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 ♣ 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.	♣ 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 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 ♣ identify common factors, common multiples and prime numbers ♣ use their knowledge of the order of operations to carry out calculations involving the four operations ♣ solve problems involving addition, subtraction, multiplication and division ♣ use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
Fractions	Children are not explicitly taught fractions in the early	♣ recognise, find and name a half as one of two equal	♣ recognise, find, name and write fractions 1/3 , ¼ ,	♣ recognise, find and write fractions of a discrete set of	♣ recognise and show, using diagrams, families of	♣ compare and order fractions whose	♣ use common factors to simplify fractions; use

	years but when exploring capacity, they refer to things being half full, full, empty and nearly empty which is a pre-fraction skill as it is building understanding of wholes and halves.	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.	2/4 and ¾ of a length, shape, set of objects or quantity ♣ write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and ½ .	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 and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7] ♣ compare and order unit fractions, and fractions with the same denominators ♣ solve problems that involve all of the above.	common equivalent fractions ♣ 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 or hundredths ♣ recognise and write decimal equivalents to ¼, 1/2 and ¾ ♣ solve simple measure and money problems involving fractions and decimals to two decimal places.	denominators are all multiples of the same number ♣ 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] ♣ 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 [for example, 0.71 = 71/100] ♣ 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.	common multiples to express fractions in the same denomination ♣ 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 [for example, ¼ × ½ = 1/8] ♣ divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6] ♣ associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8]
Decimals and percentages				♣ 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	♣ count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. ♣ 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	♣ multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 ♣ 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 ♣ 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	♣ associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] ♣ 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

						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.	♣ recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. ♣ solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
Shape and patterns	Copy, continue and create their own simple repeating patterns with at least three full units of repeat. AB, ABB, AABB, AAB, AABBB Including a range of shapes, colours and sizes Recall names for 2D shapes Recall some names for 3D shapes Explore which 3D shapes stack and roll	Recognise and name common 2-D and 3-D shapes, including: ♣ 2-D shapes [for example, rectangles (including squares), circles and triangles] ♣ 3-D shapes [for example, 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 ♣ identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] ♣ compare and sort common 2-D and 3-D shapes and everyday objects.	♣ draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them ♣ identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	♣ compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes ♣ 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.	♣ identify 3-D shapes, including cubes and other cuboids, from 2-D representations ♣ 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.	♣ 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 ♣ illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
Angles				♣ recognise angles as a property of shape or a description of a turn ♣ identify right angles, 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	♣ identify acute and obtuse angles and compare and order angles up to two right angles by size	♣ know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles ♣ draw given angles, and measure them in degrees (o) identify: ♣ angles at a point and one whole turn (total 360o) ♣ angles at a point on a straight line and 2 1 a turn (total 180o) ♣ other multiples of 90o	♣ draw 2-D shapes using given dimensions and angles ♣ recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
Position and direction	Respond to positional language in practical situations e.g. when tidying up, put the blocks next to the beads. Begin to use positional language to describe where things are in relation to each other	Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	♣ 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 turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).	♣ recognise angles as a property of shape or a description of a turn	♣ describe positions on a 2-D grid as coordinates in the first quadrant ♣ describe movements between positions as translations of a given unit to the left/right and up/down ♣ 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) ♣ draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

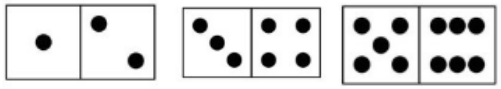
Money	Money is not explicitly taught in EYFS but children will still explore coins within provision to familiarise the concept of money being used to pay for things. Children may count 1p coins but not others as they are still learning to understand the concept of unitising.	♣ recognise and know the value of different denominations of coins and notes	♣ recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value ♣ find different combinations of coins that equal the same amounts of money ♣ solve simple 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 and calculate different measures, including money in pounds and pence	♣ use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	
Measurement	Compare and order objects by size and mass and describe using mathematical language Sort objects based on their size and mass Use balance scales to explore mass Apply their understanding of language into practical tasks e.g. build a taller tower Explore basic capacity practically e.g. how many scoops of sand will this container hold; how many cups of water will this bucket hold Measure using non-standard units of measure e.g. 3 hands long	Compare, describe and solve practical problems for: ♣ lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] ♣ mass/weight [for example, heavy/light, heavier than, lighter than] ♣ capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] ♣ time [for example, quicker, slower, earlier, later] Measure and begin to record the following: ♣ lengths and heights ♣ mass/weight ♣ capacity and volume ♣ time (hours, minutes, seconds)	♣ 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 =	♣ measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	♣ Convert between different units of measure [for example, kilometre to metre; hour to minute] ♣ estimate, compare and calculate different measures, including money in pounds and pence	♣ 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 ♣ use all four operations to solve problems involving measure [for example, 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
Time	Order key events in daily routines Use language to describe when events happen – day, night, morning, afternoon, before, after, today, tomorrow, now, next, later Informally measure time e.g. how many jumps can I do before the sand timer runs out or use a calendar to count down how many days until an event	♣ sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, 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.	♣ 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 ♣ know the number of minutes in an hour and the number of hours in a day.	♣ tell and write the time from 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 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 [for example to	♣ read, write and convert time between analogue and digital 12- and 24-hour clocks ♣ solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	♣ solve problems involving converting between units of time	use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa,

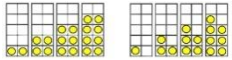
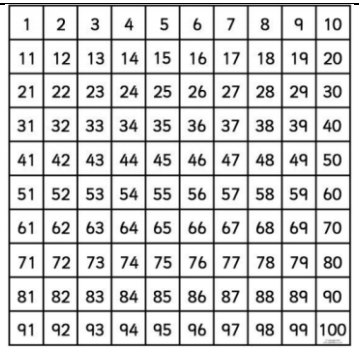
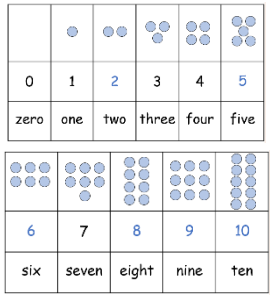
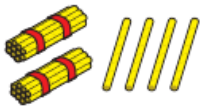
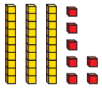
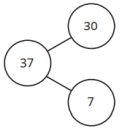
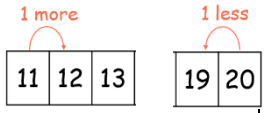
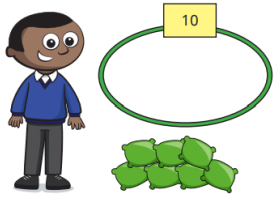
				calculate the time taken by particular events or tasks].			
Area, perimeter and volume				♣ measure the perimeter of simple 2-D shapes	♣ measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres ♣ find the area of rectilinear shapes by counting squares	♣ 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 [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]	♣ 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, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3].
Statistics			♣ interpret and construct simple pictograms, tally charts, block diagrams and simple tables ♣ ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity ♣ ask and answer questions about totalling and comparing categorical data.	♣ interpret and present data using bar charts, pictograms and tables ♣ 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.	♣ interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. ♣ 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 ♣ complete, read and interpret information in tables, including timetables.	♣ interpret and construct pie charts and line graphs and use these to solve problems ♣ calculate and interpret the mean as an average.
Ratio					integer scaling problems and harder correspondence problems such as n objects are connected to m objects.	use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	♣ 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 of percentages [for example, 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							♣ 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

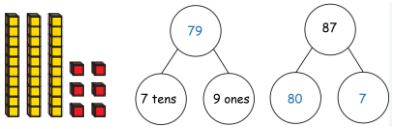
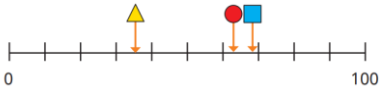
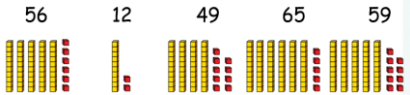
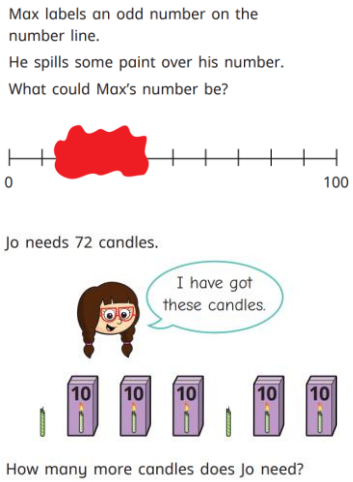
							♣ enumerate possibilities of combinations of two variables.

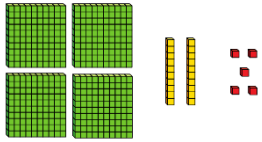
Number, Counting and Place Value

Progression of Knowledge	This is the fundamental area of mathematics. It is essential that children leave each year group having acquired a firm understanding of the knowledge and procedures linked to number, counting and place value to enable them to progress throughout the curriculum as numbers become larger and concepts from other areas of Maths are applied to increasingly larger numbers. This is why this strand is always covered at the outset of a year as it is the foundation of all learning. The only exception being EYFS and Year 1 where children study number, counting and place value regularly throughout the year so that deep early number experiences are prioritised. Early number sense is essential here and the counting skills developed in EYFS are crucial for mastering an understanding of number.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
EYFS	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr></table>To **count** we need to: • Say the number words in order • Point to the objects • Count one number name per object • Not miss any out • The last number counted is the **total** **Zero** is when there are no objects and no number **Subitise** = recognising small numbers without having to **count** them  We can **break** numbers down into **smaller parts**  5 is made of 4 and 1	Verbally count beyond 20, recognising the pattern of the counting system Have a deep understanding of number to 10, including the composition of each number Subitise (recognise quantities without counting) up to 5 (regular arrangements and some irregular arrangements)  Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity	Solve simple practical problems in familiar contexts led by the teacher e.g. Ben, Sam and Tom are playing dominoes Ben's domino has fewer than 5 spots Sam's domino has 5 spots Tom's domino has greater than 5 spots Which pieces could they have?

	Greater than = one set or number has more **Less than** = one set or number has fewer **Equal to** = the same as **Even numbers** = share equally into groups of 2 **Odd numbers** = will not share equally into groups of 2 	Explore and represent patterns within numbers up to 10, including evens and odds	
Year 1	  10 ten 11 eleven 12 twelve 13 thirteen 14 fourteen 15 fifteen 16 sixteen 17 seventeen 18 eighteen 19 nineteen 20 twenty We can make **groups of ten** to make it easier to count  Ten **ones** = one **ten** We can represent the **tens** and **ones** in a number in different ways   **Multiples of 2** – 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 **Multiples of 5** – 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 **Multiples of 10** – 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 **One more** = the number after, adding one **One less** = the number before, subtracting one  **Equal to** = the same as	Count to and across 100, forwards and ackwards, beginning with 0 or 1, or from ny given number ead and write numbers to 100 in umerals artition a number into tens and ones ount in multiples of twos, fives and tens given a number, identify one more and one less 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 and words.	Use place value and number facts to solve problems. Mo is playing a game.   He scores 10 points for every bean bag that lands in the hoop. He scores 50 points in total. How many bean bags does Mo get in the hoop? Ben scores 10 fewer points than Mo. How many points does Ben score?

	More than = greater **Less than** = fewer		
Year 2	A number can be split into **tens** and **ones** Ten **ones** = one **ten**  Tens: 3 Ones: 5 To write numbers in words, we need to know the numbers to 20 and: **Thirty** **Forty** **Fifty** **Sixty** **Seventy** **Eighty** **Ninety** **One-hundred** We can then put them together e.g seventy-nine Counting in 2s – 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24 Counting in 3s – 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36 Counting in 5s – 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 Counting on in tens from a number – keep adding one to the **tens column** e.g. 23, 33, 43, 53, 63 Counting back in tens from a number – keep subtracting one to the tens column e.g. 85, 75, 65, 55, 45 **> greater than** **< less than** **= equal to** Numbers with the greatest number of tens are bigger If they have the same number of tens, we look to the ones 56 12 49 65 59 	Count in steps of 2, 3, and 5 from 0 read and write numbers to at least 100 in numerals and in words count 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  use < > and = signs to compare numbers up to 100 order numbers from 0 up to 100 56 12 49 65 59 	Use place value and number facts to solve problems. 
Year 3	Ten **tens** = one **hundred** 3 digit numbers have **hundreds, tens and ones** Hundreds Tens Ones	Count from 0 in multiples of 4, 8, 50 and 100 read and write numbers up to 1000 in numerals and in words	Solve number problems and practical problems involving these ideas.

<table>
<tr>
<td></td>
<td>
<table><tr><td>4</td><td>2</td><td>5</td></tr></table>

4 hundreds, 2 tens and 5 ones
400 + 20 + 5 = 425

To write bigger numbers, we use the numbers to hundred and put ___ hundred in front of it e.g. four-hundred and twenty-five

Multiples of 4 – 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48
Multiples of 8 – 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96
Multiples of 50 – 50, 100, 150, 200, 250, 300, 350, 400..
Multiples of 100 – 100, 200, 300, 400, 500…

Adding and subtracting 10 or 100 from a number can be done mentally
Identify the tens or hundreds column and adjust this
It may lead to surrounding columns needing to change if there is a 0 or 9 in the column

When comparing and ordering numbers, we can use a place value chart.
The greater the number of hundreds, the greater the number.
If they have the same amount of hundreds, we look to the tens and so on.
</td>
<td>
Find 10 or 100 more or less than a given number

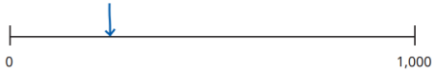
Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)

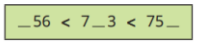
Compare numbers up to 1000

<table><tr><td>Alex</td><td>428 cm</td></tr><tr><td>Annie</td><td>395 cm</td></tr><tr><td>Mo</td><td>403 cm</td></tr><tr><td>Rosie</td><td>083 cm</td></tr></table>

Order numbers up to 1000

identify, represent and estimate numbers using different representations



</td>
<td>
Each number has the same digit missing.


What could the missing digits be?
</td>
</tr>
<tr>
<td>Year 4</td>
<td>
Multiples of 6 – 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72
Multiples of 7 – 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84
Multiples of 9 – 9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99 108
Multiples of 25 – 25, 50, 75, 100, 125, 150, 175, 200, 225…
Multiples of 1000 – 1000, 2000, 3000, 4000, 5000 …

The thousands column comes before the hundreds column – it is ten times bigger
Ten hundreds = one thousand

<table><tr><td>Thousands</td><td>Hundreds</td><td>Tens</td><td>Ones</td></tr><tr><td>6</td><td>6</td><td>3</td><td>1</td></tr></table>
</td>
<td>
Count in multiples of 6, 7, 9, 25 and 1000

Find 1000 more or less than a given number by adjusting the thousands column

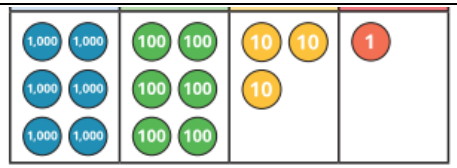
Count backwards through 0 to include negative numbers

Determine the value of each digit in a 4-digit number and partition

Compare numbers with 4 digits
</td>
<td>
solve number and practical problems that involve all of the above and with increasingly large positive numbers

There are 2,458 children in a school.

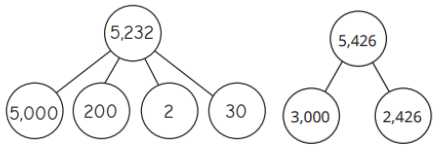

a) Round the number of children to the nearest 10
</td>
</tr>
</table>



6 **thousands**, 6 **hundreds**, 3 **tens** and 1 **one**

6000 + 600 + 30 + 1 = 6631

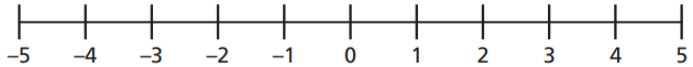
We can **partition** numbers in different ways



We use a comma after the **thousands** – these are used to help with reading and writing longer numbers

6,631
Six-thousand, three-hundred and thirty-one

Adding and subtracting 1000 from a number can be done **mentally**
Identify the **thousands column** and adjust this
It may lead to surrounding columns needing to change if there is a 0 or 9 in the thousands column
We can count backwards past **zero** into **negative numbers**



When **rounding** numbers, we decide which **multiple** it is closest to
To the nearest ten – the multiple of 10 that it is closest to
To the nearest hundred – the multiple of 100 that it is closest to
To the nearest thousand – the multiple of 1000 that it is closest to
01234 – rounds down to the multiple before
56789 – rounds up to the multiple after

Roman numerals were used in the past for numbers.
Over time, the numeral system changed to include the concept of **zero** and **place value**.
The Roman system does not have a zero or place holders.
It uses letters to represent numbers

Order sets of numbers with 4 digits

Mountain	Height (m)
Mount Elbrus	5,642
Kilimanjaro	5,895
Aconcagua	6,962
Mont Blanc	4,810
Mount Everest	8,848

Write the names of the mountains in order starting with the highest.

Thousands	Hundreds	Tens	Ones
~~5~~	~~6~~	~~4~~	~~2~~
~~5~~	~~8~~	~~9~~	~~5~~
~~6~~	~~9~~	~~6~~	~~2~~
4	8	1	0
~~8~~	~~8~~	~~4~~	~~8~~

Round any number to the nearest 10, 100 or 1000

Read Roman numerals to 100 (I to C)

Teddy and Scott have some digit cards.

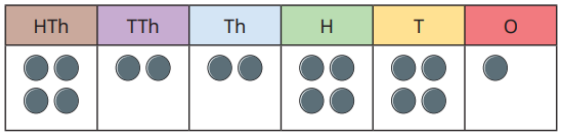
1	4	5	7

Teddy makes the number 4,571

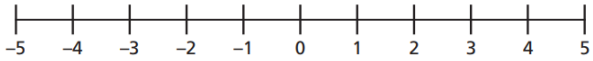
Scott says his number is greater than Teddy's.

Teddy says Scott's number must start with a 5

Is Teddy correct? _____

<table>
<tr>
<td></td>
<td>I = 1
V = 5
X = 10
L = 50
C = 100
There would never be more than 3 numerals the same next to each other XXX = 30
A smaller numeral in front of a bigger numeral means one less than e.g. XL means 10 less than 50 = 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 5</td>
<td>Ten thousands = 1 ten thousand
10 ten thousands = 1 hundred thousand
Every column is ten times bigger
 

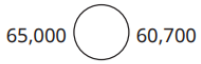
We use the
help us read
numbers
422,441
<table>
<tr><td>4</td><td>2</td><td>2</td><td>4</td><td>4</td><td>1</td></tr>
<tr><td>400,000</td><td>20,000</td><td>2,000</td><td>400</td><td>40</td><td>1</td></tr>
</table>
Four-hundred and twenty-two THOUSAND four-hundred and forty-one

When solving problems with negative numbers, we use a number line
 

You can round a number to any degree of accuracy – nearest ten, hundred…hundred thousand
Digits 0,1,2,3,4 will round down to the multiple before
Digits 5,6,7,8,9 will round up to the multiple after

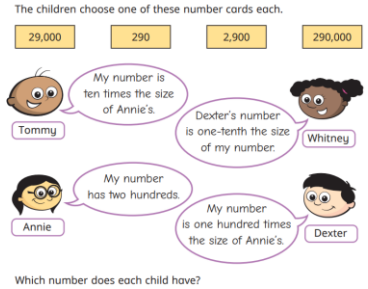
The Roman numerals system does not have a zero or place holders.
It uses letters to represent numbers
I = 1
V = 5
X = 10</td>
<td>Read and write numbers to at least 1 000 000

Determine the value of each digit in numbers to at least 1 000 000

order and compare numbers to at least 1 000 000
 

List the towns and cities in descending order of population.
<table>
<tr><th>Town or city</th><th>Population</th></tr>
<tr><td>Halifax</td><td>88,134</td></tr>
<tr><td>Brighouse</td><td>32,360</td></tr>
<tr><td>Leeds</td><td>792,925</td></tr>
<tr><td>Huddersfield</td><td>146,234</td></tr>
<tr><td>Wakefield</td><td>343,932</td></tr>
<tr><td>Bradford</td><td>536,986</td></tr>
</table>
count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000

interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero

round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</td>
<td>solve number and practical problems that involve understanding of place value
 

Solve problems requiring rounding to a degree of accuracy

328,154 people buy tickets for a festival.
Tickets are printed in batches of 10,000
How many batches of tickets should the organisers print?
 

Solve simple negative number problems in contexts
The temperature on Monday was 4°C.
a) That night the temperature fell by 7°C.
What was the temperature at night?</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td>L = 50
C = 100
D = 500
M = 1000
There would never be more than 3 numerals the same next to each other CCC = 300
A smaller numeral in front of a bigger numeral means one less than e.g. CD means 100 less than 500 = 400
We can use the bigger letters to represent dates e.g. MMXXI</td>
<td>read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</td>
<td></td>
</tr>
<tr>
<td>Year 6</td>
<td>
<table>
<tr><th>Millions</th><th colspan="3">Thousands</th><th colspan="3">Ones</th></tr>
<tr><td>O</td><td>H</td><td>T</td><td>O</td><td>H</td><td>T</td><td>O</td></tr>
<tr><td>4</td><td>2</td><td>8</td><td>7</td><td>2</td><td>9</td><td>5</td></tr>
</table>
The millions column comes before the hundred thousand column – it is ten times bigger
Ten hundred thousands = one million

When writing bigger numbers, we mark every third digit from the ones with a comma – we can use this to help us read the numbers
4,326,509

Four million, three-hundred and twenty-six thousand, five-hundred and nine

When partitioning numbers, we can count the columns after the digit to determine how many 0s a number will have.
<table>
<tr><th>Millions</th><th colspan="3">Thousands</th><th colspan="3">Ones</th></tr>
<tr><td>O</td><td>H</td><td>T</td><td>O</td><td>H</td><td>T</td><td>O</td></tr>
<tr><td>4</td><td>2</td><td>8</td><td>7</td><td>2</td><td>9</td><td>5</td></tr>
</table>
4,000,000 200,000 80,000 7,000 200 90 5

Numbers can be partitioned in different ways
</td>
<td>Read and write numbers up to 10 000 000

Determine the value of each digit of numbers up to 10 000 000

Order and compare numbers up to 10 000 000

Round any whole number to any degree of accuracy

Use negative numbers in context, and calculate intervals across zero</td>
<td>Solve number and practical problems showing understanding of the place value of numbers

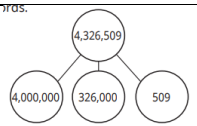
Here are some clues to a 7-digit number.
• There is nothing in the thousands or hundreds columns.
• The tens digit is 1 less than the millions digit.
• The ones digit is 1 less than the tens digit.
• The hundred-thousands digit is 4
• The digit sum is 15
a) What could the number be?

Understand the contexts when rounding is useful and solve problems involving rounding

A and B are integers.
A = 300,000 to the nearest 100,000
B = 300,000 to the nearest 10,000
a) What is the greatest possible value of A + B?

Solve problems using negative numbers in real-life contexts

A ship sits in the sea.
• The base of the ship is 5 m below sea level.
• The top of the ship is 11 m above sea level.
How tall is the ship?</td>
</tr>
</table>



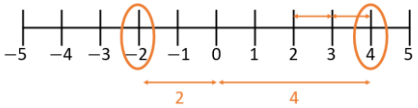
To **order** and **compare** numbers, put them into a **place value grid**
Start at the biggest column
If it is the same, move onto the next column

212,731 < 233,814

M	HTh	TTh	Th	H	T	O
	2	1	2	7	3	1
	2	3	3	8	1	4

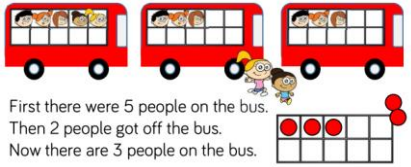
Rounding is useful to **approximate** larger numbers
You can round a number to any degree of accuracy – nearest ten, hundred…million. The degree of accuracy will depend on the context
Digits 0,1,2,3,4 will round down
Digits 5,6,7,8,9 will round up

Negative numbers are numbers below zero
Common contexts include temperature and bank accounts
To calculate across zero, a number line is useful



Addition and Subtraction

Progression of Knowledge	Once children are secure with numbers and counting, they move towards addition. Once secure with addition, they will progress towards subtracting, noting the links between the two operations through use of consistent visual representations such as part-whole models and bar models. Children learn the concept of addition and subtraction in the Early Years along with key facts, bonds and double facts. This extends in Year 1 so that children can confidently recall all addition and subtraction facts needed to formalise methods in Key Stage 2. Formal written methods are learnt to automaticity throughout Key Stage 2 as children apply these methods to bigger numbers, decimals and mixed operations. At all stages, it is important that emphasis and thought is given to which calculations would be better done mentally and which would be more efficient with a method.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
EYFS	We combine groups to make a **total** The quantity of a group can be changed by **adding** more The quantity of a group can be changed by **taking away** **Addition facts** within 5 + | 0 | 1 | 2 | 3 | 4 | 5 0 | 0 + 0 | 0 + 1 | 0 + 2 | 0 + 3 | 0 + 4 | 0 + 5 1 | 1 + 0 | 1 + 1 | 1 + 2 | 1 + 3 | 1 + 4 2 | 2 + 0 | 2 + 1 | 2 + 2 | 2 + 3 3 | 3 + 0 | 3 + 1 | 3 + 2 4 | 4 + 0 | 4 + 1 5 | 5 + 0 Including related **subtraction facts** e.g 5-2 **Number bonds** to 10 0 + 10 | 1 + 9 | 2 + 8 | 3 + 7 | 4 + 6 | 5 + 5 Including related **subtraction facts**	Combine two groups to find a total in many contexts using real objects (encourage to subitise for the groups) Reduce a group by taking away	Solve simple one-step problems that involve addition and subtraction, using concrete objects and in familiar and known contexts e.g 3 people are on the bus and 2 more get on. Represent number stories using ten frames 
Year 1	The + symbol – **plus, add** The – symbol – **subtract, take away** The = symbol – **equals, is equal to** **Addition facts** to 10 fluently including related **subtraction facts**	read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs represent and use number bonds and related subtraction facts within 20	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9.

