Yellow Maths

Number, Shape, Space and Measure

Maths - Number

-H1: Pupils join in rote counting to 10, for example, saying or signing number names to 10 in counting activities. They can count at least 5 objects reliably, for example, candles on a cake, bricks in a tower. They recognise numerals from one to five and understand that each represents a constant number or amount, for example, putting correct number of objects (1 to 5) into containers marked with the numeral; collecting the correct number of items up to five. Pupils demonstrate an understanding of less, for example, indicating which bottle has less water in it. In practical situations they respond to add one to a number of objects, for example, responding to requests such as add one pencil to the pencils in the pot, add one sweet to the dish.

--[]Pupil can count at least 5 objects reliably when presented in a line

--[]Pupil can make sets of up to 5 using objects

--[]Pupil can relate numerals 1 to 5 to the number of objects

--[]Pupil can join in with rote counting to 10

--[]Pupil can count reliably at least 5 objects when randomly placed on the table

--[]Pupil can respond appropriately to the question 'How many?' when working with numbers up to 5

--[]Pupil can recognise numerals from 1 to 5

--[]Pupil demonstrates an understanding of less

--[]Pupil can, in practical situations, respond appropriately to 'add one'

--[]Pupil can recognise numerals 1 to 5 and relate each numeral to the correct quantity, understanding that numeral always represents that quantity

--[]Pupil can match the pattern on a dice to the numeral

-H2: Pupils join in with rote counting to beyond 10, for example, they say or sign number names in counting activities. They continue to rote count onwards from a given small number, for example, continue the rote count onwards in a game using dice and moving counters up to 10; continue to say, sign or indicate the count aloud when adult begins counting the first two numbers. Pupils recognise differences in quantity, for example, in comparing given sets of objects and saying which has more or less, which is the bigger group or smaller group. They recognise numerals from one to nine and relate them to sets of objects, for example, labelling sets of objects with correct numerals. In practical situations they respond to add one to or take one away from a number of objects, for example, they add one more to three objects in a box and say, sign or indicate how many are now on the box; at a cake sale say, sign or indicate how many cakes are left when one is sold. They use ordinal numbers (first, second, third) when describing the position of objects, people or events, for example, indicate who is first in a queue or line; who is first, second and third in a race or competition. Pupils estimate a small number (up to 10) and check by counting, for example, suggesting numbers that can be checked by counting, guessing then counting the number of: Pupils in a group; adults in the room; cups needed at break time.

--[]Pupil can rote count to beyond ten

--[]Pupil can use the vocabulary of first, second, third and last when describing the position of people or objects or the order of events

--[]Pupil can count up to ten objects reliably when randomly placed on the table

--[]Pupil can recognise numerals 1 to 9 when represented in order and randomly

--[]Pupil can estimate a small number

--[]Pupil can continue the rote count onwards from a given small number

--[]Pupil can use ordinal numbers (1st, 2nd or 3rd) when describing the position of objects, people or events

--[]Pupil can in practical situations add one to and take one away from a number of objects (up to 10) then say or sign how many there are now

--[]Pupil can recognise numerals 1 to 9 and relate each numeral to the correct quantity, understanding that numeral always represents that quantity

--[]Pupil can compare two given numbers of objects saying which is more and which is less

-H3: Pupils join in with rote counting to beyond 30, for example, they say or sign number names in counting activities. They continue to rote count onwards from a given small number, for example, continue the rote count onwards in a game using dice and moving counters up to 30 and also start to begin counting backwards within the number range 0 to 30. They recognise numerals from one to twenty and relate them to sets of objects, for example, labelling sets of objects with correct numerals. In practical situations they understand addition as finding the total of two or more sets of objects and understand subtraction as taking away objects from a set and finding how many are left. Pupils can add and subtract numbers of objects to 10 and know some simple addition and subtraction facts. Pupils can solve addition and subtraction problems involving up to 10 objects in a range of contexts.