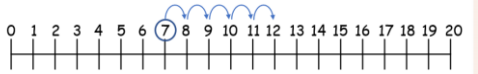
+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8		
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7			
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6				
5	5+0	5+1	5+2	5+3	5+4	5+5					
6	6+0	6+1	6+2	6+3	6+4						
7	7+0	7+1	7+2	7+3							
8	8+0	8+1	8+2								
9	9+0	9+1									
10	10+0										

For **near doubles**, we can double the number and then add or subtract one as needed.
e.g. 7 + 8
double 7 is 14 and one more is 15

Number bonds to 20

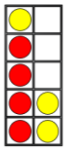
1 + 19	2 + 18	3 + 17	4 + 16	5 + 15
6 + 14	7 + 13	8 + 12	9 + 11	10 + 10

<u>We can add by:</u>
Counting on

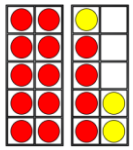


Using **number bonds** and the **addition facts** that we know

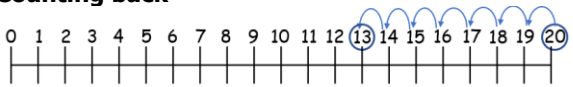
4 + 3 = 7



14 + 3 = 17

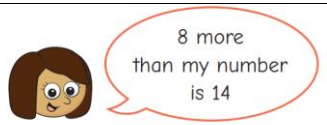


<u>We can subtract by:</u>
Counting back

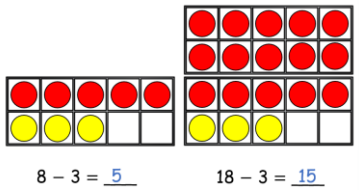


Using the **number bonds** and **subtraction facts** that we know

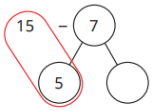
add and subtract one-digit and two-digit numbers to 20, including zero



What number is Kim thinking of?

<table>
<tr>
<td></td>
<td>


Partitioning the number that we are subtracting using our **addition facts**



Finding the difference = subtract the smallest number from the biggest number

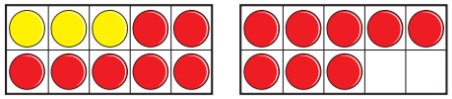
Fact families
If we know an **addition fact**, we also know other **related facts**

<table>
<tr><td colspan="2">12</td></tr>
<tr><td>4</td><td>8</td></tr>
</table>

4 + 8 = 12   12 – 4 = 8
8 + 4 = 12   12 – 8 = 4
12 = 4 + 8   4 = 12 – 8
12 = 8 + 4   8 = 12 – 4
</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>
Addition and subtraction facts to 20

1 + 19	2 + 18	3 + 17	4 + 16	5 + 15
6 + 14	7 + 13	8 + 12	9 + 11	10 + 10

We can use addition facts to find out other **related facts** with **fact families**



3 + 15 = 18
15 + 3 = 18
18 – 3 = 15
18 – 15 = 3

We can use **number bonds** to work out bigger numbers
e.g. 3 + 5 = 8, 3 tens + 5 tens = 8 tens, 30 + 50 = 80
</td>
<td>
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 ones
- a two-digit number and tens
- two two-digit numbers
- adding three one-digit numbers

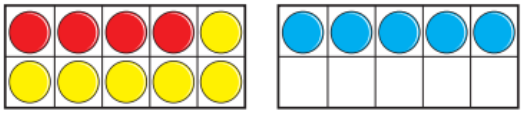
compare calculations
</td>
<td>
Solve problems with addition and subtraction:

- using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- applying their increasing knowledge of mental and written methods
</td>
</tr>
</table>

Bonds to 100:

0 + 100	10 + 90	20 + 80	30 + 70	40 + 60	50 + 50

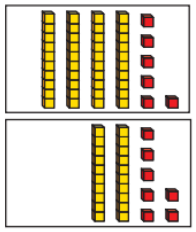
When adding 3 one-digit numbers, this can be done in any order.
Look for **number bonds** or **near doubles** to make it easier



4 + 6 + 5 _____

To find 10 more or 10 less, **adjust** the **tens column** only

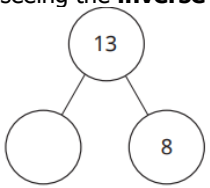
46 + 27

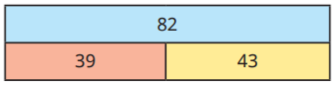


To add or subtract two numbers, we can **partition** them and add/subtract the ones and the tens
Ten ones = one ten
This can be **exchanged**

Addition of two numbers can be done in any order (commutative)
Subtraction of one number from another cannot be done in any order

Addition and **subtraction** are the **inverse** of each other
They are the opposite
Bar models and part whole models are useful representations for seeing the **inverse relationship of addition and subtraction**





There are two different subtractions that you can do
Addition is **commutative**; **subtraction** is not

35 + 12 ◯ 41 – 18

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations

9 + 9 = 10 + ☆

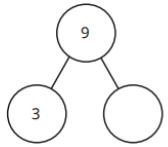
☆ + ☆ = △

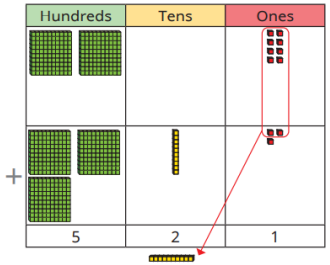
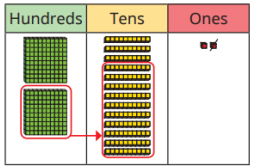
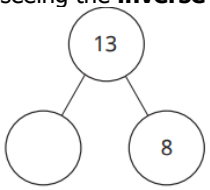
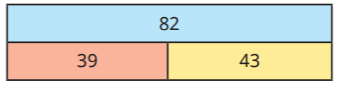
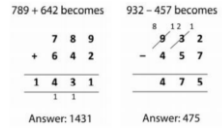
27 + △ = ●

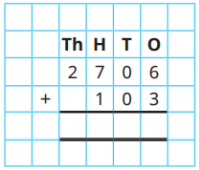
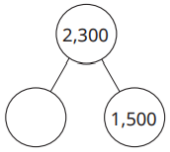
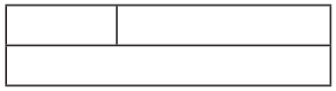
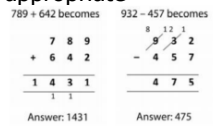
■ + ● = 87

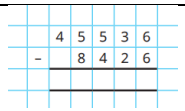
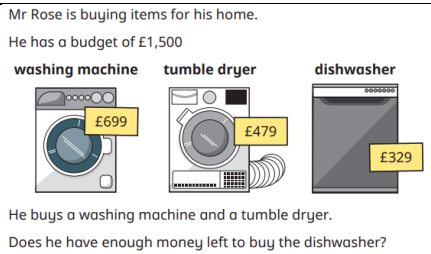
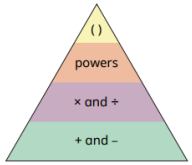
Use the inverse relationship between addition and subtraction to check calculations and solve missing number problems.

53 – 9 = 50 – _____



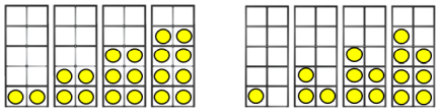
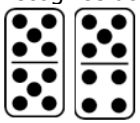
Year 3	 H T O 2 0 8 + 3 1 3 5 2 1 1 ten **ones** can be **exchanged** for one **ten** ten **tens** can be **exchanged** for one **hundred**  H T O ~~2~~ ~~3~~ 2 – 1 4 1 1 If the numbers have a different number of **digits**, **place value columns** must be lined up accurately H T O 2 5 5 + 5 4 We can **estimate** answers by using a number line and thinking what a number is close to **Addition** and **subtraction** are the **inverse** of each other They are the opposite Bar models and part whole models are useful representations for seeing the **inverse relationship of addition and subtraction**  	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  estimate the answer to a calculation and use inverse operations to check answers calculate complements to 100	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. **Start** **378** | + 100 | + 200 | – 200 | + 300 – 100 | + 300 | – 500 | + 100 | – 100 + 500 | – 300 | + 200 | + 200 | – 100 – 200 | + 100 | + 100 | – 100 | + 200 – 100 | + 300 | – 500 | + 200 | **778** **Finish** Find a path from the start to the finish so that your end number is 778 A tablet costs £329 ▸ A laptop costs £154 more than the tablet. How much does the laptop cost? ▸ A TV costs £107 more than the laptop. How much does the TV cost? 

	There are two different subtractions that you can do **Addition** is **commutative**; **subtraction** is not		
Year 4	Adding and subtracting 1000 from a number can be done **mentally** Identify the thousands column and **adjust** this It may lead to surrounding **columns** needing to change if there is a 0 or 9 in the thousands column If the numbers being added together have a different number of **digits**, **place value columns** must be lined up accurately  Knowledge around **exchange** is the same as Year 3 but extended to apply to 4 digit numbers We can **estimate** answers by **rounding** both **addends** or **subtrahends** and calculating mentally We can also use the **inverse** to check answers Bar models and part whole models are useful representations for seeing the **inverse relationship of addition and subtraction**  Complete the bar model for 3,582 – 2,236 = 1,346 	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate  estimate and use inverse operations to check answers to a calculation	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. 1,235 people go on a school trip. There are 1,179 children and 27 teachers. The rest are parents. How many parents are there?
Year 5	**Rounding** helps us check whether an answer is broadly accurate. e.g. 4836 + 1976 rounded would be 5000 + 2000 so the answer should be close to 7000. If you subtract one from each **addend**, the answer will be the same. This can help **efficient calculations**	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

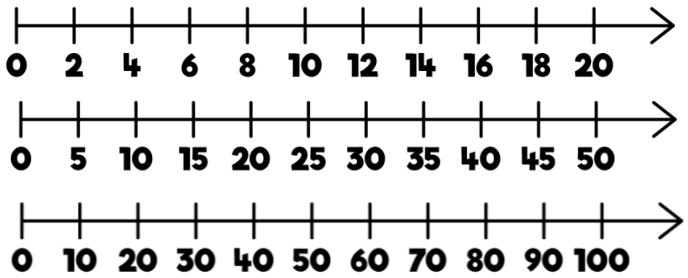
	e.g. 7000 – 4537 would be 6999 – 4536 and this would require no exchange	 add and subtract numbers mentally with increasingly large numbers use rounding to check answers to calculations Use knowledge of the inverse from previous years to solve calculations with larger numbers ▸ _____ – 100 = 5,823 ▸ _____ – 1,000 = 5,823 ▸ 5,423 + _____ = 5,823 ▸ 3,623 + _____ = 5,823	 use rounding to determine, in the context of a problem, levels of accuracy
Year 6	If you subtract one from each **addend**, the answer will be the same. This can help **efficient calculations** Context of decimals e.g. 7 – 3.24 would be 6.99 – 3.23 and this would require no exchange When calculations have **mixed operations**, the **order** matters. **Addition and subtraction** would be done last  **Estimating** answers helps us check whether an answer is broadly accurate. We can do this by loosely rounding a number and calculating mentally	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 use estimation to check answers to calculations	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why solve multi-step problems involving addition, subtraction, multiplication and division including applying addition and subtraction procedures into other strands of mathematics. Problems should explore mixed operations in multi-steps In the context of a problem, use estimation to check an appropriate degree of accuracy.

Multiplication and Division

Progression of Knowledge	Children start to progress in multiplication when they are secure with additive structures. In the Early Years, pupils will have many hands on and concrete experiences of sharing and making groups and this is built upon in Year 1 where pupils continue to group and share and explore arrays. Children are only introduced to the multiplication and division symbols in Year 2 where they start to understand how to represent these in number statements. At this stage, children will explore repeated addition and subtraction as well as informal methods of grouping and sharing to ensure that they leave KS1 with a firm understanding of the concept of multiplication and division. Throughout KS2, as their understanding of place value develops, children learn to apply this understanding to increasingly bigger numbers and more formalised methods to ensure accuracy and efficiency. Knowledge of table facts begins in Year 2 and progresses sequentially to allow deep learning links to be made through the learning of times tables. All children will leave Year 4 proficient in rapid recall of times table facts up to 12 x 12 to prepare them for the formalised methods of multiplication and division throughout Upper Key Stage 2.

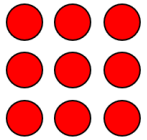
	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
EYFS	**Double** means twice as many Double 1 is 2 Double 2 is 4 Double 3 is 6 Double 4 is 8 Double 5 is 10  **Sharing** must be done **equally** – this means they are all the **same amount** Some quantities will share equally into 2 groups – these are **even** Some quantities will not share equally into 2 groups – these are **odd**  **Even numbers** **Odd numbers**	Understand double facts Build simple doubles Recognise doubles  Understand how quantities can be distributed equally.	Solve simple practical and contextual problems through familiar scenarios with the use of concrete objects to support e.g. these 3 teddy bears are coming to the teddy bear's picnic and we need to share the buns equally

Year 1



When **sharing** and **grouping**, groups have to be **equal** – this means the same amount in each group.

An **array** is arranging the groups in rows and columns



Doubling is 2 **groups** of a number or amount

1 + 1 = 2	2 + 2 = 4	3 + 3 = 6	4 + 4 = 8	5 + 5 = 10
6 + 6 = 12	7 + 7 = 14	8 + 8 = 16	9 + 9 = 18	10 +10 = 20

Count in 2s, 5s and 10s

Make and add equal groups

There are 3

They each have 2 dots.

There are 3 equal groups of 2

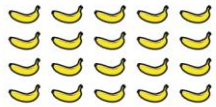
There are 6 dots.

Make arrays

Share an amount into equal groups

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.

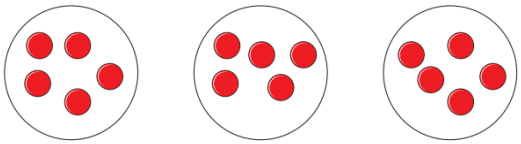
Ron needs to share 20 bananas between 5 boxes.



How many bananas will there be in each box?

Year 2

Multiplication is **equal groups**
The multiplication symbol is **x**
3 x 5 means 3 **equal groups** of 5
We can add the **equal groups** 5 + 5 + 5



2 times table

1 x 2 = 2
2 x 2 = 4
3 x 2 = 6
4 x 2 = 8
5 x 2 = 10
6 x 2 = 12
7 x 2 = 14
8 x 2 = 16
9 x 2 = 18
10 x 2 = 20
11 x 2 = 22
12 x 2 = 24

5 times table

1 x 5 = 5
2 x 5 = 10
3 x 5 = 15
4 x 5 = 20
5 x 5 = 25
6 x 5 = 30
7 x 5 = 35
8 x 5 = 40
9 x 5 = 45
10 x 5 = 50
11 x 5 = 55
12 x 5 = 60

10 times table

1 x 10 = 10
2 x 10 = 20
3 x 10 = 30
4 x 10 = 40
5 x 10 = 50
6 x 10 = 60
7 x 10 = 70
8 x 10 = 80
9 x 10 = 90
10 x 10 = 100
11 x 10 = 110
12 x 10 = 120

Recognise, make and add equal groups, relating this to multiplication

Use multiplication and division facts for the 2, 5 and 10 multiplication tables

Recognise odd and even numbers

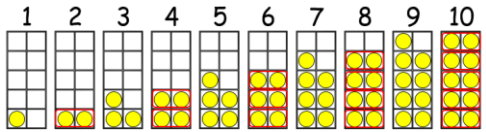
Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs

Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Kim buys 5 lollipops.

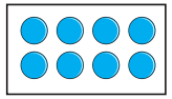
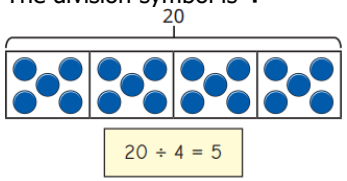
It costs 50p.

How much do 2 lollipops cost?

<table>
<tr>
<td></td>
<td>
<u>Odd and even</u>
Even numbers can be grouped into 2s; odd numbers cannot


<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr>
<tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr>
<tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr>
<tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr>
<tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr>
</table>
Even numbers will have 0,2,4,6 or 8 in the ones column

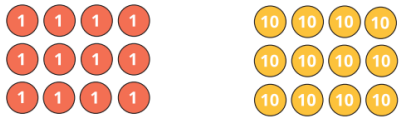
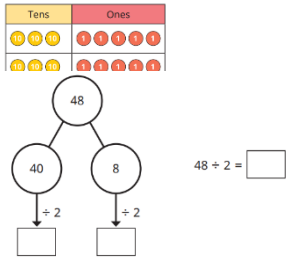
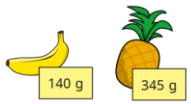
Odd numbers will have 1,3,5,7 or 9 in the ones column

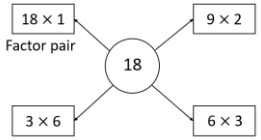
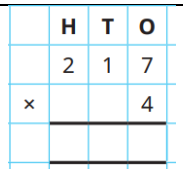
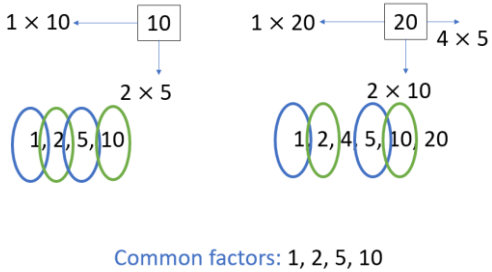
Multiplication of two numbers can be done in any order (commutative)

2 x 4 is the same as 4 x 2
Division of one number by another cannot be done in any order
Division is sharing equally
The division symbol is ÷


Doubling a number is multiplying by 2
Halving a number is dividing by 2
</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>
Multiplication is equal groups
We can show these equal groups using an array

<table>
<tr><th>2 times table</th><th>3 times table</th><th>4 times table</th><th>5 times table</th><th>8 times table</th><th>10 times table</th></tr>
<tr><td>1 x 2 = 2</td><td>1 x 3 = 3</td><td>1 x 4 = 4</td><td>1 x 5 = 5</td><td>1 x 8 = 8</td><td>1 x 10 = 10</td></tr>
<tr><td>2 x 2 = 4</td><td>2 x 3 = 6</td><td>2 x 4 = 8</td><td>2 x 5 = 10</td><td>2 x 8 = 16</td><td>2 x 10 = 20</td></tr>
<tr><td>3 x 2 = 6</td><td>3 x 3 = 9</td><td>3 x 4 = 12</td><td>3 x 5 = 15</td><td>3 x 8 = 24</td><td>3 x 10 = 30</td></tr>
<tr><td>4 x 2 = 8</td><td>4 x 3 = 12</td><td>4 x 4 = 16</td><td>4 x 5 = 20</td><td>4 x 8 = 32</td><td>4 x 10 = 40</td></tr>
<tr><td>5 x 2 = 10</td><td>5 x 3 = 15</td><td>5 x 4 = 20</td><td>5 x 5 = 25</td><td>5 x 8 = 40</td><td>5 x 10 = 50</td></tr>
<tr><td>6 x 2 = 12</td><td>6 x 3 = 18</td><td>6 x 4 = 24</td><td>6 x 5 = 30</td><td>6 x 8 = 48</td><td>6 x 10 = 60</td></tr>
<tr><td>7 x 2 = 14</td><td>7 x 3 = 21</td><td>7 x 4 = 28</td><td>7 x 5 = 35</td><td>7 x 8 = 56</td><td>7 x 10 = 70</td></tr>
<tr><td>8 x 2 = 16</td><td>8 x 3 = 24</td><td>8 x 4 = 32</td><td>8 x 5 = 40</td><td>8 x 8 = 64</td><td>8 x 10 = 80</td></tr>
<tr><td>9 x 2 = 18</td><td>9 x 3 = 27</td><td>9 x 4 = 36</td><td>9 x 5 = 45</td><td>9 x 8 = 72</td><td>9 x 10 = 90</td></tr>
<tr><td>10 x 2 = 20</td><td>10 x 3 = 30</td><td>10 x 4 = 40</td><td>10 x 5 = 50</td><td>10 x 8 = 80</td><td>10 x 10 = 100</td></tr>
<tr><td>11 x 2 = 22</td><td>11 x 3 = 33</td><td>11 x 4 = 44</td><td>11 x 5 = 55</td><td>11 x 8 = 88</td><td>11 x 10 = 110</td></tr>
</table>
</td>
<td>Use multiplication and division facts for the 3, 4 and 8 multiplication tables

Write and calculate mathematical statements for multiplication and</td>
<td>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.</td>
</tr>
</table>

	Multiplication is the opposite of **division** If I know 3 x 4 = 12, I know 12 ÷ 3 = 4 and 12 ÷ 4 = 3 These are called **inverse division facts** We can use **multiplication facts** to work out **related facts**  3 x 4 = 12 30 x 4 = 120 **Remainder** is what is left over when we **divide**	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  	Esther has 2 jars of mints. She shares all the mints equally between 3 bowls. How many mints are in each bowl? 
Year 4	**2 times table** 1 x 2 = 2 2 x 2 = 4 3 x 2 = 6 4 x 2 = 8 5 x 2 = 10 6 x 2 = 12 7 x 2 = 14 8 x 2 = 16 9 x 2 = 18 10 x 2 = 20 11 x 2 = 22 12 x 2 = 24 **3 times table** 1 x 3 = 3 2 x 3 = 6 3 x 3 = 9 4 x 3 = 12 5 x 3 = 15 6 x 3 = 18 7 x 3 = 21 8 x 3 = 24 9 x 3 = 27 10 x 3 = 30 11 x 3 = 33 12 x 3 = 36 **4 times table** 1 x 4 = 4 2 x 4 = 8 3 x 4 = 12 4 x 4 = 16 5 x 4 = 20 6 x 4 = 24 7 x 4 = 28 8 x 4 = 32 9 x 4 = 36 10 x 4 = 40 11 x 4 = 44 12 x 4 = 48 **5 times table** 1 x 5 = 5 2 x 5 = 10 3 x 5 = 15 4 x 5 = 20 5 x 5 = 25 6 x 5 = 30 7 x 5 = 35 8 x 5 = 40 9 x 5 = 45 10 x 5 = 50 11 x 5 = 55 12 x 5 = 60 **6 times table** 1 x 6 = 6 2 x 6 = 12 3 x 6 = 18 4 x 6 = 24 5 x 6 = 30 6 x 6 = 36 7 x 6 = 42 8 x 6 = 48 9 x 6 = 54 10 x 6 = 60 11 x 6 = 66 12 x 6 = 72 **7 times table** 1 x 7 = 7 2 x 7 = 14 3 x 7 = 21 4 x 7 = 28 5 x 7 = 35 6 x 7 = 42 7 x 7 = 49 8 x 7 = 56 9 x 7 = 63 10 x 7 = 70 11 x 7 = 77 12 x 7 = 84 **8 times table** 1 x 8 = 8 2 x 8 = 16 3 x 8 = 24 4 x 8 = 32 5 x 8 = 40 6 x 8 = 48 7 x 8 = 56 8 x 8 = 64 9 x 8 = 72 10 x 8 = 80 11 x 8 = 88 12 x 8 = 96 **9 times table** 1 x 9 = 9 2 x 9 = 18 3 x 9 = 27 4 x 9 = 36 5 x 9 = 45 6 x 9 = 54 7 x 9 = 63 8 x 9 = 72 9 x 9 = 81 10 x 9 = 90 11 x 9 = 99 12 x 9 =108 **10 times table** 1 x 10 = 10 2 x 10 = 20 3 x 10 = 30 4 x 10 = 40 5 x 10 = 50 6 x 10 = 60 7 x 10 = 70 8 x 10 = 80 9 x 10 = 90 10 x 10 = 100 11 x 10 = 110 12 x 10 = 120 **11 times table** 1 x 11 = 11 2 x 11 = 22 3 x 11 = 33 4 x 11 = 44 5 x 11 = 55 6 x 11 = 66 7 x 11 = 77 8 x 11 = 88 9 x 11 = 99 10 x 11 = 110 11 x 11 = 121 12 x 11 = 132 **12 times table** 1 x 12 = 12 2 x 12 = 24 3 x 12 = 36 4 x 12 = 48 5 x 12 = 60 6 x 12 = 72 7 x 12 = 84 8 x 12 = 96 9 x 12 = 108 10 x 12 = 120 11 x 12 = 132 12 x 12 = 144 factor 2 × 3 = 6 factor product	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 Recall all times tables and division facts 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. The mass of a banana is 140 g. The mass of a pineapple is 345 g.  Bag A contains 8 bananas and bag B contains 3 pineapples. Which bag is heavier and by how much?

	Factor pairs are pairs of numbers that multiply together to make a given number  **Multiply** by 0 – when one of the **factors** is 0, the **product** will always be 0 **Multiply** by 1 – when one of the **factors** is 1, the **product** will be the other factor **Dividing** by 1 – number remains the same A number divided by itself will always = 1 **Multiplication** is **commutative** – the order doesn't matter **3 x 4 = 4 x 3** **Multiplying** 3 numbers together – the order doesn't matter $4 \times 4 \times 5 =$ $4 \times 20 = 80$ We can use **multiplication facts** to work out **related facts** e.g. 3 x 4 = 12 30 x 4 = 120 300 x 4 = 1200	 	
Year 5	**Factors** = numbers that a number is divisible by without a remainder Factors can be found by working systematically Factors come in **pairs** **Common factors** = 2 or more numbers having the same factor  Common factors: 1, 2, 5, 10 **Multiples** = the result of multiplying a number by something Multiples can be found by counting in jumps of that number or repeatedly adding the number on **Common multiples** = 2 or more numbers having the same multiple	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19 applying accurate vocabulary 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	Solve multi-step problems with mixed operations applying the facts and procedures that they know A multipack of water contains 6 bottles of water. A box holds 3 multipacks of water. A shop orders 24 boxes of water. How many bottles of water have they ordered?

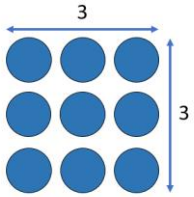
Multiples of 6:
6, 12, 18, 24, 36, 42, 48

Multiples of 8:
8, 16, 24, 30, 40, 48

Prime numbers = a number with exactly 2 factors: 1 and itself
If a number is not prime, it is **composite**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Square numbers



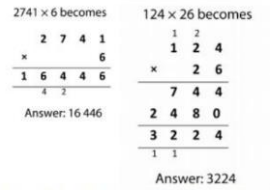
The array makes a square

$\boxed{3} \times \boxed{3} = 9$

The product of an integer multiplied by itself is a square number.

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$
$11^2 = 121$
$12^2 = 144$

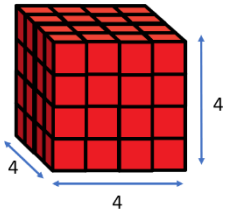
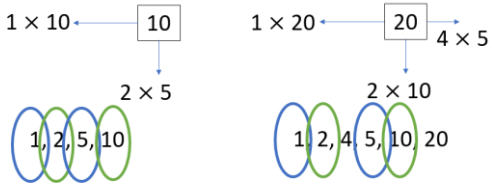
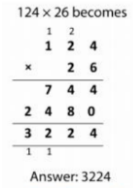
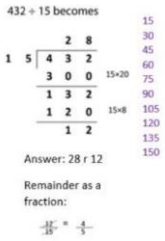
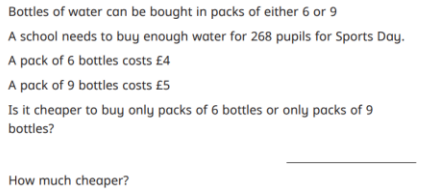
Cube numbers

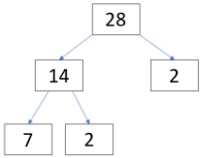
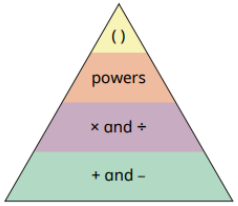
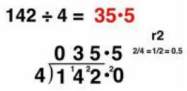


Multiply and divide numbers mentally drawing upon known facts

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

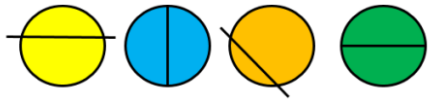
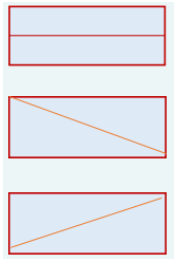
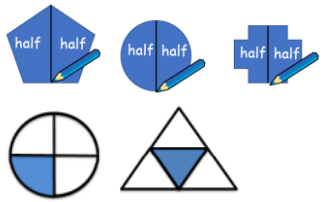
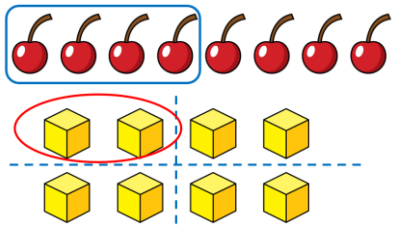
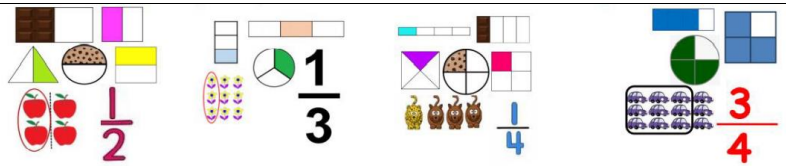
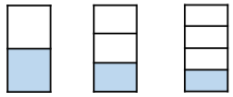
Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

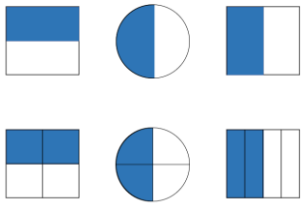
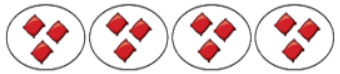
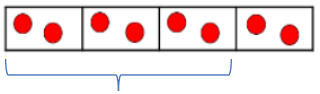
	 $4 \times 4 \times 4 = 64$ 16 $1^3 = 1$ $2^3 = 8$ $3^3 = 27$ $4^3 = 64$ $5^3 = 125$ $6^3 = 216$ $7^3 = 343$ $8^3 = 512$ $9^3 = 729$ $10^3 = 1000$ The result of multiplying a number by itself and then by itself again		
Year 6	**Factors** = numbers that a number is divisible by without a remainder Factors can be found by working systematically Factors come in **pairs** **Common factors** = 2 or more numbers having the same factor  Common factors: 1, 2, 5, 10 **Multiples** = the result of multiplying a number by something Multiples can be found by counting in jumps of that number or repeatedly adding the number on **Common multiples** = 2 or more numbers having the same multiple Multiples of 6: 6, 12, 18, 24, 36, 42, 48 Multiples of 8: 8, 16, 24, 30, 40, 48 **Prime numbers** = a number with exactly 2 factors: 1 and itself If a number is not prime, it is **composite** 1 is not a prime number 2 is the only even prime number	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 	Solve problems involving addition, subtraction, multiplication and division Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. 

	Prime factors = keep factorising a number until you reach **factors** that are prime numbers  When calculating with more than one operation, the **order** matters:  	Divide numbers up to 4 digits by a one-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 Identify common factors, common multiples and prime numbers Use their knowledge of the order of operations to carry out calculations involving the four operations Use estimation to check answers to calculations	

Fractions

Progression of Knowledge	Pupil formally start to learn fractions in Year 1 where they learn the concept of a half and a quarter and how to find a half or a quarter. They widen their knowledge of different fractions in Year 2 where they explore thirds and three quarters and start to find fractions of numbers. The majority of declarative knowledge is imparted throughout lower key stage 2 where pupils learn to write, order, compare, add, subtract and find equivalences. They extend this in Year 5 and 6 where they work with fractions with different denominators and learn procedures around calculating with a range of fractions.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
EYFS	Children are not explicitly taught fractions in the early years but when exploring capacity, they refer to things being half full, full, empty and nearly empty which is a pre-fraction skill as it is building understanding of wholes and halves.		
Year 1	**Half** = one of two **equal parts** **Quarter** = one of four **equal parts** **Whole** = all of the parts The parts must be **equal**   But don't have to look the same All of these represent halves of the rectangle They have 2 **equal** parts	Find half or quarter of a shape or object  Find half or quarter of a quantity or set of objects 	Recognising simple contexts where fractions might apply e.g. Ben has lost a quarter of his sweets
Year 2	 	Recognise halves, quarters and thirds What fraction is shaded in each diagram? 	Solve simple problems applying the declarative and procedural knowledge from KS1

	We write a **half** like this. $\frac{1}{2}$ 2 parts make the whole and we have 1 of them. We write a **quarter** like this. $\frac{1}{4}$ 4 parts make the whole and we have 1 of them. We write **three quarters** like this. $\frac{3}{4}$ 4 parts make the whole and we have 3 of them. We write a **third** like this. $\frac{1}{3}$ 3 parts make the whole and we have 1 of them. ½ is **equivalent** to $\frac{2}{4}$ (same value)  We can find a **fraction of a number** by sharing it (dividing) into **equal groups** ¼ of 12  We can also use a bar model ¾ of 8 	Find fractions of a length, shape, set or objects or quantity. Circle half the cakes.  Shade $\frac{1}{3}$ of each shape.  write simple fractions for example, ½ of 6 = 3 $\frac{1}{2}$ of 12 = ☐ $\frac{1}{4}$ of 12 = ☐	I am thinking of a number. ? One third of my number is 12 Which will be greater, one half of my number or one quarter of my number?
Year 3	<u>Writing fractions</u> **Denominator** shows how many equal parts the whole has been divided into **Numerator** shows how many of those parts we have	Write unit and non-unit fractions Count in fractions on a number line	Solve problems involving finding a fraction of a set of objects

Numerator
How many parts are we looking at?

$\frac{1}{4}$

Denominator
How many equal parts are there?

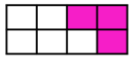
Unit fractions have a numerator of 1

$\frac{1}{3}$ is shaded

$\frac{1}{5}$ is shaded

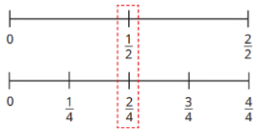
Non-unit fractions have a numerator greater than 1
They are made up of a quantity of unit fractions e.g. ¼ + ¼ + ¼ = ¾

$\frac{5}{6}$ is shaded



$\frac{3}{8}$ is shaded

Equivalent means same value or amount
We can see these on double number lines or fraction walls

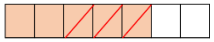


To **add and subtract fractions** with the same **denominator**, the **denominator** stays the same and you add or subtract the **numerator**.

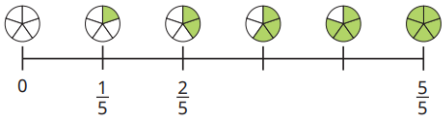
$\frac{1}{7}+\frac{2}{7}=\frac{3}{7}$

one seventh + two sevenths = three sevenths

$\frac{5}{7}-\frac{3}{7}=\frac{2}{7}$

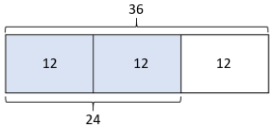


Comparing and ordering
When the **numerators** are the same, the bigger the **denominator**, the smaller the fraction. The smaller the **denominator**, the bigger the fraction.



Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

$\frac{2}{3}$ of 36 = 24



recognise and show, using diagrams, equivalent fractions with small denominators

add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]

compare and order unit fractions, and fractions with the same denominators

Eva has a bag of 20 sweets.

She eats $\frac{1}{4}$ of the sweets.

She gives $\frac{1}{5}$ of the sweets that are left to Dora and 2 sweets to her mum.

How many sweets does Eva have left?

Solve problems involving adding and subtracting fractions

Jack has $\frac{7}{8}$ of a chocolate bar.

He eats $\frac{4}{8}$ of the chocolate bar.

What fraction of the chocolate bar does he have left?

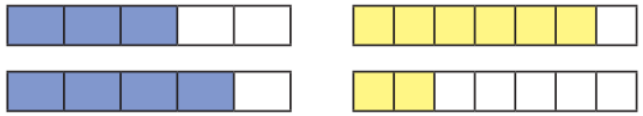
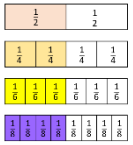
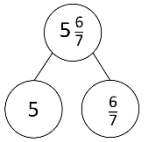
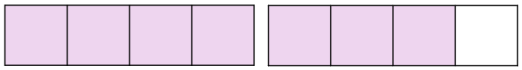
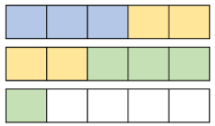
Solve problems involving comparing and ordering fractions

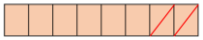
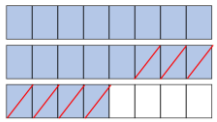
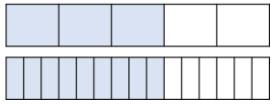
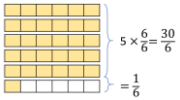
Use the digit cards to work out what the fractions could be.

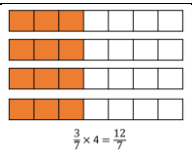
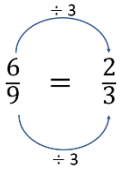
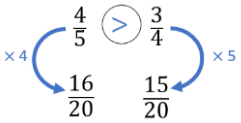
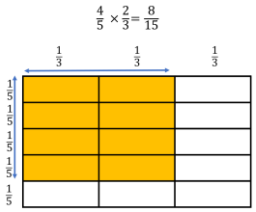
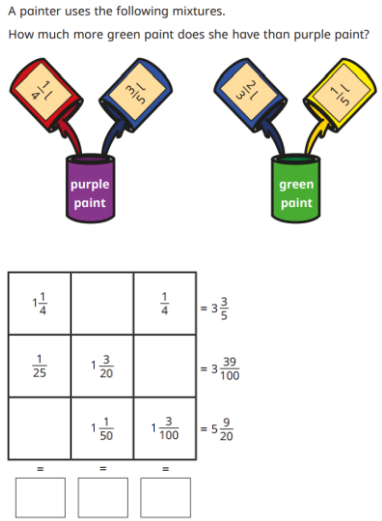
You can use the digit cards more than once each time.

1 2 4 5 9

$\frac{2}{9} < \square < \square < 1$

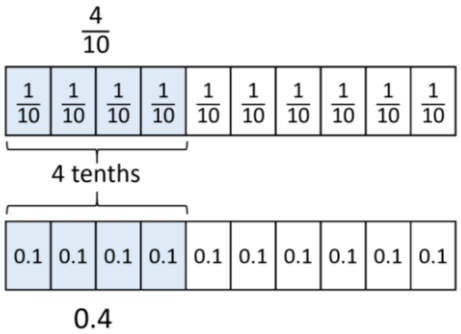
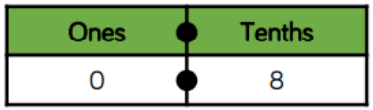
	$\frac{1}{4} < \frac{1}{3}$  $\frac{1}{4}$ is smaller than $\frac{1}{3}$ When the **denominators** are the same, the bigger the **numerator**, the bigger the fraction. The smaller the **numerator**, the smaller the fraction.  $\frac{3}{5} < \frac{4}{5}$ $\frac{6}{7} > \frac{2}{7}$		
Year 4	**Equivalent fractions** can be found by multiplying or dividing both the **numerator** and **denominator** by the same amount  $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}$  $5\frac{6}{7}$ can be partitioned into 5 wholes and $\frac{6}{7}$ **Mixed numbers** are made up of whole numbers and a fraction **Improper fractions** will have a numerator greater than a denominator It can be written as either  $\frac{7}{4}$ $1\frac{3}{4}$	Recognise and show, using diagrams, families of common equivalent fractions Count in fractions beyond 1 Calculate fractions of amounts with non-unit fractions and larger numbers Convert between improper fractions and mixed numbers Add and subtract fractions with the same denominator – the answer may exceed 1 whole $\frac{3}{5} + \frac{4}{5} + \frac{4}{5} = \frac{11}{5} = 2\frac{1}{5}$  Subtract from the whole	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 solve problems involving adding and subtracting fractions, including answers greater than one whole and subtracting from the whole A chocolate bar has been split into 10 equal parts.  Rosie eats $\frac{3}{10}$ of the bar. Dexter eats $\frac{1}{10}$ of the bar more than Rosie. What fraction of the chocolate bar is left?

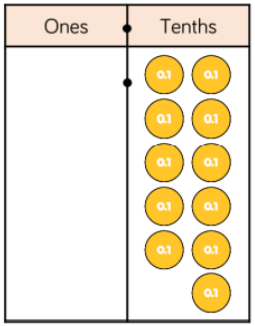
		$\frac{8}{8} - \frac{2}{8} = \frac{6}{8}$  Subtract from a mixed number $2\frac{4}{8} - \frac{7}{8} = 1\frac{5}{8}$ 	
Year 5	To find an **equivalent fraction**, we can multiply the **numerator** and **denominator** by the same number.  $\times 3$ $\frac{3}{5} = \frac{9}{15}$ $\times 3$ To add, subtract, compare and order fractions, the **denominators** must be the same. When the **denominators** are multiples of each other, we can find the **equivalent fraction** $\frac{\boxed{1}}{3} + \frac{\boxed{1}}{9} = \frac{4}{9}$ X 3 $\frac{\boxed{3}}{9} + \frac{\boxed{1}}{9} = \frac{4}{9}$ Multiplying fractions is the same as **repeated addition** e.g. ¾ x 3 is the same as ¾ + ¾ + ¾	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Find a common denominator compare and order fractions whose denominators are all multiples of the same number recognise mixed numbers and improper fractions and convert from one form to the other $5\frac{1}{6} = \frac{31}{6}$  $5 \times \frac{6}{6} = \frac{30}{6}$ $= \frac{1}{6}$ 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	Solve a range of problems involving all procedural knowledge, including two-step problems On Saturday, Alex cycles for $\frac{2}{3}$ of an hour. On Sunday, she cycles for $\frac{5}{12}$ of an hour.  **a)** How many more hours does Alex cycle on Saturday than Sunday?

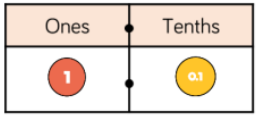
			
Year 6	**Simplifying fractions** means finding an **equivalent fraction** with smaller numbers to make it easier to work with To **simplify**, we divide the **numerator** and **denominator** by the same factor  If a **fraction** cannot be **simplified** any further, it is in its **simplest form** <u>Finding a **common denominator**</u> Fractions are easier to order, compare, add and subtract if they have the same **denominator**. To express fractions in the same **denominator**: • See if one is a multiple of the other • Find the lowest common multiple • Multiply the denominators together Whatever you do to the **denominator**, you must do to the **numerator** to ensure that it is **equivalent** 	use common factors to simplify fractions use common multiples to express fractions in the same denomination 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 [for example, ¼ × ½ = 1/8]  divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]	Solve multi-step and non-straightforward problems involving multiplying, dividing, adding and subtracting fractions – including mixed numbers and different denominators 

Decimals and Percentages

Progression of Knowledge	Children are introduced to decimals in Year 3 once they have a firm understanding of whole numbers in the number system. They start by exploring tenths and relating fractions to decimals. During Year 4, children are introduced to hundredths and gain some depth of understanding regarding the place value of decimals and how to manipulate them to divide by 10 and 100, round, order and compare. They then apply this to decimal notation in Money in Year 4. At the start of Upper Key Stage 2, children are introduced to thousandths and look at ways of calculating using decimals. They start to explore the link between fractions, decimals and percentages which is built upon in Year 6 along with confidence in using all 4 operations with decimals and exploring problem solving and conditional knowledge linked to decimals.

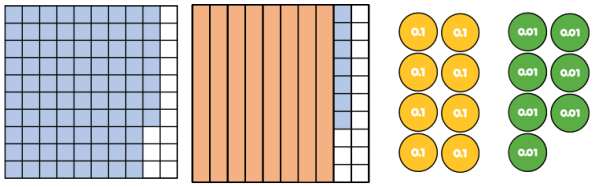
	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
Year 3	**Tenths** arise from dividing one whole into ten equal parts **Tenths** can be written as **fractions** or as **decimals**  Ten tenths = one After the ones column, is a **decimal point** and then the **tenths column**  	Counting up and down in tenths, crossing the decimal point Express tenths as decimals and fractions	
Year 4	Ten **tenths** = one Can be exchanged between columns	Express tenths and hundredths as decimals and fractions	Solve money and measure problems using decimals to 2 decimal places

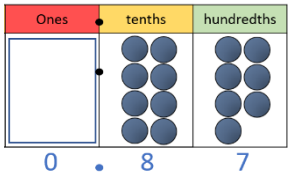




The **tenths** column is ten times smaller than the ones column
When dividing by ten, the number is split into ten equal parts and is ten times smaller so we can move the digits down one column.

Hundredths arise from dividing one whole into one hundred parts
One **tenth** = ten **hundredths**





Hundredths can be written as **tenths** and **hundredths** and using the two place value columns after the **decimal point**.

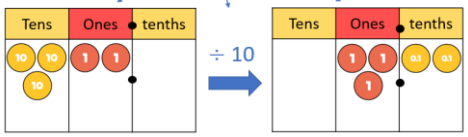
Fraction	Decimal
$\frac{91}{100}$	0.91

Fraction	Decimal
$\frac{9}{100}$	0.09

They can be written as **fractions**.
Parts of one hundred

Dividing one- and two-digit numbers by 10

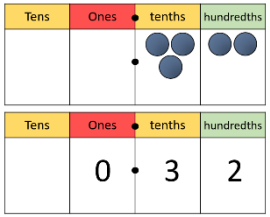
32 ÷ 10 = 3.2



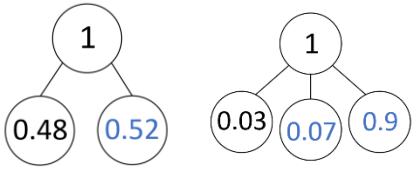
Counting up and down in hundredths

Dividing one- and two-digit numbers by 100

32 ÷ 100 =

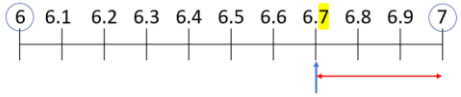


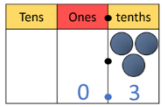
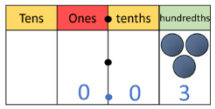
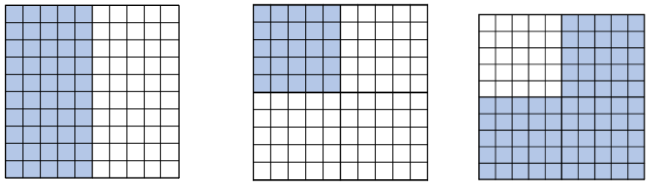
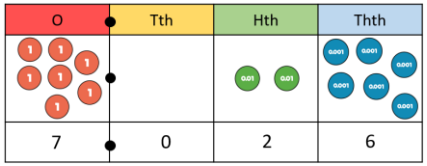
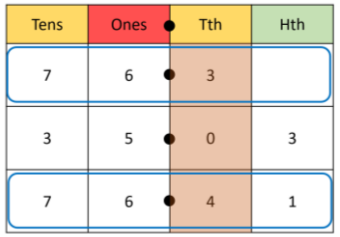
Use bonds to 100 to make one whole using tenths and hundredths

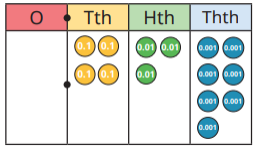


Compare and order numbers with the same number of decimal places (up to hundredths)

Round decimals with one decimal place to the nearest whole numbers



	Dividing by 100 is the same as dividing by ten and then dividing by ten again. Move the digits down 2 place value columns to make a number 100 times smaller 3 ÷ 10 = 0.3  3 ÷ 100 = 0.03  To **round decimals** to the nearest **whole number**, look at the digit in the **tenths** column to decide whether to round up or not. 5,6,7,8,9 – **rounds up** to the next whole number 0,1,2,3,4 – **rounds down** to the whole number before **Halves** and **quarters** can be written as **decimals**  $\frac{1}{2} = \frac{5}{10} = \frac{50}{100} = 0.5$ $\frac{1}{4} = \frac{25}{100} = 0.25$ $\frac{3}{4} = \frac{75}{100} = 0.75$		
Year 5	One **thousandth** = 1 whole split into 1000 parts It is the columns after **hundredths** Ten **thousandths** = 1 **hundredth**  **Thousandths** can be expressed as **fractions** and **decimals**	Order and compare decimals with up to 3 decimal places, including with different decimal places  Round decimals to the nearest whole number	Solve 1 and 2 step problems involving adding and subtracting decimals up to 3 decimal places. Solve problems involving multiplying and dividing by 10, 100 and 1000



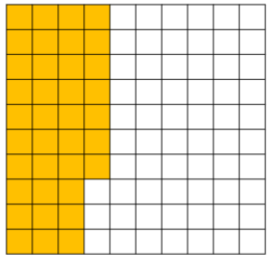
$\frac{83}{1000}$

0.253

Per cent = number of parts per hundred

We use this symbol to represent **percentages %**

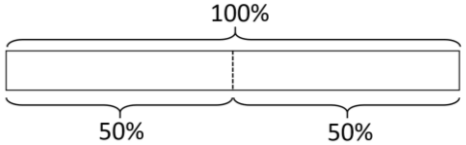
If the whole is split into 100 equal parts, each part is worth 1%

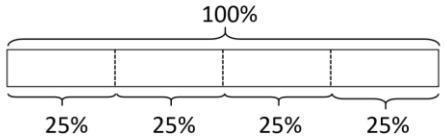


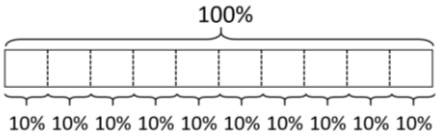
There are 37 parts out of a hundred shaded.
This is 37 %

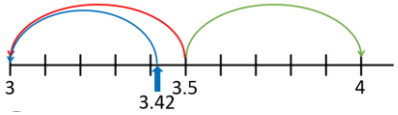
Percentages can be written as fractions with a denominator of 100

We can use some equivalent fractions to see **percentages**

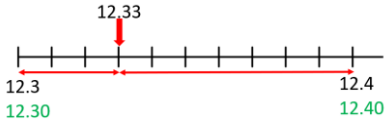








Round decimals to the nearest tenth



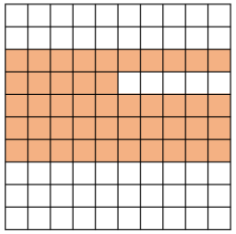
Express percentages as decimals and fractions