--[]Pupil can rote count to beyond 30

--[]The pupil starts to count backwards as well as forwards

--[]Pupil can begin to record numbers of objects initially by making marks, progressing to simple tallying and writing numbers to 10 and beyond

--[]Pupil can demonstrate an understanding of place value of 10s and 1s in a 2 digit number, using resources to support them if necessary

--[]Pupil understands addition as finding the total of two or more sets of objects

--[]Pupil can use number bonds from 1 to 5

--[]Pupil understands subtraction as taking away objects from a set and finding how many are left

--[]Pupil can put up to 20 items into groups of 2 or 5 or into equal groups

--[]Pupil can add and subtract numbers of objects to 10

--[]Pupil knows some simple addition and subtraction facts

-H4: Pupils can count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. They count in multiples of twos, fives and tens. They can read and write numbers to 100 in numerals and identify and represent numbers using objects and pictorial representations including the number line. They can use number and place value language and can identify one more and one less. Pupils can read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. They represent and use number bonds and related subtraction facts within 20. They 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. Pupils can understand that fractions can describe part of a whole and that a unit fraction represents one equal part of a whole. They recognise, find and name a half as one of two equal parts and a quarter as one of four equal parts of an object, shape or quantity (including measure). Pupils can sort objects and numbers to a given criterion and their own. They can present and interpret data in block diagrams using practical equipment and ask and answer questions about the data. Pupils can follow a line of enquiry: answer questions by choosing and using suitable equipment and selecting, organising and presenting information in lists, tables and simple diagrams.

--Counting

---[]Pupil can count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number

---[]They can count in multiples of twos, fives and tens

--Reading & Writing Numbers

---[]Pupil can read and write numbers to 100 in numerals

--Representing Numbers/Place Value

---[]Pupil can identify and represent numbers using objects and pictorial representations including the number line (numbers to at least 30)

--Mathematical Language

---[]Pupil can use the language of: equal to, more than, less than (fewer), most, least

---[]Given a number, pupil can identify one more and one less

--Fractions

---[]Pupil understands that a fraction can describe a part of a whole

----[]Pupil recognises, finds and names a half as one of two equal parts of an object, shape or quantity (including measure)

--Addition & Subtraction

---[]Pupil can read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs

---[]Pupil understands and uses the vocabulary involved in addition and subtraction

----[]Pupil can add and subtract one-digit and two-digit numbers to 20, including zero (using concrete objects and pictorial representations)

---[]Pupil can solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = 2 - 9

---[]Pupil represents and uses number bonds and related subtraction facts within 20

--Multiplication & Division

---[]Pupil can 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

--Doubling & Halving

---[]Pupil can recall and use doubles of all numbers to 10 and corresponding halves

--Money

---[]Pupil can recognise and know the value of different denominations of coins and notes

--Statistics

---[]Pupil can sort objects, numbers and shapes to a given criterion and their own

---[]Pupil can present and interpret data in block diagrams using practical equipment and ask and answer questions about the data

----[]Pupils can follow a line of enquiry; answer questions by choosing and using suitable equipment and selecting, organising and presenting information lists, tables and simple diagrams.

-H5: Pupils can count in steps of 2, 3 and 5 from 0 and in tens from any number forward and backward. They can recognise the place value of each digit in a two-digit number (tens, ones) and can compare and order numbers from 0 up to 100. They can partition numbers in different ways and can find 1 or 10 more or less than a given number. Pupils can add and subtract numbers using concrete objects, pictorial representations and mentally. They recognise and use the inverse operation between addition and subtraction and use this to check calculations and solve missing number problems. They understand multiplication as repeated addition and arrays and understand division as sharing and grouping. They recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. Pupils can understand that fractions can describe part of a set and understand that the larger the denominator is the more pieces it is split into and therefore the smaller each part will be. They recognise, find, name and write fractions 1/3, ¼, 2/4, ¾. Pupils can understand that fractions can describe part of set and understand that the larger the denominator is the more pieces it is split into and therefore the smaller each part will be. Pupils can sort objects and classify them using more than one criterion, and understands vocabulary you live in relating to statistics. They can interpret and construct simple pictograms, tally charts, block graphs as simple tables, and communicate their findings. Pupils can ask and answer questions about totalling and comparing categorical data and can follow a line of enquiry by deciding what information is important. They make and use lists, tables and graphs to organise and interpret the information.