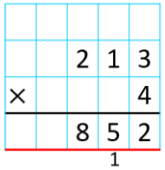
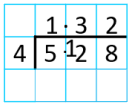
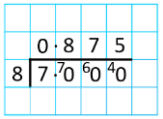
Add and subtract decimals with the same and a different number of decimal places including crossing the whole

	3	2	• 8	
+		1	• 2	7
	3	4	• 0	7
		1		

decimal place value is essential

Multiply and divide decimals by 10, 100 and 1000

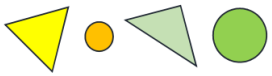
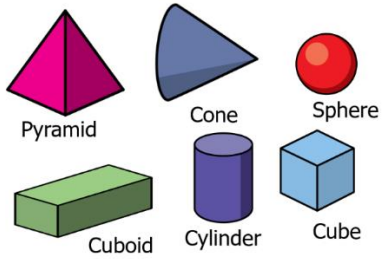
	Percentages can be written as **decimals** – using the **tenths** and **hundredths** column as the **percentage** out of 100. We can represent the same values as **fractions, decimals** and **percentages** – they are all ways of representing part of a whole  45 out of 100 $\frac{45}{100} = 45\% = 0.45$ When calculating with **decimals**, we use the same methods as whole numbers but apply what we know about **decimal place value** $\begin{array}{r\|c\|c\|c\|} & 3 & 2 \bullet 8 & \\ + & & 1 \bullet 2 & 7 \\ \hline & 3 & 4 \bullet 0 & 7 \\ \hline & & 1 & \end{array}$ Empty columns can be filled with a zero as a **place holder** We use decimal place value to **multiply and divide by 10, 100 and 1000** Multiplied by 10 = move one place to the left Multiplied by 100 = move two places to the left Multiplied by 1000 = move 3 places to the left Divided by 10 = move one place to the right Divided by 100 = move two places to the right Divided by 1000 = move three places to the right		
Year 6	**Multiplying decimals** is the same methods as multiplying whole numbers but the place value is different	Calculate all four operations using decimals Express remainders as decimals Express fractions, decimals and percentages as representations of each other	Solve multi-step problems involving adding, subtracting, multiplying and dividing decimals in context Recognising multiplicative and division structures and applying procedural knowledge of decimals

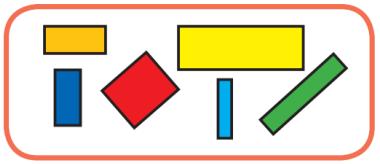
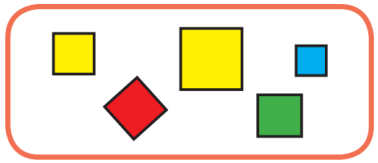
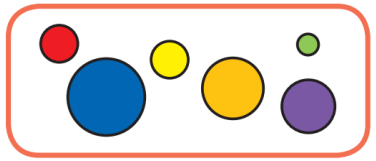
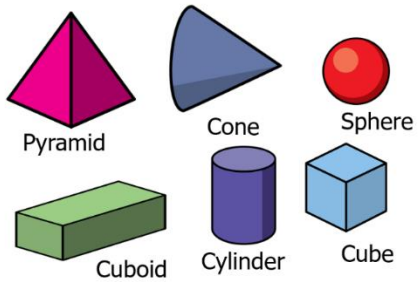
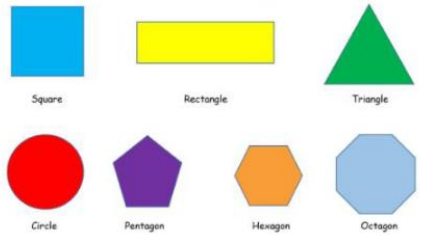
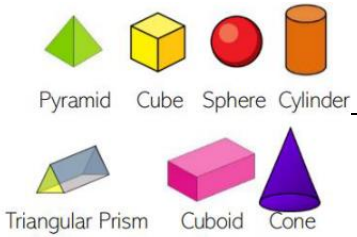
	  However many **decimal places** there are in the number that you are multiplying, there will be that many in the **product**. **Dividing decimals** is the same methods as dividing whole numbers but the place value is different  When dividing, **remainders** can be expressed as decimals by showing empty tenths/ hundredths columns as appropriate  To find a fraction as a **percentage**, we would find an **equivalent fraction** in **hundredths** to find the parts per hundred $\frac{3}{5} \overset{\times 20}{\underset{\times 20}{=}} \frac{60}{100} = 60\ \%$ Equivalent fractions, decimals and percentages Tenths and hundredths using place value, also: Fraction: $\frac{1}{2}$ — Decimal: 0.5 — Percentage: 50% Fraction: $\frac{1}{4}$ $\frac{3}{4}$ — Decimal: 0.25 0.75 — Percentage: 25% 75% Fraction: $\frac{1}{3}$ $\frac{2}{3}$ — Decimal: 0.33 0.66 — Percentage: 33% 66% Fraction: $\frac{1}{5}$ $\frac{2}{5}$ $\frac{3}{5}$ $\frac{4}{5}$ — Decimal: 0.2 0.4 0.6 0.8 — Percentage: 20% 40% 60% 80%	Order fractions, decimals and percentages Find a percentage of an amount	Solve problems involving percentages, including finding the whole Solve multistep problems involving fractions, decimals and percentages

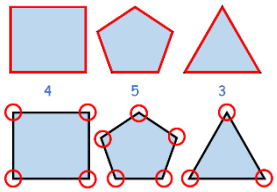
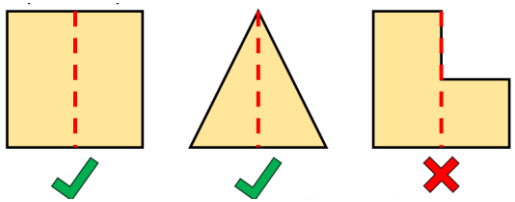
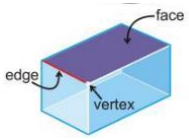
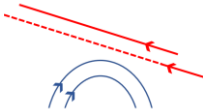
	Percentages of amounts: To find 50%, divide by 2 because 50% = ½ To find 25%, divide by 4 because 25% = ¼ To find 10%, divide by 10 because 10% = $\frac{1}{10}$ To find 1%, divide by 100 because 1% = $\frac{1}{100}$ To find 5%, divide by 10 and then halve it To find any multiple of 10%, find 10% then multiply by that number. $10\% \text{ of } 120 = 12$ $20\% \text{ of } 120 = 24$ To find any multiple of 1%, find 1% then multiply by that number. To find any **percentage**, **partition** it, find the parts and **recombine** it.		

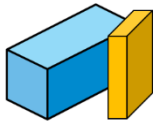
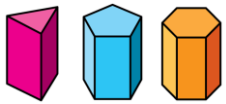
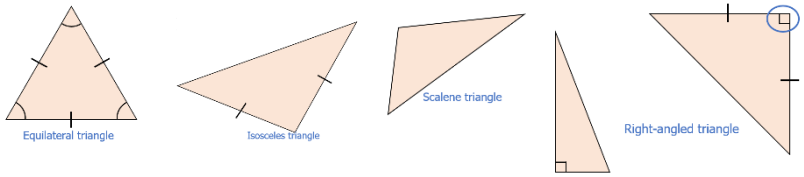
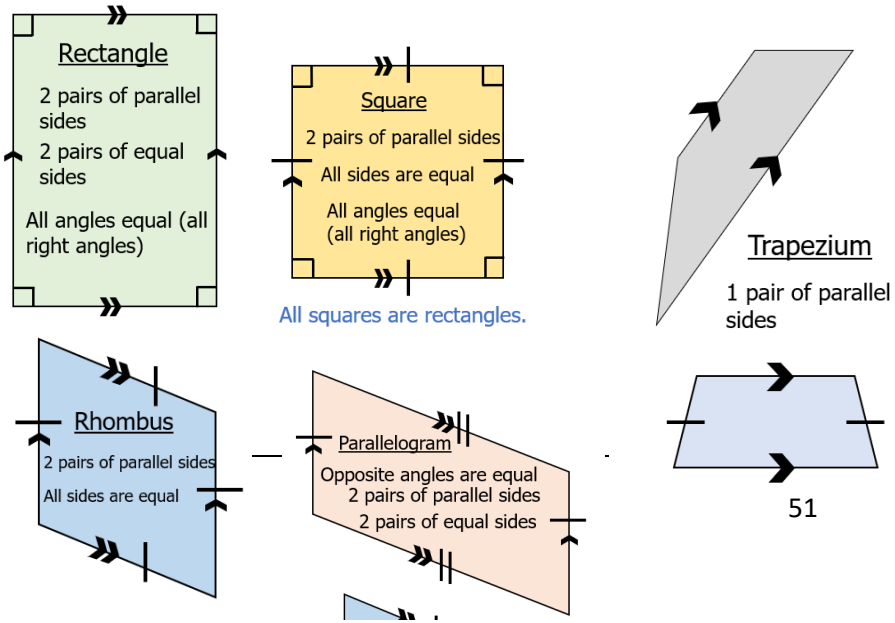
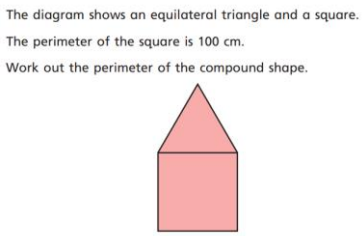
Shape and Pattern

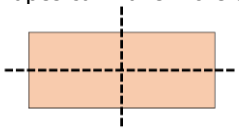
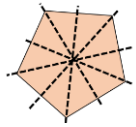
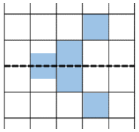
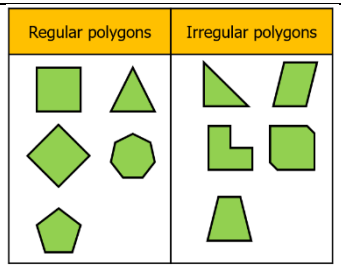
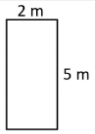
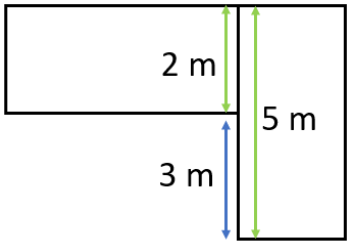
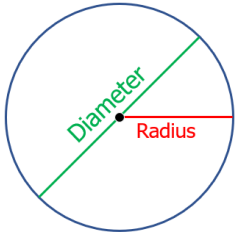
Progression of Knowledge	Shape knowledge features heavily in the Early Years curriculum and pupils enter Year 1 with an awareness of shape names. Throughout KS1 they learn to describe them with accuracy and during KS2, they are exposed to more complicated shapes and learn the procedures of geometry and classification. At all stages, pupils solve problems to apply their knowledge.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
EYFS	**Circles** have one curved side **Triangles** have 3 straight sides  **Squares** and **rectangles** have 4 straight sides and 4 corners  **3D shapes**  **Patterns** can use shapes and colours to **repeat** 	Copy, continue and create their own simple repeating patterns with at least three full units of repeat. AB, ABB, AABB, AAB, AABBB Including a range of shapes, colours and sizes Recall names for 2D shapes Recall some names for 3D shapes Explore which 3D shapes stack and roll	Use what children know to explore situations and challenges e.g we need to build a tower for Rapunzel, which 3D shapes would be best and why? Pose problems to discuss relating to patterns e.g. this repeating pattern is all muddled up, can you help to sort it out?

Year 1	 **Triangles** – 3 sides  **Rectangles**  **Squares** – 4 sides the same  **Circles** 	Recognise, name and sort 2D shapes in different orientations and different sizes Recognise, name and sort 3D shapes Describe and repeat patterns using 2D and 3D shapes	Using knowledge of shapes and descriptions to explore and solve simple problems e.g. my shape rolls what could it be?
Year 2	**2D shapes** are **flat**  **3D shapes** are not flat 	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line	Work out which shape has been described by visualising, including visualising new shapes e.g. I have placed a triangle on top of a square

	We can describe **2D shapes** by: • the number of **sides** • the number of **vertices** (corners) • If they have a **line of symmetry**  A shape is **symmetrical** if both sides of the line are equal – the line is called a **line of symmetry**  We can fold a shape to see if it is **symmetrical** We can describe **3D shapes** by: • the number of **faces** • the number of **vertices** • the number of **edges**  We can see **2D shapes** on the **faces** of **3D shapes**	Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] Compare and sort common 2-D and 3-D shapes and everyday objects. Make patterns with 2D and 3D shapes	to make a new shape, how many vertices does it have? Applying procedural knowledge to consider the odd one out or how a group of shapes have been sorted
Year 3	**Horizontal** line across **Vertical** line down **Parallel** lines – always the same distance apart. They will never meet  **Perpendicular** lines – meet at right angles	Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. Draw 2D shapes Make 3D shapes using modelling materials Recognise 3D shapes in different orientations and describe them	Use knowledge and procedures to sort shapes based on multiple criteria Sort a selection of 3-D shapes using the criteria in the table. At least one triangular face / No triangular faces Prism Not a prism

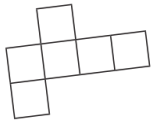
	 Shapes are still the same shape even if in different **orientations**  A **prism** is any 3D shape where the same 2D face is joined by rectangles 		
Year 4	**Triangle** is a 3 sided shape – there are different types **Equilateral** = all 3 sides are equal length and all 3 angles are equal size **Isosceles** = 2 sides have equal length and 2 angles are equal size **Scalene** = no equal sides or angles **Right angled triangle** = one angle is a right angle. Could be scalene or isosceles.  **Quadrilateral** = 2D closed shape with 4 straight sides  	Compare and classify geometric shapes based on their properties and size Identify lines of symmetry in 2D shapes presented in different orientations Complete a simple symmetric figure with respect to a line of symmetry	Solve problems involving applying knowledge and procedures of shapes learnt so far, including applying knowledge from other sequences of learning like measurement e.g. involving properties of triangles and quadrilaterals  The diagram shows an equilateral triangle and a square. The perimeter of the square is 100 cm. Work out the perimeter of the compound shape.

	Shapes can have more than one **line of symmetry**   Patterns can have **lines of symmetry** as long as it is a reflection 		
Year 5	**Polygon** = closed shape made of straight lines **Regular polygon**: • all sides equal in length • all interior angles the same size If this is not the case, it is an **irregular polygon**  **Rectangles** will always have 4 right angles and opposite sides will be equal in length  	Identify 3D shapes from 2D representations Distinguish between regular and irregular polygons	Use knowledge about rectangles to work out missing sides and angles 
Year 6	**Circumference** = measurement around the edge of a circle **Diameter** is twice the **radius** Centre of the circle is called the **origin**  $\text{Radius} = \frac{\text{diameter}}{2}$ $\text{Diameter} = \text{radius} \times 2$ A **net** is a **3D shape** unfolded. From this, we can see the **2D shapes** on each of its **faces**	Compare and classify shapes based on properties and sizes. Calculate the diameter and radius and vice versa, given the other Draw shapes accurately using a ruler and protractor	Solve problems involving all shape knowledge and applying understanding of properties of shapes to find missing lengths, angles and dimensions Solve problems involving nets of 3D shapes and visualising constructions

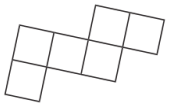
Shape	Name	Net
	Cone	
	Cuboid	
	Cube	
	Triangular prism	
	Cylinder	
	Tetrahedron	
	Square based pyramid	

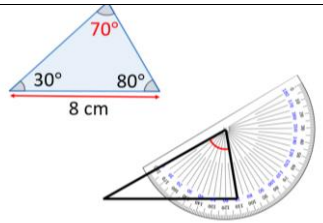
Different **nets** can make the same **3D shapes** if they will fold up

A

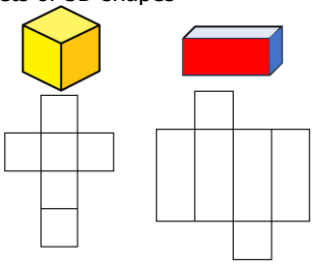


C





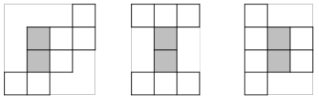
Recognise, describe and draw nets of 3D shapes



Here is an open box.

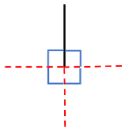
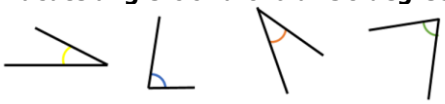
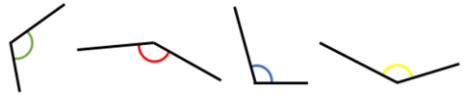
Which of the nets will fold together to make the box?
The grey squares show the base.

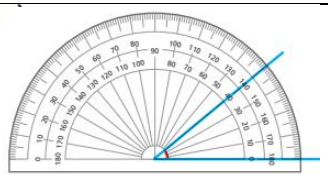
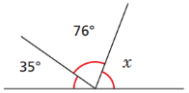
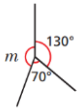
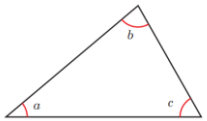
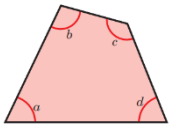
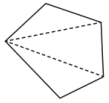
A B C



Angles

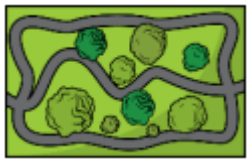
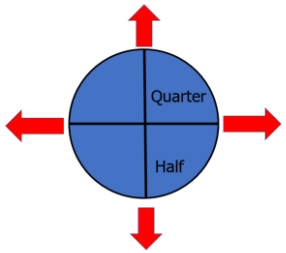
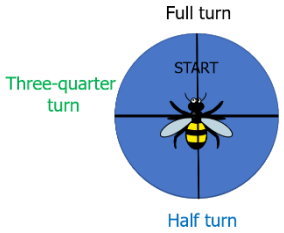
Progression of Knowledge	Children are introduced to the concept of an angle in the Year 3 Maths curriculum. Throughout KS1, children have developed their knowledge of polygons and turns in preparation for introduction to angles in KS2. Children start by learning the concept of an angle and the different types and facts around this area. They learn the procedures for working with angles as they progress throughout KS2. It is only in UKS2 that children start to deploy this into problem solving and familiarise with the conditions where these facts and procedures are useful.

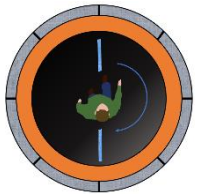
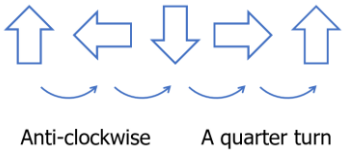
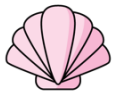
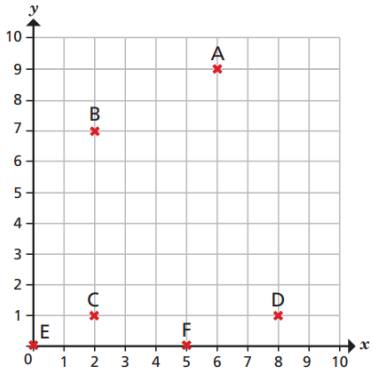
	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
Year 3	An **angle** is where 2 **straight lines** meet A **right angle** is a **quarter turn** There are 2 **right angles** in a half turn There are 3 **right angles** in a 3 quarter turn There are 4 **right angles** in a full turn Angles are measured in **degrees** A **right angle** is **90 degrees** A **straight line** is **180 degrees**  	Identifying right angles, acute and obtuse angles	
Year 4	An **acute angle** is smaller than **90 degrees**  An **obtuse angle** is greater than 90 **degrees** but smaller than 180 **degrees** 	Comparing angles and ordering by size	
Year 5	A **reflex** angle is greater than 180 **degrees** but less than 360 **degrees** A **protractor** (angle measurer) can be used to draw and measure angles	Measuring angles using a protractor Drawing angles using a protractor	Applying facts and procedures to find missing angles on a straight line and around a point.

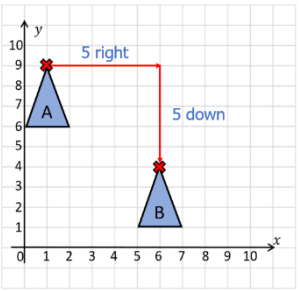
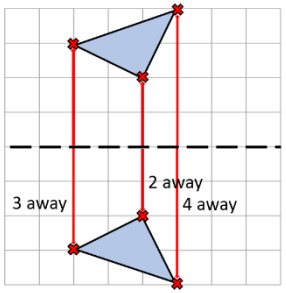
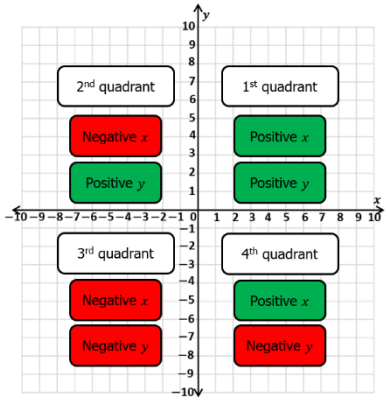
	 **Angles** on a **straight line** will always add up to 180 **degrees**  **Angles** around a **point** will always add up to 360 **degrees**  	Finding missing angles on a straight line and around a point	
Year 6	Where two straight lines cross, the angles opposite each other are called **vertically opposite**. **Vertically opposite angles** will always be equal  **Interior angles** are the angles inside a polygon. Interior angles of a **triangle** will equal **180 degrees** Interior angles of a **quadrilateral** will equal **360 degrees**   To find the sum of interior angles of a polygon, split it into the smallest number of triangles x 180 degrees.	Find missing angles in triangles and quadrilaterals Finding the interior angles of a regular polygon  number of sides = 5 number of triangles = 3 3 × 180 = 540 The sum of the interior angles of a pentagon is 540°	Applying facts and procedures to find missing angles inside quadrilaterals, triangles and regular polygons and solve problems with more than one missing angle.

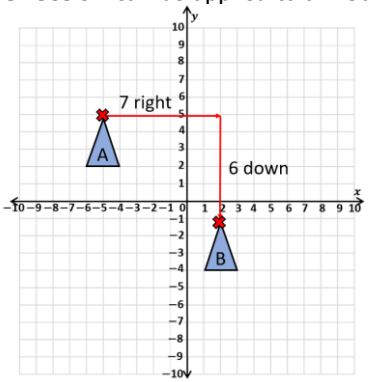
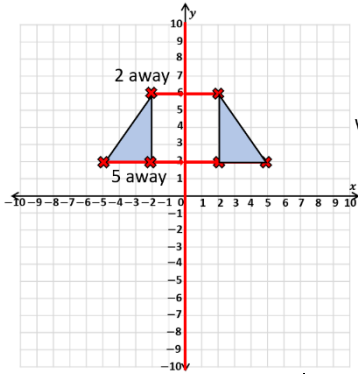
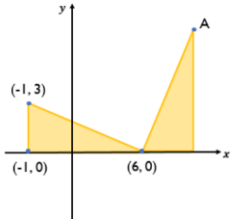
Position and Direction

Progression of Knowledge	This unit of learning comes AFTER the fractions sequence of learning in Year 1 so that children have deep knowledge of the concept of a half and a quarter before applying this to half and quarter-turns. It also comes BEFORE the time sequence of learning in Year 1 as it gives children a deep understanding of quarters and halves as a 360 turn so that they can then see this on a clock face and apply this to half and quarter past. During year 3, no new declarative knowledge is acquired but the ability to consolidate and apply the knowledge from Key Stage 1 is practised alongside linking this to the learning of angles. Throughout the rest of Key Stage 2, pupils start to develop their understanding of coordinates on the first quadrant and translation and reflection before moving to all 4 quadrants in Year 6.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
EYFS	Words can be used to describe where things are: **on, next to, over, under, around, through, above, below** We can use **maps** to show where places are 	Respond to positional language in practical situations e.g. when tidying up, put the blocks next to the beads. Begin to use positional language to describe where things are in relation to each other	
Year 1	A **turn** is to rotate about a point.   **Position** is where something is. **Left, right, above, below** and **in between** can be used to describe position. **Direction** is where something is going. **Left, right, forwards** and **backwards** can be used to describe direction.	Describing positions using mathematical language ribing directions using mathematical uage ribing movement as turns including half, quarter and three-quarter turns	

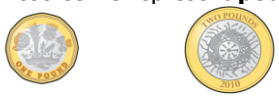
Year 2	Positions on a grid can be described using left, right, up and down. Turns can go in different directions. **Clockwise** is to your right (like the hands of a clock move)  **Anti-clockwise** is to your left	Describing patterns using position and direction language  Continuing patterns that apply the rules Ordering and arranging objects in patterns and sequences	Applying facts and procedures to continue patterns of mathematical objects in a sequence.
Year 3	**Direction** and size of turns can be combined to describe **movements**. Different descriptions of turns can get you to the same **position**.   e.g – the crab turns to face the shell. It could have done.. A quarter turn anti-clockwise OR A three-quarter turn clockwise	Recognising angles as a description of a turn	
Year 4	The **coordinates** going horizontally are the x **coordinates.** The **coordinates** going vertically are the y **coordinates.** **Coordinates** are written (x,y) **Translation** is a movement on a grid  Points and shapes can move combinations of **up, down, left** and **right**. E.g. 4 up, 2 left The shape will not change if being translated, just move.	Efficient and accurate methods for first quadrant grid construction. Plotting points and describing the position as coordinates in the first quadrant. Describing movements between positions as translations of a given unit to the left/right and up/down Plotting points and drawing sides to complete a given polygon.	

Year 5	**Translation** is the **movement** of a shape on a grid. The language **up, down, left** and **right** can describe a translation. When translating a shape, choose just one point.  **Reflection** uses the axis as a **mirror line**. It is like a line of **symmetry**. To reflect a shape, count how many squares away from the mirror line each point is to plot the points. It can be checked using a mirror  **Translation** the shape doesn't change, just moves. **Reflection** the shape will look the opposite of the original.	Identifying whether a movement is a reflection or a translation Describing the position of a shape following a reflection or translation using the appropriate language Representing shapes that have been translated or reflected	
Year 6	A **coordinate grid** has 4 **quadrants** The middle (0) is called the **origin** Negative numbers are used **Coordinates** are still written as (x,y)  	Efficient and accurate methods for coordinate geometry in all 4 quadrants. Describing positions and plotting of coordinate points in all 4 quadrants Translating simple shapes on the coordinate plane Reflecting simple shapes in the axes of the coordinate plane	Applying facts and procedures to find missing coordinate points by labelling the axes and applying other geometrical knowledge. E.g.

	The same knowledge and procedures of **translation** and **reflection** can be applied to all **four quadrants**   		The diagram shows two identical triangles. The coordinates of three points are shown. Find the coordinates of point A. 

Money

Progression of Knowledge	Children are introduced to Money in Year 1 where they learn the core knowledge of the purpose of money and what the coins and notes represent. They are then introduced to the symbols in Year 2 and start to combine amounts of pounds and pence to find totals, but do not cross over the threshold of pence to pounds at this stage. This is learnt in Year 3 where children start to convert money and apply the equivalence of pence to pounds. Knowledge of decimals acquired in Year 4 is applied to this area of Maths where pupils learn to express amounts of money using decimal notion, which they then calculate with in Year 5. There is no new declarative knowledge relating to money covered in Upper Key Stage 2. During this phase, pupils refine their procedural knowledge and develop their conditional knowledge in a range of contexts and drawing upon a range of strategies.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
EYFS	Money is not explicitly taught in EYFS but children will still explore coins within provision to familiarise the concept of money being used to pay for things. Children may count 1p coins but not others as they are still learning to understand the concept of unitising.		
Year 1	**Money** is used to buy and pay for things Money comes in **coins** and **notes –** different ones have different **values** In England, we use **pounds** and **pence** These **coins** represent **pence**:  These **coins** represent **pounds**:  These **notes** represent **pounds**: 	Recognising coins and notes Determining which coins have greater value Using knowledge of counting in ones, fives and tens to count coins	

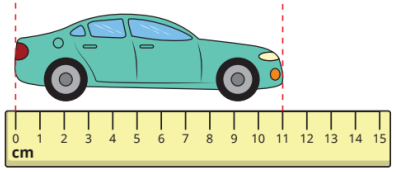
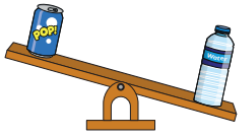
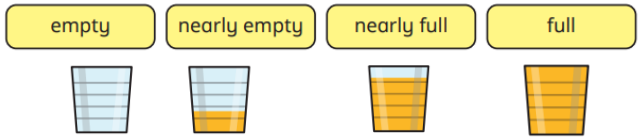
Year 2	Different **coins** can be combined to make a **value** of money **Coins** and **notes** can be combined to make a **value** of money £ = symbol for **pounds** p = symbol for **pence** Combined amounts can be written with both e.g. £2 and 23p  100p = £1 Different combinations of coins can be used to make the same **amount**. **Change** = the amount remaining when you spend some money	Using knowledge of counting in multiples and adding to determine the value of an amount of coins (will not cross over to a pound at this stage but could be combined pounds and pence) Finding different combinations of coins to equal the same amounts of money Calculating giving change by finding the difference	Solving simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. Changing a practical context into a calculation 2 step problems involving adding and subtracting money
Year 3	**Money** can be represented in different ways but still have the same value. 100p = £1 When we cross over 100p, we convert this to £1 This fact can be used to **convert** between pounds and pence e.g 323p = £3 and 23p	Add coin values together to determine the value of an amount of coins crossing over 100p Convert pence to pounds and vice versa When adding amounts together, it is useful to add the pounds first, then add the pence. You can exchange the pence for pounds if needed this way.  Adding 99p is the same as adding £1 then taking away 1p When subtracting amounts of money, you may need to use knowledge of converting and exchange £1 for 100p.	Solving simple problems in a practical context involving addition and subtraction of money of different units, including giving change and requiring conversion of pounds and pence. Changing a practical context into a calculation 2 step problems involving adding and subtracting money
Year 4	Amounts of money can be written using **decimal notation**, with the **pence** after the **decimal point**. e.g. £2 and 35p = £2.35 This means £2 and 35 hundredths of a pound as 100p = £1 We can use **rounding** to **estimate** amounts of money	Compare and order amounts of money, looking at totals that include pence, pounds and pence and decimal notation. Estimate the total of given amounts by rounding.	Solving simple problems in a practical context involving addition and subtraction of money represented in a range of ways, including decimal notation.

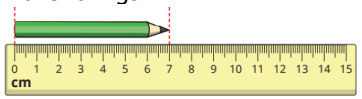
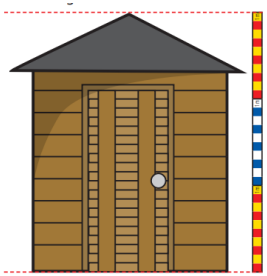
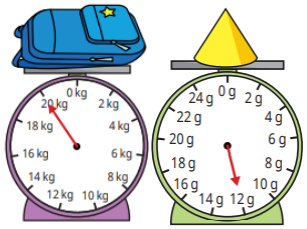
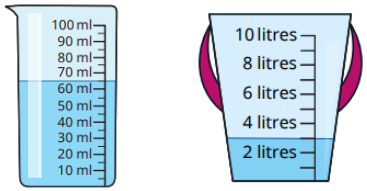
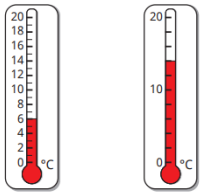
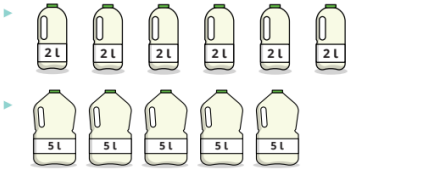
	e.g £4.89 is close to £5 This is helpful when estimating prices to find totals.	Add and subtract amounts of money given in decimal notation (not required to add and subtract decimals at this stage – children will partition and recombine or use a number line)	Changing a practical context into a calculation Multi- step problems involving adding and subtracting money.
Year 5		Add and subtract amounts of money given in decimal notation and using decimal notation in the calculation methods.	Use all four operations to solve problems involving money and using decimal notation. Here are some items for sale in a shop.  **a)** How much more does a scarf cost than a bag of marbles? **b)** Esther has £15.31 She buys a pair of headphones and a bag of marbles. How much money does she have left?
Year 6			Use all 4 operations and multi-step problems involving money and drawing upon other strands of mathematics e.g percentages and fractions It costs a factory £2.32 to produce 8 key rings. The factory sells the key rings in boxes of 5 for £3.20 How much profit do they make on each key ring?

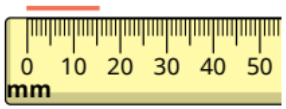
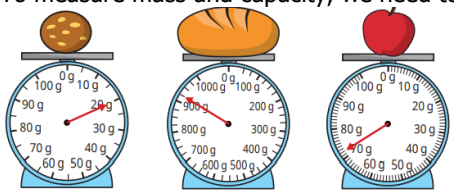
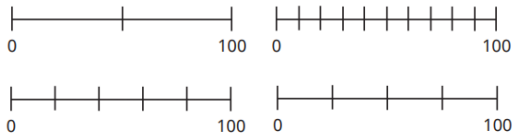
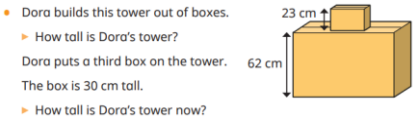
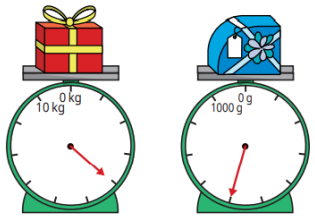
Measurement

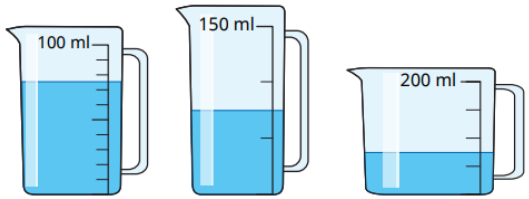
Progression of Knowledge	Measurement is a key area of Early Mathematics where children build the language, vocabulary and understanding in a very practical and hands on approach to prepare them for the Key Stage 1 curriculum. Throughout Key Stage 1 pupils explore length, mass, capacity and volume first by measuring using non-standard units and progressing towards standard units. They will compare and solve problems at all stages. Children start to learn equivalence facts in Year 2 by simply understanding how many centimetres are in a metre and new facts are acquired and explored in each year group including imperial measurements being introduced throughout Upper Key Stage 2. Children start to convert the measures that they know in Year 3 in a simple way and do not explore decimal notation in measures until Year 4 when children are secure with knowledge of decimal place value. Conditional knowledge towards the end of Key Stage 2 is extensive and can involve multi-steps, different operations and conversions as well as calculations.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
EYFS	Objects can be described by size: • **big / little** • **large / small** • **tall / short (height)** • **long / short (length)** • **wide /narrow** Mass can be described by: • **heavy/ heavier/ heaviest** • **light / lighter/ lightest** Smaller objects are not always lighter and bigger objects are not always heavier Capacity can be described by: • **empty** • **full** • **half full** • **nearly full** • **nearly empty**	Compare and order objects by size and mass and describe using mathematical language Sort objects based on their size and mass Use balance scales to explore mass Apply their understanding of language into practical tasks e.g. build a taller tower Explore basic capacity practically e.g. how many scoops of sand will this container hold; how many cups of water will this bucket hold	Solve practical problems applying knowledge of mathematical language with familiar contexts e.g. teddy is packing his suitcase for his holiday and wants to take his lightest toys with him, which should he pack?

		Measure using non-standard units of measure e.g. 3 hands long	
Year 1	**Length** = how long something is To describe length, we would say **longer** or **shorter** **Height** is a type of length usually going up – we would use the language **taller** or **shorter** We can **measure length** using objects (e.g cubes, paperclips) but we must use the same objects We can measure length in **centimetres** using a **ruler**  **Mass** = how heavy or light something is If the scales balance, the mass is **equal** If the balance scale goes lower, it is **heavier** If the balance scale goes higher, it is **lighter**  **Capacity** = amount a container can hold **Volume** = amount of something inside the container  	Measure and begin to record the following: • lengths and heights (non-standard and ruler) • mass/weight (in cubes) • capacity and volume (non-standard- in cups) Compare and describe: • lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] • mass/weight [for example, heavy/light, heavier than, lighter than] • capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]	Solve practical problems for: • lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] • mass/weight [for example, heavy/light, heavier than, lighter than] • capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
Year 2	**<u>Length and height</u>** We can measure in **metres** or **centimetres**	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)	Solve simple contextual problems involving using different measures and applying the calculations that they know Ben has a toy train, a toy plane and a toy car. ▸ The train is 28 cm long. The plane is 16 cm longer. How long is the plane? ▸ The train is double the length of the car. How long is the car?

	Centimetres are smaller than **metres** so we would use them to measure smaller things   **Metres** are bigger than **centimetres** so we would use them to measure bigger things 100 **centimetres** = 1 **metre** **<u>Mass</u>** We can measure mass in **grams** and **kilograms** **Kilograms** are heavier than **grams** and used to measure heavier things. **Grams** are lighter than **kilograms** and used to measure lighter things.  **<u>Volume/capacity</u>** We can measure **volume** in **millilitres** and **litres**  **<u>Temperature</u>** Measures how hot or cold something is. **Temperature** is higher when something is warmer; **temperature** is lower when something is colder. We use a **thermometer** to measure temperature Temperature is measured in **degrees Celsius** and we write this as °C  	Measure 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 =	How much milk is there altogether in each set of cartons? 

Year 3	**<u>Lengths</u>** 100 **centimetres** = 1 **metre** We can measure in **metres** AND **centimetres** e.g. 2m 12cm **Millimetres** are a smaller unit of measurement 10 **millimetres** = 1 **centimetre**  We can measure in **centimetres** AND **millimetres** e.g. 1cm 6mm **Metres** are bigger than **centimetres**; **centimetres** are bigger than **millimetres**. We need to choose the most appropriate **unit of measurement** for what we are measuring **<u>Mass</u>** We measure **mass** in **grams** 1000 **grams** = 1 **kilogram** To measure mass and capacity, we need to be able to read different **scales**  To work out what the scale is going up in, we can do **distance ÷ gaps**  We can measure in **kilograms** and **grams** e.g 2kg 300g **<u>Capacity and Volume</u>** **Capacity** = maximum amount of liquid a container can hold **Volume**= specific amount of liquid in a container We measure **volume** in millilitres	Measure and compare: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) Add and subtract all of the above measures Simple conversions between mm/cm and cm/m (not using decimal notation at this stage) e.g. 134cm = 1m 34cm 34mm = 3cm 4mm	Solve problems involving adding and subtracting measures  What is the total mass of the two presents? 

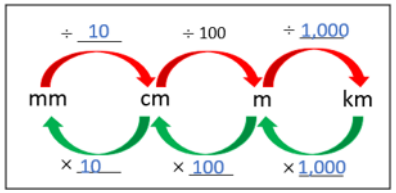
<table>
<tr>
<td></td>
<td> 

1000 millilitres = 1 litre
We can measure in litres and millilitres e.g. 2 litres 200ml

Convert means to swap between units of measurement
e.g. 134cm = 1m 34cm; 34mm = 3cm 4mm; 2300g = 2kg 300g

When comparing, adding and subtracting measures, we should convert them all to the same unit of measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 4</td>
<td>10 millimetres = 1 centimetre
100 centimetres = 1 metre
1000 metres = 1 kilometre

Kilometres are greater than metres and are used to measure greater distances.

To convert from km to m, multiply by 1000
To convert from m to km, divide by 1000

</td>
<td>Convert between different units of measure [for example, kilometre to metre]

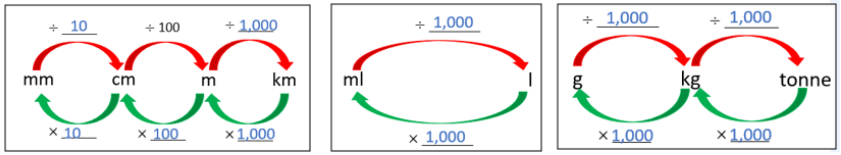
Estimate, compare and calculate different measures</td>
<td>Solve problems involving conversion of different measures
<table>
<tr><th>Pupil</th><th>How far they live from school (km)</th><th>How far they live from school (m)</th></tr>
<tr><td>Dani</td><td>2 km</td><td></td></tr>
<tr><td>Scott</td><td></td><td>7,000 m</td></tr>
<tr><td>Kim</td><td>$\frac{1}{2}$ km</td><td></td></tr>
<tr><td>Nijah</td><td></td><td>2,500 m</td></tr>
<tr><td>Teddy</td><td>$1\frac{3}{4}$ km</td><td></td></tr>
</table>

Solve problems involving application of calculation of different measures

Solve some 2 step problems applying procedures of measurement including recognising measures written in different ways e.g. ¼ of a kilometre</td>
</tr>
<tr>
<td>Year 5</td>
<td><table>
<tr><td>Length</td><td>The measurement of something from end to end</td></tr>
<tr><td>Capacity</td><td>The maximum amount that something can contain</td></tr>
<tr><td>Mass</td><td>The amount of matter that makes up an object or substance</td></tr>
</table>

10 millimetres = 1 centimetre
100 centimetres = 1 metre
1000 metres = 1 kilometre
1000 millilitres = 1 litre</td>
<td>Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and</td>
<td>Solve problems involving the conversions of imperial units of measure
At sports day, the children drink a total of 60 gallons of water.
Each child drinks 3 pints.
How many children are at the sports day?</td>
</tr>
</table>

	1000 **grams** = 1 **kilogram** **Convert** = swap between one unit of measurement to another but the amount or size stays the same. To convert from a smaller **unit of measurement** to a bigger, we divide To convert from a bigger **unit of measurement** to a smaller, we multiply We divide and multiply by the size of the measurement that we are converting **Metric** = system for measures that uses a base 10 **Imperial** = older system for measures – some are still used today • 1 inch ≈ 2.5 cm • 1 foot = 12 inches • 1 pound = 16 ounces • 1 stone = 14 pounds • 1 gallon = 8 pints	millimetre; gram and kilogram; litre and millilitre)	Use all four operations to solve problems involving measure [for example, length, mass, volume] using decimal notation and including scaling. Solve 2 step problems combining calculating and converting measures The depth of a plank is 15 mm. 12 of the planks are stacked on top of each other. What is the depth of the stack of planks? Give your answer in centimetres. 
Year 6	10 **millimetres** = 1 **centimetre** 100 **centimetres** = 1 **metre** 1000 **metres** = 1 **kilometre** 1000 **millilitres** = 1 **litre** 1000 **grams** = 1 **kilogram** 1000 **kilograms** = 1 **tonne** **Convert** = swap between one unit of measurement to another but the amount or size stays the same. To convert from a smaller **unit of measurement** to a bigger, we divide To convert from a bigger **unit of measurement** to a smaller, we multiply We divide and multiply by the size of the measurement that we are converting  5 **miles** is approximately equal to 8 **kilometres** We can use this fact to work out other conversions e.g 5 miles ≈ 8 km 10 miles ≈ 16 km	Convert between standard units, converting measurements of length, mass and volume 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	Solve multi-step problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. Jack wants to find out the mass of his suitcase. Jack weighs 34.5 kg. He steps onto the scales and it shows 47 kg and 200 g. How heavy is his suitcase?  Solve problems drawing upon and applying other strands of mathematics and notating answers accurately where stipulated Solve contextual problems involving the conversion of miles and kilometres Esther cycles 70 miles over 4 days. On day 1, she cycles 14 miles. On day 2, she cycles 32 km. On day 4, she cycles twice as far as she does on day 3 How far does she cycle on day 4? Give units with your answer.

Time

Progression of Knowledge	Children first explore the concept of time in EYFS where they use simple language to describe events and their daily routine. They build upon this and start to learn to tell the throughout Year 1 (to the hour and half past), Year 2 (to the nearest 5 minutes) and Year 3 (to the nearest minute). Children should leave Year 3 secure with telling the time to prepare them for learning about digital and 24-hour clocks in Year 4. There is no new declarative or procedural knowledge introduced throughout Upper Key Stage 2. During this phase, pupils apply their knowledge to solve problems in different ways with flexibility and deep understanding of how to manipulate and convert time. Therefore, it is essential that pupils end Year 4 being fluent and confident telling the time.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
EYFS	**Night time** is when we go to bed and it gets dark **Day time** is when we wake up and it is light **Today** is the day that we are in now **Tomorrow** is the day that will be next **Morning** is when we have just woken up **Afternoon** is after lunch	Order key events in daily routines Use language to describe when events happen – day, night, morning, afternoon, before, after, today, tomorrow, now, next, later Informally measure time e.g. how many jumps can I do before the sand timer runs out or use a calendar to count down how many days until an event	
Year 1	There are 7 **days** in a **week** Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday There are 12 **months** in a **year** January, February, March, April, May, June	Compare and describe time using appropriate language e.g. quicker, slower, earlier, later	

	July | August | September | October | November | December Time can be measured in **seconds, minutes** and **hours** **Seconds** = shortest measurement of time **Minutes** **Hours** = longer measurement of time <u>Telling the time</u> A clock has a longer hand and a shorter hand The shorter hand is the **hour hand**; the longer hand is the **minute hand** When the longer hand is pointing to 12, this is ___ o 'clock **O'clock** means on the hour. The shorter hand shows us the hour At **half past** the hour, the minute hand has travelled half-way around the clock from 12 to 6. The hour hand will be half-way between the hours.	 	Measure and record time in hours, minutes and seconds Sequence events in chronological order using appropriate language e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening Use language relating to dates e.g. days, weeks, months and year Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	
Year 2	60 **minutes** = 1 **hour** 24 hours = 1 **day** <u>Telling the time</u> At **quarter past**, the **minute hand** has travelled a quarter of the way around the clock and is pointing at 3. The **hour hand** will be just past the hour At **quarter to**, the **minute hand** has travelled ¾ of the way around the clock and has only ¼ to go until the next hour. The minute hand will point at 9 and the **hour hand** will be nearly at the next hour. Every number on the clock face represents 5 minutes We can use counting in multiplies of 5 to help us work out the minutes	 	Compare and sequence intervals of time Tell and write time to the nearest 5 minutes, including quarter past/to and draw the hands on a clock face to show these times	Solve simple word problems involving time Aisha and Kim both started their homework at 6 o'clock.  Aisha finished her homework at 25 past 6 Kim's homework took her 10 minutes longer. What time did Kim finish her homework?

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<tr>
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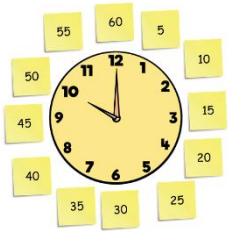
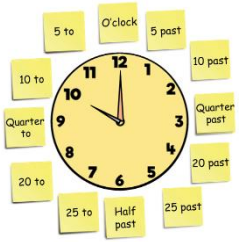
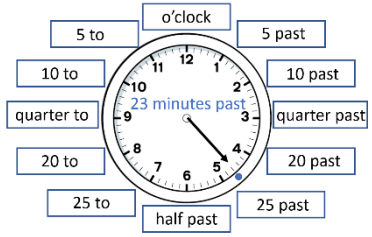
<td>


The second half of the clock is ‘to’ the hour so we would need to count how many minutes (in 5s) ‘to’ the hour this is


</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>
60 seconds = 1 minute

Different months have a different number of days
<table>
<tr><td>January
31</td><td>February
28 (29)</td><td>March
31</td><td>April
30</td><td>May
31</td><td>June
30</td></tr>
<tr><td>July
31</td><td>August
31</td><td>September
30</td><td>October
31</td><td>November
30</td><td>December
31</td></tr>
</table>
365 days = 1 year
366 days (extra day in February) = leap year (every 4 years)

There are 24 hours in a day; there are 12 hours on a clock.
To complete a day, the clock will go around twice.
Once is am; the other is pm
am = morning
12pm = noon
pm = afternoon/evening
12am = midnight

<u>Telling the time to the nearest minute</u>
Use the 5-minute intervals
Count the individual minutes between the 5-minute markers
Consider past and to


Some clocks show the numbers using roman numerals
</td>
<td>
Tell and write the time from an analogue clock (including roman numerals) to the nearest minute

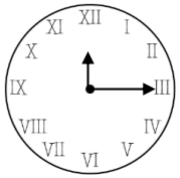
Record time in seconds, minutes and hours

Compare durations of events e.g. the time taken by different tasks
</td>
<td>
Solve simple one-step time problems with familiar contexts

Whitney is baking a cake.
She looks at the clock before she puts the cake into the oven.