-Counting & Sequencing

--[]Pupil can count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward

--[]Pupil can find 1 or 10 more or less than a given number

-Representing, Comparing & Rounding Numbers

--[]Pupil can identify, represent and estimate numbers using different representations, including the number line

--[]Pupil can compare and order numbers from 0 up to 100; and use <, > and = signs

--[]Pupil can round numbers to at least 100 to the nearest 10

-Place Value & Partitioning

--[]Pupil can recognise the place value of each digit in a two-digit number (tens, ones)

--[]Pupil can partition numbers in different ways

-Addition & Subtraction

--[]Pupil can 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

--[]Pupil recognises and uses the inverse relationship between addition and subtraction and uses this to check calculations and solve missing number problems

--[]Pupil can recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100

--[]mathematical statements for multiplication (using repeated addition) and division within the multiplication tables and writes them using the multiplication (x), division (\div) and equals (=) signs

--[]Pupil recalls and uses multiplication and division facts for the 2, 5 and 10 multiplication tables

--[]Pupil solves problems involving multiplication and division (including those with remainders), using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

-Fractions

--[]Pupil understands that a fraction can describe part of a set

--[]Pupil understands also that the larger the denominator is, the more pieces it is split into and therefore the smaller each part will be

--[]Pupil recognises, finds, names and write fractions 1/3,1/4 , 2/4, and 3/4 of a length, shape, set of objects or quantity

-Multiplication & Division

--[]Pupil understands multiplication as repeated addition and arrays and division as sharing and grouping and that a division calculation can have a remainder

-Doubling & Halving

--[]Pupil can derive and use doubles and halves of simple two-digit numbers. They understand halving as a way of 'undoing' doubling and vice versa

-Money

--[]Pupil finds different combinations of coins that equal the same amounts of money and combine amounts to make a particular value

--[]Pupil solves simple problems involving money

-Statistics

--[]Pupil sorts objects and classifies them using more than one criterion

--[]Pupil understands vocabulary relating to statistics and can communicate their findings, using simple pictograms, tally charts, block diagrams and simple tables

--[]The pupil can ask and answer questions about totalling and comparing categorical data

--[]Pupils can interpret and construct simple pictograms, tally charts, block diagrams and simple tables.

--[]Pupils can follow a line of enquiry by deciding what information is important. They make and use lists, tables and graphs to organise and interpret the information.

-H6: Pupils can count in multiples of 4, 8, 50 and 100. They can read and write numbers up to 1000 and numbers with one decimal place. They can recognise the place value of each digit in a threedigit number (hundreds, tens, ones) and can identify the value of each digit to one decimal place. They can compare and order numbers up to 1000 and can find 1, 10 or 100 more or less than a given number. Pupils can add and subtract numbers mentally and numbers with up to three digits, using formal written methods of columnar addition and subtraction. They recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. They write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, using mental and progressing to formal written methods. Pupils understand that finding a fraction of an amount relates to division and recognise and show, using diagrams, equivalent fractions with small denominators. They can add and subtract fractions with the same denominator within one whole. Pupils can sort and classify information using Venn diagrams or two way tables. They can extract and interpret information presented in simple tables and lists. Pupils are able to construct and interpret bar charts and pictograms where the symbol/interval represents a group of units, and solve questions using information presented in scaled bar charts, pictograms and tables. They can suggest a line of enquiry and can follow their own strategy to collect, organise and interpret selected information to find answers.

-Counting & Sequencing

--[]Pupil can count from 0 in multiples of 4, 8, 50 and 100

--[]Pupil can find 1,10 or 100 more or less than a given number

--[]Pupil can describe and extend number sequences involving counting on or back in different steps

-Representing, Comparing & Ordering

--[]Pupil can identify, represent and estimate numbers using different representations, including the number line

--[]Pupil can compare and order numbers up to 1000

--[]Pupil can round numbers to at least 1000 to the nearest 10 or 100

-Place Value & Partitioning

--[]Pupil can recognise the place value of each digit in a three-digit number (hundreds, tens, ones)