The cake needs to be in the oven for 30 minutes.
At what time should she take the cake out of the oven?
</td>
</tr>
</table>

<table>
<tr><td></td><td> 
</td><td></td><td></td></tr>
<tr><td>Year 4</td><td>Time can be displayed in 2 different ways
1. Analogue = clock face 
2. Digital = numbers e.g. hours : minutes 7:55 am
We use the hour and minute hand to help us write time in digital format

In 24 hour clock, am times are the same expect for midnight
<table>
<tr><td>12am</td><td>1am</td><td>2am</td><td>3am</td><td>4am</td><td>5am</td><td>6am</td><td>7am</td><td>8am</td><td>9am</td><td>10am</td><td>11am</td></tr>
<tr><td>0:00</td><td>1:00</td><td>2:00</td><td>3:00</td><td>4:00</td><td>5:00</td><td>6:00</td><td>7:00</td><td>8:00</td><td>9:00</td><td>10:00</td><td>11:00</td></tr>
</table>
To convert pm 12-hour clock times into 24-hour clock, add on 12 hours
<table>
<tr><td>12pm</td><td>1pm</td><td>2pm</td><td>3pm</td><td>4pm</td><td>5pm</td><td>6pm</td><td>7pm</td><td>8pm</td><td>9pm</td><td>10pm</td><td>11pm</td></tr>
<tr><td>12:00</td><td>13:00</td><td>14:00</td><td>15:00</td><td>16:00</td><td>17:00</td><td>18:00</td><td>19:00</td><td>20:00</td><td>21:00</td><td>22:00</td><td>23:00</td></tr>
</table>
When writing time in 24hr clock, you do not need to have am/pm on the end as it is obvious which one you are referring to.</td><td>Read, write and convert time between analogue and digital

Understand digital time written in 24-hour clocks

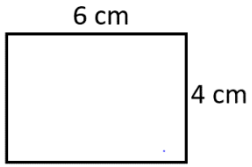
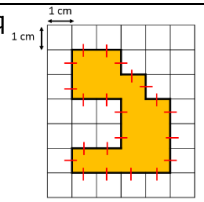
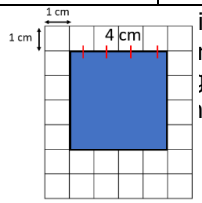
Convert units of time e.g. hour to minute</td><td>Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days</td></tr>
<tr><td>Year 5</td><td></td><td></td><td rowspan="2">Solve problems involving converting between all units of time

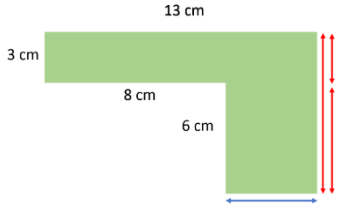
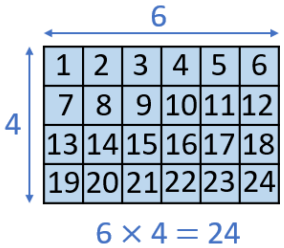
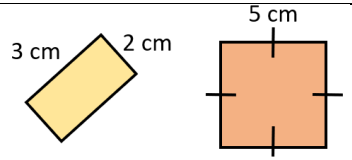
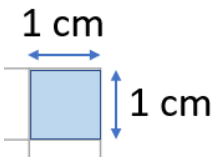
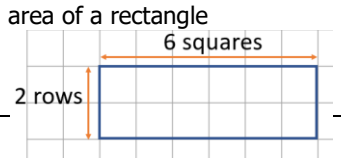
Solve problems involving applying knowledge of time to interpreting timetables

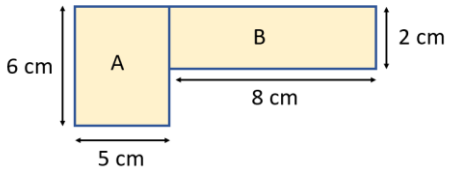
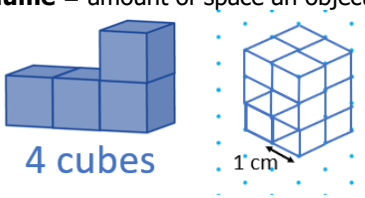
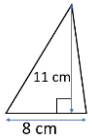
Solve problems involving adding and subtracting time, including calculating durations, and understanding the methods that are useful</td></tr>
<tr><td>Year 6</td><td></td><td></td></tr>
</table>

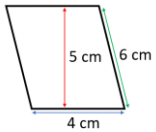
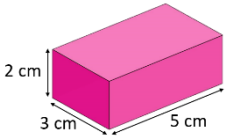
Area, Perimeter and Volume

Progression of Knowledge	Children are introduced to the concept of perimeter in Year 3 once they have secure knowledge of 2D shapes and different lengths from KS1 Geometry and Measurement sequences of learning. In Year 4, this progresses to the perimeter of rectilinear shapes and once secure with perimeter, children move onto being introduced to the concept of area. This is firstly introduced in Year 4 as counting squares and links to knowledge of arrays and multiplication. It progresses towards a formula for different shapes throughout Upper Key Stage 2. Children explore the difference between perimeter and area in depth by Year 6. Children are first introduced to volume in Upper Key Stage 2 once they have a firm understanding of perimeter and area. It is explored as 1cm³ blocks first in Year 5 to build concrete understanding before progressing to using a formulae for calculating volume in year 6. The link between area and volume is made explicit.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
Year 3	**Perimeter** = total **length** around the edge of a 2D shape **Length** can be measured in mm, cm, m etc and so can **perimeter**.  **Measure** the sides – using a ruler Add them all up to find **total length** Use knowledge of shapes to help: • All sides on a square will be equal length • Opposite sides of a rectangle will be equal 	Measuring perimeter Calculating perimeter Finding the most efficient strategy for adding multiple values together e.g. use of doubles and number bonds.	
Year 4	**Perimeter** on a grid – can count the sq Only around the outside Apply knowledge of shapes to help  	ing efficient methods to calculate the rimeter ı length + width x 2 for a rectangle ıgth x 4 for a square	Knowing the perimeter of a rectangle or square can be used to work out missing sides.

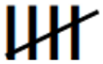
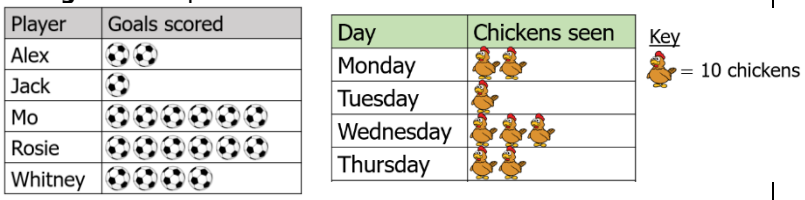
	Rectilinear shape = a shape with straight sides and all sides meeting at right angles Add together the lengths of the sides to find the **perimeter**  Missing lengths can be found by using the sum of the parallel sides **Area** = the amount of space taken up by a 2D shape Find the area by **counting squares**  	 Measuring and calculating the perimeter of composite rectilinear shapes Finding the area of rectilinear shapes by counting squares Finding missing lengths on rectilinear shapes	
Year 5	We can apply knowledge of properties of shapes to help us work out missing sides to calculate the **perimeter**: • Equilateral triangles – all sides same length • Isosceles triangles – 2 sides same length • Parallelogram – opposite sides equal length **Area** is measured in **centimetres squared**  1cm x 1cm 1cm squared 1cm² To save counting the squares, we can do **length x width** to find the area of a rectangle  	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres – including finding missing lengths Calculate the area of rectangles Estimate the area of irregular shapes Estimate volume	Solve problems where the area or perimeter is known and the other needs calculating (vice versa) Know and identify the conditions and contexts where area and perimeter would be useful – apply procedural knowledge to problem solve

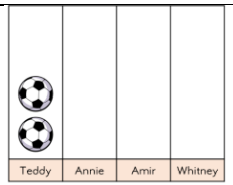
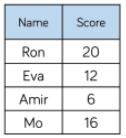
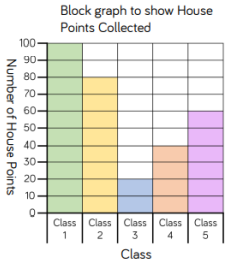
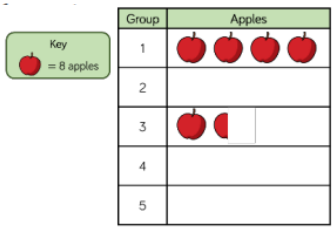
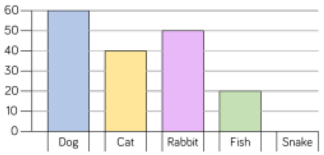
	Area of a **compound shape**: • split into rectangles • find the area (l x w) • add back together • apply knowledge of finding missing lengths if needed  **Volume** = amount of space an object takes up  Measured in **centimetres cubed** cm^3		
Year 6	**Perimeter** = add up all the sides **Area** of a rectangle = **length x width** Shapes with the same **areas** can have different **perimeters** Shapes with the same **perimeters** can have different **areas** **Area** of a **triangle** = base x height x ½  **Area** of a **parallelogram** = base x perpendicular height	Recognise when it is possible to use formula for area and volume of shapes Calculate the area of parallelograms and triangles Calculate the volume of cubes and cuboids	Solve multi-step problems involving application of all procedural and declarative knowledge relating to this area.

	 **Volume** of a **cuboid** = length x width x height 		

Statistics

Progression of Knowledge	Children first explore statistics in Year 2 where they look at basic tally charts, pictograms and block diagrams. Pupils explore the contexts and purpose of gathering data. This is developed in Year 3 where they build upon knowledge of pictograms, explore bar charts and spend more time eliciting and solving problems with information from these. In Year 4 and 5, children explore line graphs, bar charts and timetables and start to understand the differences between discrete and continuous data and the decisions that mathematicians make when representing data – such as which graph and which scale is most appropriate. In Year 6, children explore pie charts and apply knowledge of angles to help construct these.

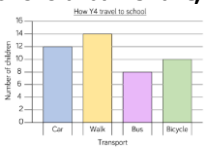
	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
Year 2	**Tally charts** are used to count and **record data** One stick represents 1 We do the 5th stick across  We can then count the total easily by counting in 5s and 1s **Pictograms** use pictures to show **data**  Pictures can represent more than one – there will be a **key** to show Count in that number to find the total **Pictograms** can be set out horizontally and vertically	Counting and sorting categories by quantity Constructing tally charts, pictograms, block diagrams and tables. Interpreting tally charts, pictograms, block diagrams and tables. (pictograms within 2s, 5s and 10s)	Use knowledge and procedures to total and compare data

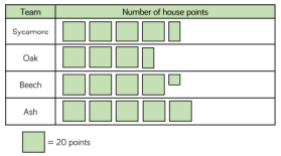
	   **Tables** show data with numbers **Block diagrams** show data using blocks We can use what we know about number lines to help with the **scale** The **scale** could go up in different jumps but will always be the same jump e.g. 1s, 2s, 5s, 10s How tall the blocks are shows the number that it represents 		
Year 3	The **key** on a **pictogram** may show **halves** and **quarters** of the number  **Bar charts** show information in bars The bars will not touch **Scales** will go up in the same jumps We can use the **bars** to see the **information** such as **most popular** and **least popular** 	Interpret and present data using bar charts, pictograms and tables (pictograms to go beyond 2s,5s and 10s) Use pictograms, tables and tally charts to construct bar charts	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.

<table>
<tr>
<td>Year 4</td>
<td>

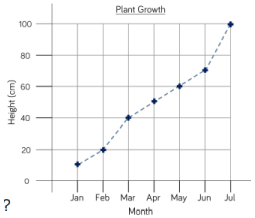
Discrete data = shows stand alone data or information at a point in time e.g. favourite colours
The best way to show this is a **bar chart, pictogram** or **table**

<table>
<tr><th>Activity</th><th>Number of votes</th></tr>
<tr><td>Bowling</td><td>9</td></tr>
<tr><td>Cinema</td><td>10</td></tr>
<tr><td>Swimming</td><td>7</td></tr>
<tr><td>Ice-skating</td><td>14</td></tr>
</table>





Continuous data = shows data over time
The best way to show this is a **time graph** (**line graph**)



A measurement of time will usually go along the **x axis**

What is being measured will go along the **y axis**

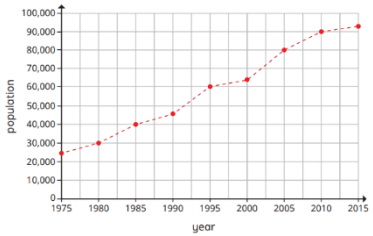
We can use this to see find information about one variable based on the other.

?

</td>
<td>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.

Decide which scale will be most appropriate when representing a set of data</td>
<td>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</td>
</tr>
<tr>
<td>Year 5</td>
<td>

Line graphs can be used to show data other than related to time – such as **conversion graphs**



Line graphs can be used to find out information about one point based on the other.

Tables show data and information in categories – we can use this to retrieve information and use it to compare.

<table>
<tr><th>Planet</th><th>Time for revolution</th><th>Diameter (km)</th><th>Time for rotation</th></tr>
<tr><td>Mercury</td><td>88 days</td><td>4,878</td><td>59 days</td></tr>
<tr><td>Venus</td><td>225 days</td><td>12,104</td><td>116 days</td></tr>
<tr><td>Earth</td><td>365 days</td><td>12,756</td><td>24 hours</td></tr>
<tr><td>Mars</td><td>687 days</td><td>6,794</td><td>25 hours</td></tr>
</table>

</td>
<td>Interpret and construct line graphs – finding the difference between 2 points, the amount of time spent above/below certain points and make inferences based on the information presented.

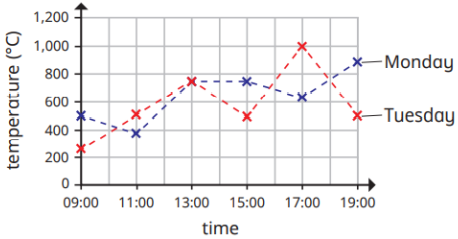
Complete, read and interpret information presented in tables.</td>
<td>Solve comparison, sum and difference problems using information presented in line graphs, tables and timetables</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td>
Two-way tables show more than one piece of information about each variable and show totals

<table>
<tr><th></th><th>No glasses</th><th>Glasses</th><th>Total</th></tr>
<tr><td>Constable</td><td>55</td><td>24</td><td>79</td></tr>
<tr><td>Sergeant</td><td>8</td><td>5</td><td>13</td></tr>
<tr><td>Inspector</td><td>2</td><td>4</td><td>6</td></tr>
<tr><td>Chief Inspector</td><td>1</td><td>1</td><td>2</td></tr>
<tr><td>Total</td><td>66</td><td>34</td><td>100</td></tr>
</table>

Timetables show information related to timings in a table

<table>
<tr><td>Bus terminal</td><td>09:32</td><td>10:02</td><td>10:22</td><td>10:32</td></tr>
<tr><td>Shopping centre</td><td>09:41</td><td>10:11</td><td>10:31</td><td>10:41</td></tr>
<tr><td>Football stadium</td><td>09:59</td><td>10:29</td><td>10:49</td><td>10:59</td></tr>
<tr><td>University campus</td><td>10:13</td><td>10:43</td><td>11:03</td><td>11:13</td></tr>
<tr><td>Library</td><td>10:16</td><td>10:46</td><td>11:06</td><td>11:16</td></tr>
<tr><td>Cinema</td><td>10:21</td><td>10:51</td><td>11:11</td><td>11:21</td></tr>
<tr><td>Museum</td><td>10:28</td><td>10:58</td><td>11:18</td><td>11:28</td></tr>
</table>
</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 6</td>
<td>
Line graphs can show data with more than one line on the same graph. This can be useful to compare



Pie charts show the proportion of data represented in a circle

The larger the section, the larger the data that it represents
Halves and quarters are easily identifiable on a circle
Percentages can be used to help
The total that the pie chart represents is essential information

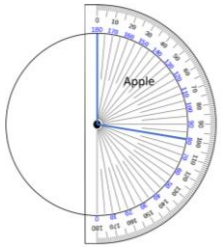
When drawing a pie chart, 360° represents 100% of the pie chart

Mean = average of a set of numbers
Mean = total of data set ÷ number of items
</td>
<td>
Interpret and construct line graphs

Interpret and construct pie charts:
Convert data into proportions of 360°

<table>
<tr><th>Fruit</th><th>Number of children</th><th>Number of degrees</th></tr>
<tr><td>Apple</td><td>10</td><td>10 × 10 = 100°</td></tr>
<tr><td>Banana</td><td>5</td><td>5 × 10 = 50°</td></tr>
<tr><td>Grapes</td><td>3</td><td>3 × 10 = 30°</td></tr>
<tr><td>Orange</td><td>18</td><td>18 × 10 = 180°</td></tr>
<tr><td>Total</td><td>36</td><td>36 × 10 = 360°</td></tr>
</table>

Use a protractor to represent proportions of data



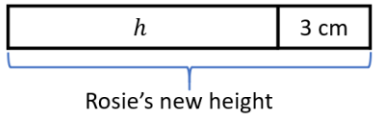
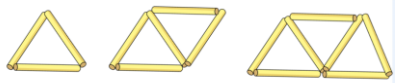
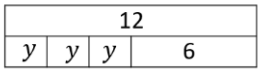
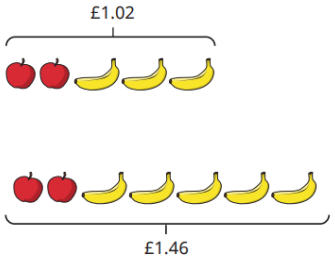
Calculate the mean as an average
</td>
<td>
Can solve problems using line graphs including ones with multiple sets of data, trends and ones applying other areas of Mathematics e.g. negative numbers

Can apply knowledge of angles, fractions and percentages to interpret pie charts and solve problems involving data represented in a pie chart.

Know the conditions in which it is appropriate to find the mean of a data set.
</td>
</tr>
</table>

Algebra

Progression of Knowledge	The concept of Algebra and the knowledge associated to it is only introduced in Year 6 once children are fully secure with the number system and how it operates. They will build upon knowledge from other year groups of using operations and their inverses to find missing numbers.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
Year 6	**Algebra** uses letters to represent numbers **Expression** = way of writing something algebraically. The letter can have different values e.g. h + 3 Algebra notation: • To add or subtract use + and – e.g. s + 2, 6 – t • 3t = 3 multiplied by t = t + t + t • $\frac{n}{3}$ = n divided by 3 These can be combined to form longer **expressions** with more than one step e.g. 3a + 1 We can find the value of an **expression** by **substitution**. We can substitute numbers in the place of letters. e.g. 3a + 1 3 multiplied by a then add 1 If a = 4, 3 multiplied by 4 is 12, then add 1 = 13 A **formula** is a rule or relationship that uses letters to represent amounts which can be changed. **Equation** = like an expression but has an equals sign. The letter has a value to be found. **Expression** $x + 5$ Different values depending on the value of x **Equation** $x + 5 = 11$ x is a specific unknown value	Form simple expressions  $h + 3$ Substitute a value into an expression Use simple formula and find the nth term  Number triangles (t): 1, 2, 3, 4, 20 Number of straws (s): 3, 5, 7, 9 Form equations by expressing missing number problems algebraically Solve one-step and two-step equations $12 = 3y + 6$  	Solve problems with 2 unknown values, but where more than one piece of information is given, so that there is only one solution. Two apples and three bananas cost £1.02 Two apples and five bananas cost £1.46  What is the total cost of one apple and one banana?

<table>
<tr>
<td></td>
<td>
Inverse operations are used to help solve equations.
c + 5 = 12
12 – 5 = c

2-step equations require 2 steps of the inverse – first isolate the letter
2a + 5 = 13
13 – 5 = 2a
8 = 2a
8 ÷ 2 = a

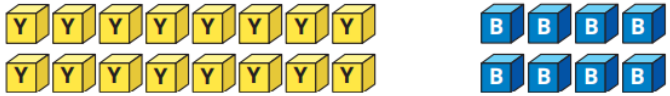
Equations may have 2 unknown values e.g 2b + c = 7
We can work systematically to find all possible values
e.g if b = 1, c = 5
if b = 2, c = 3
if b = 3, c = 1
We cannot know the exact values as we don't have enough information
</td>
<td>
Find pairs of numbers that satisfy an equation with two unknowns

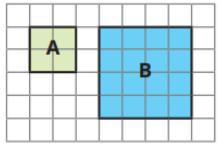
Enumerate possibilities of combinations of 2 variables

$3a + 2b = 20$ $x + y = 5$
<table>
<tr><th>x</th><th>y</th><th>$x + y$</th></tr>
<tr><td>0</td><td>5</td><td>5</td></tr>
<tr><td></td><td></td><td>5</td></tr>
<tr><td></td><td></td><td>5</td></tr>
</table>
</td>
<td></td>
</tr>
</table>

Ratio

Progression of Knowledge	Children first experience simple problems relating to correspondence and scaling in years 4 and 5 linked to multiplication. Explicit ratio knowledge is only introduced in Year 6 once pupils have a firm understanding of the number system. Starting with exploring objects being linked to each other, children are then introduced to the language and notation before recognising contexts in which this information is useful.

	Declarative knowledge 'I know that…'	Procedural knowledge 'I know how…'	Conditional knowledge 'I know when…'
Year 6	**Ratio** represents a **multiplicative relationship** between two amounts. One value is related to another e.g. for every 2 red counters, there are 3 blue counters this would be written as a **ratio** using the **symbol :** The ratio of red to blue red : blue 2:3 **Ratios** can be **simplified** – like fractions  Yellow : Blue 16 : 8 2: 1 **Ratios** can represent more than 2 values The bar model shows the ratio 2:3:4  When you multiply or divide one amount, you do the same to the other in the ratio **Scale diagrams** show something drawn **not to size** but **in proportion**	Write relationships using ratio notation and simplify ratios Use multiplication and division facts to work out simple rations Find a scale factor of a drawing Enlarge or reduce a shape by a given scale factor	Solve a variety of problems using ratio: • Finding missing values using multiplication and division facts • Where the ratio is given and one value is known • Where the ratio is given and the total is known • Where something is scaled up or down e.g. one-tenth the size • Where proportions are used e.g. this recipe feeds 3 but we are cooking for 12 • Where shapes are similar • Where scale factors are used

	Scale factor is the factor that something has been **enlarged** or **reduced** by  To find a **scale factor**, we can use the **dimensions** and work out what it has been **multiplied** or **divided** by All sides will be **enlarged/reduced** by the same **scale factor** – they will be **in proportion** Angles will not change		

Mathematics – Knowledge progression

FS1 Long Term Plan 2021 – 2022 Maths

	Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
General Themes	My Favourite Colours		Special Times & Nursery Rhymes		Traditional Tales		The Wonder of Water!		Ready, Steady, Grow!		Creepy Crawly!	
Key Vocabulary	Colour Sort Same Different	Big Small Count Match	Bigger Biggest Smaller smallest	More Less None Zero	Number Shape name Sides Edges	Curve Straight Subitise	Number Shape name Sides Edges	Curve Straight Subitise	Order More Fewer Part	Numeral Amount Total	First, next, then etc Long, tall, short	Light/Heavy Capacity words Positional language
Number **Numerical Patterns**	**Number Songs /Colours /Matching/ Sorting** Children will: Recognise, name, match & sort by colour. • Sort by other attributes e.g. size • Rote count through songs & rhymes • Develop everyday maths vocabulary		**Number 1/ Number 2** • Rote counting to 10 • Develop 1-1 correspondence to 5 – Giant's footsteps! Number 1 • 'One Wonderful Me!' • 2D shape – Circles • 'Circle' – Mac Bennett • Use numeral & formation rhyme for 1 • One or lots? Number 2 • One & another one… • Identify 2D shape – semi-circle Classifying – circle/semi-circle • Subitise 1 & 2 • Use numeral & formation rhyme for 2 • Make pairs • Creating patterns		**Number 3/Number 4/** Number 3 • Recognise 2D shape – triangle • Use positional language – build with shape • Subitise 1, 2 & 3 Number 4 • Find 4 objects & on no line • Subitise 1, 2, 3 & 4 • Represent 4 on 5 frame, on fingers etc • Recognize 2D shape – Squares and rectangles • Use numeral & formation rhymes to 4 • Make pattern with shape & numerals • Understand composition 4		**Number 5/1 more & 1 fewer** • Order numerals 1 – 5 • Find 5 objects & position on number line, • Represent 5 on 5 frame • Recognise 2D shape – stars & Pentagons • Use numeral & formation rhyme to 5 • Order numerals 1 – 5 • Represent 5 - marks, pictures, fingers • Match numerals & quantities • Understand the composition of 5 • Explore 1 more than/1 fewer than		**Comparing amounts, sizes, capacity/ pattern** Children will: • Use & extend the language of size • One-one principles, stable-order principle, cardinal principle, abstraction principle, order-irrelevance principle • Compare amount of objects • 2D shapes • 2D shapes		**My Day /Capacity/ Positional Language** Children will: • Order daily events • Understand and apply Long Short Tall • Understand and apply Light and heavy - comparing • Understand and apply Full/half-full/empty and comparing • Use language relating to position and direction	
	End of Nursery Goals: •Children are able to subitise to 3. •Children are able to name & recognise some numbers up to 5. •Children are able to represent numbers 0-5 in various different ways. •Children are to know & be able to discuss properties of some 2D & 3D shape using informal language. •Children are able to use specific shape for purpose (use triangle for roof). Children are able to copy & continue a simple ABAB pattern.											

FS2 Long Term Plan 2021 – 2022
Maths

	Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
General Themes	Me and My Family		Seasons, Animals & Habitats		People Who Help Us		Living Things & Plants		Let's explore our neighbourhood		Under the Sea (Materials etc)	
Key Vocabulary	Count Time Days of the week	Fewer/fewest smaller/smallest	Recognise Compare Represent Compose	Positional language – in/in front of, behind, side, under	Recognise Compare Represent Compose	Pattern subitise	Recognise Compare Represent Compose	2D/ 3D shapes Height/length Order Number bonds	Recognise Bigger /smaller	Shape numbers bonds	Odd/ even measure	Amount Total Combine Add takeaway
Number **Numerical Patterns**	Children will know: • And can talk about passage of time through days of the week & months of the year. • Children can follow AB ABB patterns. • Children can orally count past 10. • How to sort objects into different groups • How to match objects that are the same as another. • How to compare amounts into using smaller/smallest/ fewer/fewest		Children will know: • How to identify numbers 1 2,3,4 and 5. • How to represent numbers 1 2 3 4 and 5 • How to compare numbers 1 2 3 4 and 5 • How to compose numbers 1 2 3 4 and 5 • How to use some positional language to describe the position of an object. • How to recognise triangles and circles in different shapes and pictures. • Children are able to recognise some numbers 0-10.		Children will know: • How to recognise numbers 4 and 5 • How to compare numbers 4 and 5 • How to represent numbers 4 and 5 • How to compose numbers 4 and 5 • Children can create & follow AB ABB patterns & be able to spot the rule. • Children can orally count to 20 Children can use units when measuring & comparing (weight, length capacity). Children can subitise to 5.		Children will know: • How to recognise numbers 6 7 8 and 9 • How to represent numbers 6 7 8 and 9 • How to compare numbers 6 7 8 and 9 • How to compose numbers 6 7 8 and 9 • How to combine 2 groups together. • How to compare objects for height and length using mathematical language. • How to order 2 objects for height and length using mathematical language • Children can describe properties of 2D and 3D shapes using mathematical language. • Number bonds to 10.		Children will know: • How to recognise numbers to 20. • Recognise patterns in numbers beyond 10. . • Be able to name & recognise a range of numbers up to 10 & represent these numbers in various different ways. • number bonds to 10 • How two add groups together. • How to take away a smaller another from a bigger number to 10. • Children are developing an awareness of shape, recognising shapes within shapes.		Children will know: • How to double a number to 10. • How to share an equal amount between two or more groups. • children can use mathematical language when comparing & measuring practically. • How to spot & discuss simple number patterns such as odd & even numbers. • Children are using units to measure & compare.	
	Early Learning Goals: •Have a deep understanding of number to 10, including the composition of each number. •Subitise (recognise quantities without counting) up to 5. •Automatically recall (without reference to rhymes, counting or other aids). Number bonds up to 5 (including subtraction facts) & some number bonds to 10, including doubles •Verbally count beyond 20, recognising the pattern of the counting system. •Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. •Explore & represent patterns within numbers up to 10, including evens & odds, double facts & how quantities can be distributed equally.											

Mathematics – Arithmetic progression

Foundation stage 2:

I can count to 20 verbally from 0.
I can count back from 20 to 0.
I can count on or back from 0 to 20 starting from different points.
I can touch count starting verbally from 0 total amounts of objects to 10.
I can touch count starting verbally from 0 total amounts of objects to 20.
I can recognise digits to 10 in and out of order (rapid recall).
I can recognise digits to 20 in and out of order (rapid recall).
I can link a numeral to a cardinal number (amount) for each digit 0 – 3.
I can link a numeral to a cardinal number (amount) for each digit 3-5.
I can link a numeral to a cardinal number (amount) for each digit 5 - 10.
I can show number fingers to 3.
I can show number fingers to 5.
I can show number fingers to 10.
I can subitise to 3 WITHOUT counting.
I can subitise to 5 WITHOUT counting.
I can subitise to 10 WITHOUT counting.
I can write digits to 0-3.
I can write digits to 3-5.
I can write digits to 5-10.
I can write digits to 10 – 13 naming them correctly.
I can write digits to 13 – 15 naming them correctly.
I can write digits to 15 – 20 naming them correctly.
I can compare numbers and amounts using greater than, less than, equal to.
I can recognise the + symbol.

I can recognise the – symbol.
I can recognise the = symbol.
I know all numbers bonds to 5 (record small steps 1, 2, 3, 4, 5)
I know all numbers bonds to 10 (record small steps 6, 7, 8, 9 and 10)
I know all my doubles to 3/ 5/ 10.
I can count to say one more than any number 0 – 5/5 -10/ 10-15/ 15-20.
I can count to say one less than any number 0 – 5/5 -10/ 10-15/ 15-20.
I can add a 1-digit number to a 1-digit number.
I can subtract a 1-digit numbers from a 1-digit number
I can add a 1-digit number to a 2-digit number.
I can subtract 1-digit numbers from a 2-digit number
I can recognise simple 2D shapes.
I can draw a simple map.
I can use below, above, next to, in front, behind in relation to positions (sometimes on a simple map)
I can compare weight of objects.
I can compare length of objects.
I can use the vocabulary first, then, next to sequence time.
I can name the days of the week.
I can name the months of the year.
I can name the months of the year.

Year 1:

I can count 0 – 50.
I can count 50 – 100.
I can count back from 50 – 0.
I can count back from 100 – 0.
I can count on or back from 0 to 100 starting from different points.
I can recognise digits to 30/50/100 in and out of order (rapid recall).
I can recognise the tens in a 2-digit number. I can represent this.
I can recognise the ones in a 2-digit number. I can represent this.
I know all numbers bonds to 10 (record small steps 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10)
I can count on/back in 2s to 24.
I can count on/back in 5s to 60.
I can count on/back in 10s to 100.
I can count 1 more with objects by counting or using a number line
I can count 1 more from any given number 0 –100.
I can count 1 less with objects by counting or using a number line
I can count 1 less from any given number 100 – 0.
I can form digits to 10 without reversals.
I can form digits to 20 without reversals.
I can recognise the + symbol.
I can recognise the – symbol.
I can recognise the = symbol.
I can add two 1-digit numbers.
I can add a 1-digit number to a 2-digit number.
I can subtract two 1-digit numbers.
I can subtract a 1-digit number from a 2-digit number.
I can solve missing number problems.
I can recognise ALL 2D shapes.

I can recognise ALL 3D shapes.
I can recognise and represent a half turn.
I can recognise and represent a full turn.
I can recognise ½ of a shape, quantity or number.
I can recognise ¼ of a shape, quantity or number.
I can recognise and read the hour on a clock.
I can recognise and read half past/quarter past on a clock.
I can name the days of the week.
I can name the months of the year.

Year 2:

I can count forwards and backwards to/from 100 verbally from any given number.
I can count forwards and backwards to/from 100 verbally from any given number.
I can recognise digits to 100 (rapid recall)
I can recognise the tens in a 2-digit number. I can represent this.
I can recognise the ones in a 2-digit number. I can represent this.
I know ALL number bonds to 20 (0 –5, 5 – 10, 10 – 15, 15 – 20.)
I can count on/back in 2s to 24 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 2s (from 0x to 12x/ in reverse)
Recall 2 times table facts in and out of order at pace.
I can count on/back in 5s to 60 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 5s (from 0x to 12x/ in reverse)
Recall 5x facts in and out of order.
I can count on/back in 10s to 100 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 10s. (from 0x to 12x/ in reverse)
Recall 10x facts in and out of order.
I can count on/back in 3s to 36 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 3s (from 0x to 12x/ in reverse)
Recall 3x facts in and out of order.
I can count 1 more with objects by counting or using a number line/hundred square
I can count 1 more from any given number 0 –100 beginning to bridge past 100.
I can count 1 less from any given number 100 – 0 beginning to bridge past 100.
I can form digits correctly to 10/20/50/100 with no reversals.
I can recognise the +/ -/ = symbol.
I can recognise the X symbol.
I can recognise the ÷ symbol.
I can add a two-digit and 1-digit number with NO exchanging.
I can add a two-digit and 1-digit numbers WITH exchanging.

I can subtract a two-digit and 1-digit numbers with NO exchanging.
I can subtract a two-digit and 1-digit numbers WITH exchanging.
I can add two, two-digit numbers with NO exchanging.
I can add two, two-digit numbers WITH exchanging.
I can subtract two, two-digit numbers with NO exchanging.
I can subtract two, two-digit numbers WITH exchanging.
I can multiply a 1 digit number by a 1 digit number using arrays.
I can multiply a 2 digit number by a 1 digit number using arrays.
I can divide a 2 digit number by a 1 digit number with NO remainders.
I can recognise ALL 2D shapes.
I can recognise ALL 3D shapes.
I can recognise and represent a half turn.
I can recognise and represent a full turn.
I can recognise ½ ¼ and 1/3 of a shape, quantity or number.
I can recognise 2/4 and 3/4 of a shape, quantity or number.
I can recognise and read the hour on a clock.
I can recognise and read half past/quarter past on a clock.
I know the number of minutes in an hour and hours in a day.

Year 3:

I can recognise numbers to 100 (rapid recall)
I can recognise numbers to 500 (rapid recall)
I can recognise numbers to 1000 (rapid recall)
I can write numbers to 100.
I can write numbers to 500.
I can write numbers to 1000.
I know all numbers bonds to 10 (record small steps 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10)
I know ALL number bonds to 20. (record small steps 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20)
I can count in 2s to 24 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 2s.
I can count in 3s to 36 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 3s.
I can count in 4s to 48 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 4s.
I can count in 5s to 60 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 5s.
I can count in 8s to 96 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 8s.
I can count in 10s to 100 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 10s.
I can count in 50s and 100s (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 50s.
I can recognise hundreds, tens and ones in a 3 digit number.
I can compare and order numbers to 100.
I can compare and order numbers to 1000.
I can form numbers to 10 correctly without reversals.
I can form numbers to 50 correctly without reversals.

I can form numbers to 100 correctly without reversals.
I can form ALL numbers correctly.
I can use manipulatives to represent numbers to 100.
I can use manipulatives to represent numbers to 1000.
I can recognise the + - = X ÷ symbol.
I can add/subtract 1 to a number mentally.
I can add/subtract 10 to a number mentally.
I can add/subtract 100 to a number mentally.
I can add two/three digit numbers with NO exchanging.
I can add two/three digit numbers WITH exchanging.
I can subtract two/three digit numbers with NO exchanging.
I can subtract two/three digit numbers WITH exchanging.
I can multiply a 2 digit number by a 1 digit number.
I can multiply two numbers using 2/ 5/ 10 times table facts.
I can multiply two numbers using 3 times table facts.
I can multiply two numbers using 4 times table facts.
I can multiply two numbers using 8 times table facts.
I can divide a 2 digit number by a 1 digit number with NO remainders.
I can divide a 2 digit number by a 1 digit number with WITH remainders.
I can recognise and use commutativity to solve problems.
I can recognise ALL 2D and 3D shapes.
I can recognise horizontal, vertical and parallel lines.
I can recognise a right angle.
I can measure the perimeter of a 2D shape.
I can recognise ½ ¼ 1/3 2/4 3/4 of a shape, quantity or number.
I can order fractions in a linear system.
I can add fractions with the same denominator.
I can subtract fractions with the same denominator.

I can recognise and read the hour and minutes on a clock.
I can recognise all coins and notes.

Year 4:

I can write numbers to 100 and form them correctly.
I can write numbers to 500 and form them correctly.
can write numbers to 1000 and form them correctly.
I can count backwards through 0 to include negatives up to -10
I can count backwards through 0 to include negatives beyond -10
I can count in 2s to 24
I can count in 2s to 100 (different starting points numbers).
I can count in 2s beyond 100 (different starting points.)
Recall of associated times tables facts for 2s.
I can count in 3s to 36
I can count in 3s to 100 (different starting points numbers).
I can count in 3s beyond 100 (different starting points.)
Recall of associated times tables facts for 3s.
I can count in 4s to 48 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 4s.
I can count in 5s to 60 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 5s.
I can count in 6s to 72 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 6s.
I can count in 7s to 84 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 7s.
I can count in 8s to 96 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 8s.
I can count in 9s to 108 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 9s.
I can count in 10s to 120 (and beyond/ different starting points/ into 3-digit numbers).

Recall of associated times tables facts for 10s.
I can count in 100s to 1,200 (and beyond/ different starting points/ into 4-digit numbers).
Recall of associated times tables facts for 100s.
I can count in 1000s to 12,000 (and beyond/ different starting points).
Recall of associated times tables facts for 1,000s.
I can recognise thousands, hundreds, tens and ones in a 4 digit number.
I can compare and order numbers to 1000.
I can read roman numerals to 100.
I can use manipulatives to represent numbers to 1000.
I can recognise the + - = X ÷ symbol.
I can add/subtract 1, 10 and 100 to a number mentally.
I can add two/three/four digit numbers with NO exchanging.
I can add two/three/four digit numbers WITH exchanging.
I can subtract two/three/four digit numbers with NO exchanging.
I can subtract two/three/four digit numbers WITH exchanging.
I can recall multiplication and division facts within 12x12
I can multiply two/three digit numbers by a one digit number.
I can divide a number by another including remainders
I can use commutativity and distributive law to solve problems.
I can solve 2 step problems. (e.g. 3 x 4 + 6)
I can recognise ALL 2D and 3D shapes.
I can recognise a right angle, acute and obtuse angles.
I can measure the perimeter and area of a 2D shape.
I can recognise and find a line of symmetry on a 2D shape.
I can convert mixed numbers to improper fractions.
I can add/subtract fractions with the same denominator.
I can add/subtract improper and mixed fractions including bridging.
I can recognise and write decimal equivalents of any number of tenths or hundreds and of 1/4 , 1/2 , 3/4

I can draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.
I can compare decimal numbers and round them to 1 or 2 places.
I can read, write and convert using analogue and digital clocks.
I can recognise and calculate using all coins and notes.
I can convert between different measures.

Year 5:

I can write numbers to 1000 / 10,000, 100,000 and with the correct number of digits and form them correctly
I can say what each digit represents 1000 / 10,000, 100,000
I can write numbers to 1,000,000 and with the correct number of digits and form them correctly
I can say what each digit represents 1,000,000
I can count forwards and backwards from different starting points up to 1,000,000
I can count forwards and backwards through 0 to include negatives.
I can count forwards and backwards from different starting points e.g. –3 backwards in ones
I can count in 2s to 24 (and beyond/ different starting points/ into 3-digit numbers).
I can count in 2s from different starting numbers, E.g. odd numbers
Recall of associated times tables facts for 2s.
I can count in 3s to 36 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 3s.
I can count in 4s to 48 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 4s.
I can count in 5s to 60 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 5s.
I can count in 6s to 72 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 6s.
I can count in 7s to 84 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 7s.
I can count in 8s to 96 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 8s.
I can count in 9s to 108 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 9s.
I can count in 10s to 120 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 10s.

I can count in 11s to 132 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 11s.
I can count in 12s to 144 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 12s.
I can count in 50s to 600 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 50s.
I can count in 100s to 1,200 (and beyond/ different starting points/ into 4-digit numbers).
Recall of associated times tables facts for 100s.
I can count in 1000s to 12,000 (and beyond/ different starting points).
Recall of associated times tables facts for 1,000s.
I can determine the value of each number within 1,000,000.
I can compare and order numbers to 1,000,000.
I can count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.
I can read roman numerals to 1000.
I can recognise the + - = X ÷ symbol.
I can add/subtract 1, 10, 100 and 1000 to a number mentally.
I can add and subtract whole numbers with more than 4 digits
I can use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
I can multiply and divide using written formats for 2 digits problems.
I can multiply and divide involving decimals by 10, 100 and 1,000
I can solve multi step problems.
I can recall prime numbers to 19 and establish prime numbers to 100.
I can find and recall common factors of numbers.
I can recognise and use squared and cube numbers
I can recognise ALL 2D and 3D shapes.
I can recognise a right angle, acute and obtuse angles.
I can recognise, compare and draw angles given in degrees.
I can measure the perimeter and area of a 2D shape.

I can estimate volume
I can recognise and find a line of symmetry on a 2D shape.
I can convert mixed numbers to improper fractions. (e.g. $\frac{13}{4}$)
I can add/subtract fractions with the same denominator.
I can add/subtract improper and mixed fractions including bridging.
I can recognise mixed numbers and improper fractions and convert from one form to the other
I can recognise and write percentage and decimal equivalents of any number of tenths or hundreds, multiple of 10 or 25 and of 1/2 , 1/4 , 1/5 , 2/5 , 4/5
I can draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.
I can compare decimal numbers and round them to 1 or 2 places.
I can read, write, order and compare numbers with up to 3 decimal places
I can read, write, convert and solve problems using analogue and digital clocks.
I can recognise and calculate using all coins and notes.
I can convert between different measures.

Year 6:

I can write numbers to 1,000,000 and form them correctly.
I can say what each digit represents 1,000,000
I can write numbers to 10,000,000 and form them correctly.
I can say what each digit represents 10,000,000
I can count forwards through 0 to include negatives.
I can count backwards through 0 to include negatives.
I can count and recall facts within 12x12
I can count in 2s to 24 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 2s.
I can count in 3s to 36 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 3s.
I can count in 4s to 48 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 4s.
I can count in 5s to 60 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 5s.
I can count in 6s to 72 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 6s.
I can count in 7s to 84 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 7s.
I can count in 8s to 96 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 8s.
I can count in 9s to 108 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 9s.
I can count in 10s to 120 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 10s.
I can count in 11s to 132 (and beyond/ different starting points/ into 3-digit numbers).

Recall of associated times tables facts for 11s.
I can count in 12s to 144 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 12s.
I can count in 50s to 600 (and beyond/ different starting points/ into 3-digit numbers).
Recall of associated times tables facts for 50s.
I can count in 100s to 1,200 (and beyond/ different starting points/ into 4-digit numbers).
Recall of associated times tables facts for 100s.
I can count in 1000s to 12,000 (and beyond/ different starting points).
Recall of associated times tables facts for 1,000s.
I can determine the value of each number within 10,000,000.
I can compare and order numbers to 10,000,000.
I can round any whole number to a required degree of accuracy.
I can recognise the + - = X ÷ symbol.
I can solve addition and subtraction multi-step problems
I can use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
I can multiply multi-digit numbers up to 4 digits by a two-digit whole number
I can divide numbers up to 4 digits by a two-digit whole number inc. remainders
I can multiply and divide involving decimals by 10, 100 and 1,000
I can identify common factors, common multiples and prime numbers
I can recognise, describe and build simple 3-D shapes and draw 2D shapes.
I can recognise angles.
I can recognise, compare and draw angles given in degrees.
I can measure the perimeter and area of a shape.
I can estimate and calculate volume
I can name parts of circles, including radius, diameter and circumference
I can use common factors to simplify fractions
I can compare and order fractions, including fractions >1
I can add and subtract fractions with different denominators and mixed numbers
I can multiply simple pairs of proper fractions

I can divide proper fractions by whole numbers
I can associate a fraction with division and calculate decimal fraction equivalents
I can solve problems involving the calculation of percentages
I can solve problems involving similar shapes where the scale factor is known or can be found
I can use simple formulae
I can express missing number problems algebraically
I can find pairs of numbers that satisfy an equation with 2 unknowns
I can enumerate possibilities of combinations of 2 variables
I can read, write, convert and solve problems using analogue and digital clocks.
I can recognise and calculate using all coins and notes.
I can convert between different measures.

Mathematics – Vocabulary progression

Number						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
zero	number	number	number	number	number	number
number	numeral	numeral	numeral	numeral	numeral	numeral
one, two, three …	one, two, three …	one, two, three …	one, two, three …	one, two, three …	one, two, three …	one, two, three …
eleven, twelve …	eleven, twelve …	eleven, twelve …	eleven, twelve …	eleven, twelve …	eleven, twelve …	eleven, twelve …
none	twenty, twenty-one …	twenty, twenty-one …	twenty, twenty-one …	twenty, twenty-one …	twenty, twenty-one …	twenty, twenty-one …
how many …?	none	one hundred, two hundred …	one hundred, two hundred …	one hundred, two hundred …	one hundred, two hundred …	one hundred, two hundred …
count	how many …?	none	none	none	none	none
count (up) to	count	how many …?	how many …?	how many …?	how many …?	how many …?
count on (from, to)	count (up) to	count	count	count	count	count
count back (from, to)	count on (from, to)	count (up) to	count (up) to	count (up) to	count (up) to	count (up) to
	count back (from, to)	count on (from, to)	count on (from, to)	count on (from, to)	count on (from, to)	count on (from, to)
	forwards	count back (from, to)	count back (from, to)	count back (from, to)	count back (from, to)	count back (from, to)
	backwards	forwards	forwards	forwards	forwards	forwards
	count in ones, twos …	backwards	backwards	backwards	backwards	backwards
	equal to	count in ones, twos …	count in ones, twos …	count in ones, twos …	count in ones, twos …	count in ones, twos …
	equivalent to	equal to	equal to	equal to	equal to	equal to
	is the same as	equivalent to	equivalent to	equivalent to	equivalent to	equivalent to
	more/ less	is the same as	is the same as	is the same as	is the same as	is the same as
	most/ least	more/ less	more/ less	more/ less	more/ less	more/ less
	many	most/ least	most/ least	most/ least	most/ least	most/ least
	odd/ even	tally	tally	tally	tally	tally
	multiple of	many	many	many	many	many
	few	odd	odd	odd	odd	odd
	pattern	even	even	even	even	even
	pair	multiple of	multiple of	multiple of	multiple of	multiple of
		sequence	factor of	factor of	factor of	factor of
		continue	sequence	sequence	factor pair	factor pair
		predict	continue	continue	sequence	sequence
		few	predict	predict	continue	continue

		pattern pair rule > greater than < less than	few pattern pair rule relationship > greater than < less than roman numerals	few pattern pair rule relationship next consecutive > greater than < less than roman numerals integer positive negative above (below) zero minus negative numbers	predict few pattern pair rule relationship next consecutive > greater than or equal to < less than or equal to roman numerals integer positive negative above (below) zero minus negative numbers formula divisibility square number prime number ascending descending order	predict few pattern pair rule relationship next consecutive > greater than or equal to < less than or equal to roman numerals integer positive negative above (below) zero minus negative numbers formula divisibility square number prime number factorise prime factor ascending descending order digital total

Place Value						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
ones	ones	ones	ones	ones	ones	ones
tens	tens	tens	tens	tens	tens	tens
digit	digit	hundreds	hundreds	hundreds	hundreds	hundreds
the same number as	the same number as	digit	digit	digit	digit	digit
as many as	as many as	one-, two-, three-digit number	one-, two-, three-digit number	one-, two-, three-digit number	one-, two-, three-digit number	one-, two-, three-digit number
more	more	place	place	place	place	place
larger	larger	place value	place value	place value	place value	place value
bigger	bigger	stands for	stands for	stands for	stands for	stands for
greater	greater	represents	represents	represents	represents	represents
fewer	fewer	exchange	exchange	exchange	exchange	exchange
smaller	smaller	the same number as	the same number as	the same number as	the same number as	the same number as
less	less	as many as	as many as	as many as	as many as	as many as
fewest	fewest	more	more	more	more	more
smallest	smallest	larger	larger	larger	larger	larger
least	least	bigger	bigger	bigger	bigger	bigger
most	most	greater	greater	greater	greater	greater
biggest	biggest	fewer	fewer	fewer	fewer	fewer
largest	largest	smaller	smaller	smaller	smaller	smaller
greatest	greatest	less	less	less	less	less
one/ ten more	one/ ten more	fewest	fewest	fewest	fewest	fewest
one/ ten less	one/ ten less	smallest	smallest	smallest	smallest	smallest
compare	equal to	least	least	least	least	least
order	compare	most	most	most	most	most
size	order	biggest	biggest	biggest	biggest	biggest
first, second, third .... Twentieth	size	largest	largest	largest	largest	largest
last, last but one	first, second, third .... twentieth	greatest	greatest	greatest	greatest	greatest
before	last, last but one	one/ ten more	one/ ten/ hundred more	one/ ten/ hundred/ thousand more	one/ ten/ hundred/ thousand more	one/ ten/ hundred/ thousand more
after	before	one/ ten less	one/ ten/ hundred less	one/ ten/ hundred/ thousand less	one/ ten/ hundred/ thousand less	one/ ten/ hundred/ thousand less
next	after	equal to	equal to			

between	next between half-way between above below	compare order size first, second, third .... Twentieth twenty-first, twenty-second ... last, last but one before after next between half-way between above below	compare order size first, second, third .... Twentieth twenty-first, twenty-second ... last, last but one before after next between half-way between above below	equal to compare order size first, second, third .... Twentieth twenty-first, twenty-second ... last, last but one before after next between half-way between above below	equal to compare order size first, second, third .... Twentieth twenty-first, twenty-second ... last, last but one before after next between half-way between above below	equal to compare order size first, second, third .... Twentieth twenty-first, twenty-second ... last, last but one before after next between half-way between above below

Estimating						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
guess	guess	guess	guess	guess	guess	guess
how many ...?	how many ...?	how many ...?	how many ...?	how many ...?	how many ...?	how many ...?
estimate	estimate	estimate	estimate	estimate	estimate	estimate
nearly	nearly	nearly	nearly	nearly	nearly	nearly
close to	roughly	roughly	roughly	roughly	roughly	roughly
about the same as	close to	close to	close to	close to	close to	close to
just over	about the same as	about the same as	approximate(ly)	approximate(ly)	approximate(ly)	approximate(ly)
just under	just over	just over	about the same as	about the same as	about the same as	about the same as
too many	just under	just under	just over	just over	just over	just over
too few	too many	exact	just under	just under	just under	just under
enough	too few	exactly	exact	exact	exact	exact
not enough	enough	too many	exactly	exactly	exactly	exactly
	not enough	too few	too many	too many	too many	too many
		enough	too few	too few	too few	too few
		not enough	enough	enough	enough	enough
			not enough	not enough	not enough	not enough
			round	round	round	round
			nearest	nearest	nearest	nearest
			round to the nearest ten/ hundred	round to the nearest ten/ hundred/ thousand	round to the nearest ten/ hundred/ thousand/ ten thousand	round to the nearest ten/ hundred/ thousand/ ten thousand
			round up	round up	round up	round up
			round down	round down	round down	round down

Addition and Subtraction						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
add, more, and	addition	addition	addition	addition	addition	addition
make, sum, total	add, more, and	add, more, and	add, more, and	add, more, and	add, more, and	add, more, and
altogether	make, sum, total	make, sum, total	make, sum, total	make, sum, total	make, sum, total	make, sum, total
double	altogether	altogether	altogether	altogether	altogether	altogether
one more, two more … ten more	double	double	double	double	double	double
how many more to make …?	near double	near double	near double	near double	near double	near double
how many more is … than ….?	half, halve	half, halve	half, halve	half, halve	half, halve	half, halve
how much more is …?	one more, two more … ten more	one more, two more … ten more … one hundred more	one more, two more … ten more … one hundred more	one more, two more … ten more … one hundred more	one more, two more … ten more … one hundred more	one more, two more … ten more … one hundred more
take away	how many more to make …?	how many more to make …?	how many more to make …?	how many more to make …?	how many more to make …?	how many more to make …?
how many have gone?	how many more is … than ….?	how many more is … than ….?	how many more is … than ….?	how many more is … than ….?	how many more is … than ….?	how many more is … than ….?
one less, two less, ten less…	how much more is …?	how much more is …?	how much more is …?	how much more is …?	how much more is …?	how much more is …?
how many fewer is … than …?	subtract	subtract	subtract	subtract	subtract	subtract
how much less is …?	take away	take away	take away	take away	take away	take away
difference between	how many have gone?	how many have gone?	how many have gone?	how many have gone?	how many have gone?	how many have gone?
	one less, two less, ten less…	one less, two less, ten less … one hundred less	one less, two less, ten less … one hundred less	one less, two less, ten less … one hundred less	one less, two less, ten less … one hundred less	one less, two less, ten less … one hundred less
	how many fewer is … than …?	how many fewer is … than …?	how many fewer is … than …?	how many fewer is … than …?	how many fewer is … than …?	how many fewer is … than …?
	how much less is …?	how much less is …?	how much less is …?	how much less is …?	how much less is …?	how much less is …?
	difference between	difference between	difference between	difference between	difference between	difference between
	equals	equals	equals	equals	equals	equals
	is the same as	is the same as	is the same as	is the same as	is the same as	is the same as
	number bonds/pairs	number bonds/pairs/ facts	number bonds/pairs/ facts	number bonds/pairs/ facts	number bonds/pairs/ facts	number bonds/pairs/ facts
	missing number	tens boundary	tens boundary, hundreds boundary	tens boundary, hundreds boundary	tens boundary, hundreds boundary, ones boundary, tenths boundary	tens boundary, hundreds boundary, ones boundary, tenths boundary
		missing number	missing number	missing number	missing number	missing number
				inverse	inverse	inverse