--[]Pupil can partition numbers in different ways

-Place Value & Fractions/Decimals

--[]Pupil recognises that tenths arise from dividing objects into 10 equal parts and dividing one-digit numbers or quantities by 10

--[]Pupil can count up and down in tenths

--[]Pupil can read and write numbers with one decimal place and compare and order numbers to one decimal place

-Fractions

--[]Pupil understands that finding a fraction of an amount relates to division

--[]Pupil recognises, finds and writes fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

--[]Pupil recognises and shows, using diagrams, equivalent fractions with small denominators

-Addition & Subtraction

--[]Pupil can add and subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three digit number and hundreds

--[]Pupil recalls and uses addition and subtraction facts for 100 (multiples of 5 and 10)

--[]Pupil understands and uses take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context

--[]Pupil can add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction

-Place Value & Multiplication

--[]Pupil can find the effect of multiplying a one or two digit number by 10 and 100, identify the value of the digits in the answer

-Multiplication & Division

--[]Pupil writes and calculates 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

--[]Pupil derives and uses doubles of all numbers to 100 and corresponding halves

--[]Pupil recalls and uses multiplication and division facts for the 3, 4 and 8 multiplication tables

--[]Pupil understands that division is the inverse of multiplication and vice versa

--[]Pupil solves problems, including missing number problems, involving multiplication and division (and interpreting remainders)

-Money

--[]Pupil can recognise and use the symbols for pounds (£) and pence (p) and understand that the decimal point separates pounds/pence

--[]Pupil recognises that ten 10p coins equal £1 and that each coin is 1/10 of £1

--[]Pupil adds and subtracts amounts of money to give change, using both £ and p in practical contexts

-Statistics

--[]Pupil can use Venn or two way tables to sort and classify information

--[]Pupil can extract and interpret information presented in simple tables and lists

--[]Pupil can construct and interpret bar charts and pictograms where the symbol/interval represents a group of units

--[]Pupil can solve questions (for example how many more? And how many fewer?) using information presented in scaled bar charts, pictograms and tables.

--[]Pupil can suggest a line of enquiry and can follow their own strategy to collect, organise and interpret selected information to find answers.

-H7: Pupils can count in multiples of 6, 7, 9, 25 and 100 and can count backwards through zero to include negative numbers. They can read and write numbers to at least 10 000 and numbers with up to two decimal places. They can recognise the place value of each digit in a four-digit number and can identify the value of each digit to two decimal places. They can compare and order numbers beyond 1000 and can find 0.1, 1, 10, 100 or 1000 more or less than a given number. Pupils can add and subtract mentally combinations of two and three digit numbers and decimals to one decimal place, and numbers with up to 4 digits and decimals with one decimal place using the formal written methods of columnar addition and subtraction where appropriate. They recall and use multiplication and division facts for multiplication tables up to 12 x 12. They multiply two-digit and three-digit numbers by a one-digit number using formal written layout and divide numbers up to 3 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context. Pupils recognise, find and write fractions of a discrete set of objects including those with a range of numerators and denominators. They recognise and show, using diagrams, families of common equivalent fractions and recognise and write decimal equivalents of any number of tenths and hundredths. Pupils can interpret and present discrete and continuous data using appropriate graphical methods, including bar charts, time graphs. They can compare information presented in graphs in order to solve problems.

-Counting & Sequencing

--[]Pupil can count in multiples of 6, 7, 9, 25 and 1000

--[]Pupil can count backwards through zero to include negative numbers

--[]Pupil can find 0.1, 1, 10, 100 or 1000 more or less than a given number

--[]Pupil can describe and extend number sequences involving counting on or back in different steps, including sequences with multiplication and division steps

-Representing, Comparing & Rounding

--[]Pupil can identify, represent and estimate numbers using different representations, including the number line

--[]Pupil can order and compare numbers beyond 1000

--[]Pupil can round any number to the nearest 10, 100 or 1000

-Place Value & Partitioning

--[]Pupil can recognise the place value of each digit in a four-digit number and can identify the value of each digit to two decimal places