Multiplication and Division						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
sharing	multiplication	multiplication	multiplication	multiplication	multiplication	multiplication
doubling	multiply	multiply	multiply	multiply	multiply	multiply
halving	multiplied by	multiplied by	multiplied by	multiplied by	multiplied by	multiplied by
number patterns	multiple	multiple	multiple, factor	multiple, factor	multiple, factor	multiple, factor
	division	groups of	groups of	groups of	groups of	groups of
	dividing	times	times	times	times	times
	grouping	once, twice, three times … ten times	product	product	product	product
	sharing	repeated addition	once, twice, three times … ten times	once, twice, three times … ten times	once, twice, three times … ten times	once, twice, three times … ten times
	doubling	division	repeated addition	repeated addition	repeated addition	repeated addition
	halving	dividing, divide, divided by, divided into	division	division	division	division
	array	grouping	dividing, divide, divided by, divided into	dividing, divide, divided by, divided into	dividing, divide, divided by, divided into	dividing, divide, divided by, divided into
	number patterns	sharing, share, share equally	grouping	grouping	grouping	grouping
		left, left over	sharing, share, share equally	sharing, share, share equally	sharing, share, share equally	sharing, share, share equally
		one each, two each, three each … ten each	left, left over, remainder	left, left over, remainder	left, left over, remainder	left, left over, remainder
		group in pairs, threes … tens	one each, two each, three each … ten each	one each, two each, three each … ten each	one each, two each, three each … ten each	one each, two each, three each … ten each
		equal groups of	group in pairs, threes … tens	group in pairs, threes … tens	group in pairs, threes … tens	group in pairs, threes … tens
		doubling	equal groups of	equal groups of	equal groups of	equal groups of
		halving	doubling	doubling	doubling	doubling
		array	halving	halving	halving	halving
		row, column	array	array	array	array
		number patterns	row, column	row, column	row, column	row, column
		multiplication table	number patterns	number patterns	number patterns	number patterns
		multiplication fact, division fact	multiplication table	multiplication table	multiplication table	multiplication table
			multiplication fact, division fact	multiplication fact, division fact	multiplication fact, division fact	multiplication fact, division fact
				inverse	inverse	inverse
				square, squared	square, squared	square, squared
				cube, cubed	cube, cubed	cube, cubed

Fractions						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
parts of a whole half quarter	fraction equal part equal grouping equal sharing parts of a whole half one of two equal parts quarter one of four equal parts	fraction equivalent fraction mixed number numerator, denominator equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters one of four equal parts one third, two thirds one of three equal parts	fraction equivalent fraction mixed number numerator, denominator equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters one of four equal parts one third, two thirds one of three equal parts sixths, sevenths, eighths, tenths ..	fraction equivalent fraction mixed number numerator, denominator equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters one of four equal parts one third, two thirds one of three equal parts sixths, sevenths, eighths, tenths ... hundredths decimal, decimal fraction, decimal point, decimal place, decimal equivalent proportion	fraction, proper/improper fraction equivalent fraction mixed number numerator, denominator equivalent, reduced to, cancel equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters one of four equal parts one third, two thirds one of three equal parts sixths, sevenths, eighths, tenths ... hundredths, thousandths decimal, decimal fraction, decimal point, decimal place, decimal equivalent proportion, in every, for every percentage, per cent, %	fraction, proper/improper fraction equivalent fraction mixed number numerator, denominator equivalent, reduced to, cancel equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters one of four equal parts one third, two thirds one of three equal parts sixths, sevenths, eighths, tenths ... hundredths, thousandths decimal, decimal fraction, decimal point, decimal place, decimal equivalent proportion, in every, for every ratio percentage, per cent, %

Algebra						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						formula, formulae equation unknown variable

Measurement						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
measure size compare guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as just over, just under	measure measurement size compare guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as roughly just over, just under	measure measurement size compare measuring scale guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as roughly just over, just under	measure measurement size compare measuring scale, division guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as, approximately roughly just over, just under	measure measurement size compare unit, standard unit metric unit measuring scale, division guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as, approximately roughly just over, just under	measure measurement size compare unit, standard unit metric unit, imperial unit measuring scale, division guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as, approximately roughly just over, just under	measure measurement size compare unit, standard unit metric unit, imperial unit measuring scale, division guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as, approximately roughly just over, just under

Length						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
metre length, height, width, depth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher longest, shortest, tallest, highest far, near, close	centimetre, metre length, height, width, depth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher longest, shortest, tallest, highest far, near, close ruler metre stick	centimetre, metre length, height, width, depth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher longest, shortest, tallest, highest far, further, furthest, near, close ruler metre stick, tape measure	millimetre, centimetre, metre, kilometre, mile length, height, width, depth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher longest, shortest, tallest, highest far, further, furthest, near, close distance apart … between … to … from perimeter ruler metre stick, tape measure	millimetre, centimetre, metre, kilometre, mile length, height, width, depth, breadth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher longest, shortest, tallest, highest far, further, furthest, near, close distance apart … between … to … from edge, perimeter area, covers square centimetre (cm^2) ruler metre stick, tape measure	millimetre, centimetre, metre, kilometre, mile length, height, width, depth, breadth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher longest, shortest, tallest, highest far, further, furthest, near, close distance apart … between … to … from edge, perimeter area, covers square centimetre (cm^2), square metre (m^2), square millimetre (mm^2) ruler metre stick, tape measure	millimetre, centimetre, metre, kilometre, mile, yard, foot, feet, inch, inches length, height, width, depth, breadth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher longest, shortest, tallest, highest far, further, furthest, near, close distance apart … between … to … from edge, perimeter, circumference area, covers square centimetre (cm^2), square metre (m^2), square millimetre (mm^2) ruler metre stick, tape measure

Weight						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
weigh, weighs, balances	kilogram, half kilogram	kilogram, half kilogram, gram	kilogram, half kilogram, gram	mass: big, bigger, small, smaller	mass: big, bigger, small, smaller	mass: big, bigger, small, smaller
heavy, light	weigh, weighs, balances	weigh, weighs, balances	weigh, weighs, balances	weight: heavy/light, heavier/lighter, heaviest, lightest	weight: heavy/light, heavier/lighter, heaviest, lightest	weight: heavy/light, heavier/lighter, heaviest, lightest
heavier than, lighter than	heavy, light	heavy, light	heavy, light	kilogram, half kilogram, gram	kilogram, half kilogram, gram	tonne, kilogram, half kilogram, gram, pound, ounce
heaviest, lightest	heavier than, lighter than	heavier than, lighter than	heavier than, lighter than	weigh, weighs, balances	weigh, weighs, balances	weigh, weighs, balances
scales	heaviest, lightest	heaviest, lightest	heaviest, lightest	heavy, light	heavy, light	heavy, light
	scales	scales	scales	heavier than, lighter than	heavier than, lighter than	heavier than, lighter than
				heaviest, lightest	heaviest, lightest	heaviest, lightest
				scales	scales	scales

Capacity and Volume						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
full	litre, half litre	litre, half litre, millilitre	litre, half litre, millilitre	litre, half litre, millilitre	litre, half litre, millilitre	litre, half litre, millilitre, centilitre
empty	capacity	capacity	capacity	capacity	capacity	cubic centimetres (cm^3), cubic metres (m^3), cubic millimetres (mm^3), cubic kilometres (km^3)
half full	volume	volume	volume	volume	volume	capacity
holds	full	full	full	full	full	volume
container	empty	empty	empty	empty	empty	full
	more than	more than	more than	more than	more than	empty
	less than	less than	less than	less than	less than	more than
	half full	half full	half full	half full	half full	less than
	quarter full	quarter full	quarter full	quarter full	quarter full	half full
	holds	holds, contains	holds, contains	holds, contains	holds, contains	quarter full
	container	container	container	container, measuring cylinder	container, measuring cylinder	holds, contains
					pint, gallon	container, measuring cylinder
						pint, gallon

Temperature						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		temperature degree	temperature degree centigrade	temperature degree centigrade	temperature degree centigrade	temperature degree centigrade

Time						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
time	time	time	time	time	time	time
days of the week (Monday, Tuesday…)	days of the week, (Monday, Tuesday…)	days of the week, (Monday, Tuesday…)	days of the week, (Monday, Tuesday…)	days of the week, (Monday, Tuesday…)	days of the week, (Monday, Tuesday…)	days of the week, (Monday, Tuesday…)
day, week	months of the year (January, February …)	months of the year (January, February …)	months of the year (January, February …)	months of the year (January, February …)	months of the year (January, February …)	months of the year (January, February …)
birthday, holiday	seasons: spring, summer, autumn, winter	seasons: spring, summer, autumn, winter	seasons: spring, summer, autumn, winter	seasons: spring, summer, autumn, winter	seasons: spring, summer, autumn, winter	seasons: spring, summer, autumn, winter
morning, afternoon, evening, night	day, week, weekend, month, year	day, week, weekend, fortnight, month, year	day, week, weekend, fortnight, month, year, century	day, week, weekend, fortnight, month, year, leap year, century, millienium	day, week, weekend, fortnight, month, year, leap year, century, millienium	day, week, weekend, fortnight, month, year, leap year, century, millienium
bedtime, dinner time, playtime	birthday, holiday	birthday, holiday	birthday, holiday	birthday, holiday	birthday, holiday	birthday, holiday
today, yesterday, tomorrow	morning, afternoon, evening, night	morning, afternoon, evening, night	morning, afternoon, evening, night	morning, afternoon, evening, night	morning, afternoon, evening, night	morning, afternoon, evening, night
before, after	bedtime, dinner time, playtime	bedtime, dinner time, playtime	bedtime, dinner time, playtime	bedtime, dinner time, playtime	bedtime, dinner time, playtime	bedtime, dinner time, playtime
next, last	today, yesterday, tomorrow	today, yesterday, tomorrow	today, yesterday, tomorrow	today, yesterday, tomorrow	today, yesterday, tomorrow	today, yesterday, tomorrow
now, soon, early, late	before, after	before, after	before, after	before, after	before, after	before, after
quick, quicker, quickest, quickly	earlier, later	earlier, later	earlier, later	earlier, later	earlier, later	earlier, later
slow, slower, slowest, slowly	next, first, last	next, first, last	next, first, last	next, first, last	next, first, last	next, first, last
old, older, oldest	midnight	midnight	midnight	noon, midnight	noon, midnight	noon, midnight
new, newer, newest	date	date	calendar, date	calendar, date, date of birth	calendar, date, date of birth	calendar, date, date of birth
takes longer, takes less time	now, soon, early, late	now, soon, early, late	now, soon, early, late, earliest, latest	now, soon, early, late, earliest, latest	now, soon, early, late, earliest, latest	now, soon, early, late, earliest, latest
hour, o'clock	quick, quicker, quickest, quickly	quick, quicker, quickest, quickly	quick, quicker, quickest, quickly	quick, quicker, quickest, quickly	quick, quicker, quickest, quickly	quick, quicker, quickest, quickly
clock, watch, hands	slow, slower, slowest, slowly	slow, slower, slowest, slowly	slow, slower, slowest, slowly	slow, slower, slowest, slowly	slow, slower, slowest, slowly	slow, slower, slowest, slowly
	old, older, oldest	old, older, oldest	old, older, oldest	old, older, oldest	old, older, oldest	old, older, oldest
	new, newer, newest	new, newer, newest	new, newer, newest	new, newer, newest	new, newer, newest	new, newer, newest
	takes longer, takes less time	takes longer, takes less time	takes longer, takes less time	takes longer, takes less time	takes longer, takes less time	takes longer, takes less time
	how long ago?	how long ago?	how long ago?	how long ago?	how long ago?	how long ago?
	how long will it be to …?	how long will it be to …?	how long will it be to …?	how long will it be to …?	how long will it be to …?	how long will it be to …?
	how long will it take to …?	how long will it take to …?	how long will it take to …?	how long will it take to …?	how long will it take to …?	how long will it take to …?
	how often?	how often?	how often?	how often?	how often?	how often?
	always, never, often, sometimes	always, never, often, sometimes	always, never, often, sometimes	always, never, often, sometimes	always, never, often, sometimes	always, never, often, sometimes
	usually	usually				

	once, twice hour, o'clock, half past, quarter past, quarter to clock, clock face, watch, hands hour hand, minute hand hours, minutes	once, twice hour, o'clock, half past, quarter past, quarter to 5, 10, 15 … minutes past clock, clock face, watch, hands digital/analogue clock/watch, timer hour hand, minute hand hours, minutes, seconds	usually once, twice hour, o'clock, half past, quarter past, quarter to 5, 10, 15 … minutes past a.m., p.m. clock, clock face, watch, hands digital/analogue clock/watch, timer hour hand, minute hand hours, minutes, seconds roman numerals 12-hour clock time, 24-hour clock time	usually once, twice hour, o'clock, half past, quarter past, quarter to 5, 10, 15 … minutes past a.m., p.m. clock, clock face, watch, hands digital/analogue clock/watch, timer hour hand, minute hand hours, minutes, seconds timetable, arrive, depart roman numerals 12-hour clock time, 24-hour clock time	usually once, twice hour, o'clock, half past, quarter past, quarter to 5, 10, 15 … minutes past a.m., p.m. clock, clock face, watch, hands digital/analogue clock/watch, timer hour hand, minute hand hours, minutes, seconds timetable, arrive, depart roman numerals 12-hour clock time, 24-hour clock time	usually once, twice hour, o'clock, half past, quarter past, quarter to 5, 10, 15 … minutes past a.m., p.m. clock, clock face, watch, hands digital/analogue clock/watch, timer hour hand, minute hand hours, minutes, seconds timetable, arrive, depart roman numerals 12-hour clock time, 24-hour clock time Greenwich Mean Time, British Summer Time, International Data Line

Money						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
money	money	money	money	money	money	money
coin	coin	coin	coin	coin	coin	coin
penny, pence, pound	penny, pence, pound	penny, pence, pound	penny, pence, pound	penny, pence, pound	penny, pence, pound	penny, pence, pound
price, cost	price, cost	price, cost	price, cost	price, cost	price, cost	price, cost
buy, sell	buy, sell	buy, bought, sell, sold	buy, bought, sell, sold	buy, bought, sell, sold	buy, bought, sell, sold	buy, bought, sell, sold
spend, spent	spend, spent	spend, spent	spend, spent	spend, spent	spend, spent	spend, spent
pay	pay	pay	pay	pay	pay	pay
	change	change	change	change	change	change
	dear, costs more	dear, costs more	dear, costs more	dear, costs more	dear, costs more	dear, costs more
	cheap, costs less, cheaper	cheap, costs less, cheaper	cheap, costs less, cheaper	cheap, costs less, cheaper	cheap, costs less, cheaper	cheap, costs less, cheaper
	costs the same as	costs the same as	costs the same as	costs the same as	costs the same as	costs the same as
	how much ...?	how much ...?	how much ...?	how much ...?	how much ...?	how much ...?
	how many ...?	how many ...?	how many ...?	how many ...?	how many ...?	how many ...?
	total	total	total	total	total	total
					discount	discount
					currency	currency
						profit, loss

Properties of Shape						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
shape, pattern flat curved, straight round hollow, solid sort make, build, draw size bigger, larger, smaller symmetrical pattern, repeating pattern match	shape, pattern flat curved, straight round hollow, solid sort make, build, draw size bigger, larger, smaller symmetry, symmetrical, symmetrical pattern pattern, repeating pattern match	shape, pattern flat curved, straight round hollow, solid sort make, build, draw surface size bigger, larger, smaller symmetry, symmetrical, symmetrical pattern, line symmetry pattern, repeating pattern match	shape, pattern flat curved, straight round hollow, solid sort make, build, draw perimeter surface size bigger, larger, smaller symmetry, symmetrical, symmetrical pattern, line symmetry pattern, repeating pattern match	shape, pattern flat, line curved, straight round hollow, solid sort make, build, construct, draw, sketch perimeter centre surface angle, right-angled base, square-based size bigger, larger, smaller symmetry, symmetrical, symmetrical pattern, line symmetry reflect, reflection pattern, repeating pattern match regular, irregular	shape, pattern flat, line curved, straight round hollow, solid sort make, build, construct, draw, sketch perimeter centre, radius, diameter surface angle, right-angled congruent base, square-based size bigger, larger, smaller symmetry, symmetrical, symmetrical pattern, line symmetry reflect, reflection axis of symmetry, reflective symmetry pattern, repeating pattern match regular, irregular	shape, pattern flat, line curved, straight round hollow, solid sort make, build, construct, draw, sketch perimeter centre, radius, diameter circumference, concentric, arc, net, open, closed surface angle, right-angled congruent intersecting, intersection plane base, square-based size bigger, larger, smaller symmetry, symmetrical, symmetrical pattern, line symmetry reflect, reflection axis of symmetry, reflective symmetry pattern, repeating pattern match regular, irregular

2-D Shape						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
vertex, vertices, edge	vertex, vertices, edge	vertex, vertices, edge	vertex, vertices, edge	2-D, two-dimensional	2-D, two-dimensional	2-D, two-dimensional
rectangle (including square)	point, pointed	point, pointed	point, pointed	vertex, vertices, edge	vertex, vertices, edge	vertex, vertices, edge
circle	rectangle (including square)	rectangle (including square), rectangular	rectangle (including square), rectangular	point, pointed	point, pointed	point, pointed
triangle	circle	circle, circular	circle, circular	rectangle (including square), rectangular, oblong	rectangle (including square), rectangular, oblong	rectangle (including square), rectangular, oblong
	triangle	triangle, triangular	triangle, triangular	rectilinear	rectilinear	rectilinear
		pentagon	pentagon, pentagonal	circle, circular	circle, circular	circle, circular
		hexagon	hexagon, hexagonal	triangle, triangular	triangle, triangular	triangle, triangular
		octagon	octagon, octagonal	equilateral triangle, isosceles triangle, scalene triangle	equilateral triangle, isosceles triangle, scalene triangle	equilateral triangle, isosceles triangle, scalene triangle
			quadrilateral	pentagon, pentagonal	pentagon, pentagonal	pentagon, pentagonal
			right-angled	hexagon, hexagonal	hexagon, hexagonal	hexagon, hexagonal
			parallel, perpendicular	heptagon	heptagon	heptagon
				octagon, octagonal	octagon, octagonal	octagon, octagonal
				quadrilateral	quadrilateral	quadrilateral
				parallelogram, rhombus, trapezium	parallelogram, rhombus, trapezium	parallelogram, rhombus, trapezium, kite
				polygon	polygon	polygon
				right-angled	right-angled	right-angled
				parallel, perpendicular	parallel, perpendicular	parallel, perpendicular
					x-axis, y-axis, quadrant	x-axis, y-axis, quadrant

3-D Shape						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
face, edge, vertex, vertices	face, edge, vertex, vertices	face, edge, vertex, vertices	face, edge, vertex, vertices	3-D, three-dimensional	3-D, three-dimensional	3-D, three-dimensional
cube	cube, cuboid	cube, cuboid	cube, cuboid	face, edge, vertex, vertices	face, edge, vertex, vertices	face, edge, vertex, vertices
pyramid	pyramid	pyramid	pyramid	cube, cuboid	cube, cuboid	cube, cuboid
sphere	sphere	sphere	sphere, hemisphere	pyramid	pyramid	pyramid
cone	cone	cone	cone	sphere, hemisphere, spherical	sphere, hemisphere, spherical	sphere, hemisphere, spherical
	cylinder	cylinder	cylinder	cone	cone	cone
			prism, triangular prism	cylinder, cylindrical	cylinder, cylindrical	cylinder, cylindrical
				prism, triangular prism	prism, triangular prism	prism, triangular prism
				tetrahedron, polyhedron	tetrahedron, polyhedron	tetrahedron, polyhedron
					octahedron	octahedron
						dodecahedron
						net, open, closed

Position and Direction						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
position	position	position	position	position	position	position
over, under	over, under, underneath	over, under, underneath	over, under, underneath	over, under, underneath	over, under, underneath	over, under, underneath
above, below	above, below	above, below	above, below	above, below	above, below	above, below
top, bottom, side	top, bottom, side	top, bottom, side	top, bottom, side	top, bottom, side	top, bottom, side	top, bottom, side
on, in	on, in	on, in	on, in	on, in	on, in	on, in
outside, inside	outside, inside	outside, inside	outside, inside	outside, inside	outside, inside	outside, inside
around	around	around	around	around	around	around
in front, behind	in front, behind	in front, behind	in front, behind	in front, behind	in front, behind	in front, behind
front, back	front, back	front, back	front, back	front, back	front, back	front, back
beside, next to	beside, next to	beside, next to	beside, next to	beside, next to	beside, next to	beside, next to
opposite	opposite	opposite	opposite	opposite	opposite	opposite
apart	apart	apart	apart	apart	apart	apart
between	between	between	between	between	between	between
middle, edge	middle, edge	middle, edge	middle, edge	middle, edge	middle, edge	middle, edge
corner	centre	centre	centre	centre	centre	centre
direction	corner	corner	corner	corner	corner	corner
left, right	direction	direction	direction	direction	direction	direction
up, down	journey	journey, route	journey, route	journey, route	journey, route	journey, route
forwards, backwards, sideways	left, right	left, right	left, right	left, right	left, right	left, right
across	up, down	up, down	up, down	up, down	up, down	up, down
next to, close, near, far	forwards, backwards, sideways	higher, lower	higher, lower	higher, lower	higher, lower	higher, lower
along	across	forwards, backwards, sideways	forwards, backwards, sideways	forwards, backwards, sideways	forwards, backwards, sideways	forwards, backwards, sideways
through	next to, close, near, far	across	across	across	across	across
to, from, towards, away from	along	next to, close, near, far	next to, close, near, far	next to, close, near, far	next to, close, near, far	next to, close, near, far
movement	through	along	along	along	along	along
slide	to, from, towards, away from	through	through	through	through	through
roll	movement	to, from, towards, away from	to, from, towards, away from	to, from, towards, away from	to, from, towards, away from	to, from, towards, away from
turn	slide	clockwise, anticlockwise	clockwise, anticlockwise	clockwise, anticlockwise	clockwise, anticlockwise	clockwise, anticlockwise
stretch, bend	roll	movement	compass point	compass point	compass point	compass point

whole turn, half turn	turn stretch, bend whole turn, half turn, quarter turn, three-quarter turn	slide roll turn stretch, bend whole turn, half turn, quarter turn, three-quarter turn right angle straight line	north, south, east, west, N, S, E,W horizontal, vertical, diagonal movement slide roll turn stretch, bend whole turn, half turn, quarter turn, three-quarter turn angle … is a greater/smaller angle than… right angle acute angle obtuse angle straight line	north, south, east, west, N, S, E,W north-east, north-west, south-east, south-west, NE, NW, SE, SW horizontal, vertical, diagonal translate, translation movement slide roll turn stretch, bend whole turn, half turn, quarter turn, three-quarter turn rotate, rotation angle … is a greater/smaller angle than… degree right angle acute angle obtuse angle reflection straight line ruler, set square angle, measurer, compass	north, south, east, west, N, S, E,W north-east, north-west, south-east, south-west, NE, NW, SE, SW horizontal, vertical, diagonal translate, translation coordinate movement slide roll turn stretch, bend whole turn, half turn, quarter turn, three-quarter turn rotate, rotation angle … is a greater/smaller angle than… degree right angle acute angle obtuse angle reflection straight line ruler, set square angle, measurer, compass, protractor	north, south, east, west, N, S, E,W north-east, north-west, south-east, south-west, NE, NW, SE, SW horizontal, vertical, diagonal translate, translation coordinate movement slide roll turn stretch, bend whole turn, half turn, quarter turn, three-quarter turn rotate, rotation angle … is a greater/smaller angle than… degree right angle acute angle obtuse angle reflex angle reflection straight line ruler, set square angle, measurer, compass, protractor

Statistics						
Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
count, sort group, set list	count, sort, vote group, set list, table	count, tally, sort, vote graph, block graph, pictogram represents group, set list, table label, title most popular, most common least popular, least common	count, tally, sort, vote graph, block graph, pictogram represents group, set list, table, chart, bar chart, frequency table carroll diagram, venn diagram label, title, axis, axes diagram most popular, most common least popular, least common	count, tally, sort, vote survey, questionnaire, data graph, block graph, pictogram represents group, set list, table, chart, bar chart, frequency table carroll diagram, venn diagram label, title, axis, axes diagram most popular, most common least popular, least common	count, tally, sort, vote survey, questionnaire, data, database graph, block graph, pictogram represents group, set list, table, chart, bar chart, frequency table, bar line chart carroll diagram, venn diagram line graph label, title, axis, axes diagram most popular, most common least popular, least common maximum/ minimum value outcome	count, tally, sort, vote survey, questionnaire, data, database graph, block graph, pictogram represents group, set list, table, chart, bar chart, frequency table, bar line chart carroll diagram, venn diagram line graph pie chart label, title, axis, axes diagram most popular, most common least popular, least common maximum/ minimum value outcome mean (mode, median, range as estimates for this) statistics, distribution