--[]Pupil can partition numbers in different ways

--[]Pupil can round decimals (one decimal place) to the nearest whole number

-Place Value & Fractions/Decimals

--[]Pupil recognises that hundredths arise when dividing an object by one hundred and dividing tenths by ten

--[]Pupil can count up and down in hundredths

--[]Pupil can read and write numbers with up to two decimal places and order and compare numbers with the same number of decimal places up to two decimal places

-Fractions

--[]Pupil recognises, finds and writes fractions of a discrete set of objects including those with a range of numerators and denominators

--[]Pupil recognises and shows, using diagrams, families of common equivalent fractions

--[]Pupil recognises and writes decimal equivalents of any number of tenths or hundredths

-Addition & Subtraction

--[]Pupil can add and subtract mentally combinations of two and three digit numbers and decimals to 1 decimal place

--[]Pupil can recall and use addition and subtraction facts for 100 and for multiples of 100 totalling 1000

--[]Pupil can add and subtract numbers with up to 4 digits and decimals with one decimal place using the formal written methods of columnar addition and subtraction where appropriate

-Multiplication & Division

--[]Pupil recalls multiplication and division facts for multiplication tables up to 12 x 12

--[]Pupil solves problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, division (including interpreting remainders) and integer scaling problems

--[]Pupil can multiply two-digit and three-digit numbers by a one-digit number using a formal written layout

--[]Pupil can divide numbers up to 3 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context

-Calculation Strategies

--[]Pupil can choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method)

-Doubling & Halving

--[]Pupil can use partitioning to double and halve any number, including decimals to one decimal place

-Money

--[]Pupil can write amounts of money using decimal notation

--[]Pupil recognises that one hundred 1p coins equal £1 and that each coin is 1/100 of £1

--[]Pupil solves problems involving money

-Statistics

--[]Pupil uses a variety of sorting diagrams to compare and classify numbers based on their properties and sizes

--[]Pupil can interpret and present discrete and continuous data using appropriate graphical methods, including bar charts & time graphs

--[]Pupils can solve comparison problems using information presented in various types of graphs.

-H8: Pupils can count forwards and backwards insteps of 10, 100 etc and can count the whole numbers forwards and backwards through zero. Pupils combine numbers to the nearest 10, 100, 1000 etc and use this to estimate the accuracy of answers. Pupils understand negative numbers in context and can solve simple problems using negative numbers, for example temperature. Pupils can use the full operations for increasingly large numbers, both mentally and using a formal written method. They can identify factors, multiples, and prime numbers as well as square and cube numbers. Pupils can order fractions and can perform calculations with fractions. They know some fraction, decimal and percentage equivalents. Pupils can solve problems using information presented in a line graph and can read and interpret information in tables, including timetables.

-Place Value

--[]Pupil can count forwards or backwards in steps of powers of 10, for any given number up to 1,000,000.

--[]Pupil can count forwards and backwards with positive and negative whole numbers, including through zero.

--[]Pupil can read, write, order and compare numbers to at least 1 million and determine the value of each digit.

--[]People can interpret negative numbers in context.

--[]Pupil is able to round any number from 1 to 1,000,000 to the nearest 10, 100, 1000, 10,000, 100,000.

--[]Pupil uses rounding to check answers to calculations in order to determine the level of accuracy.

-Addition and Subtraction

--[]Pupil can add and subtract whole numbers with more than four digits, using formal written methods.

--[]Pupil can add and subtract numbers mentally with increasingly large numbers.

--[]Pupil is able to solve addition and subtraction multistep problems, deciding on which operation and method to use

--[]Pupil can solve problems involving combinations of all four operators.

--[]Pupil understands the meaning of the = sign.

-Factors, multiples and primes

--[]Pupil is able to identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers.

--[]Pupil knows and can use the vocabulary of prime numbers, prime factors and composite non-prime numbers.

--[]Pupil can establish whether a number up to 100 is prime and recall prime numbers up to 19.

--[]Pupil is able to recognise and use square numbers and cube numbers and the notation for squared and cubed.

-Multiplication and Division

--[]Pupil can multiply numbers up to 4 digits by a one or two digit number using the formal written method including long multiplication for two digit numbers.

--[]Pupil can multiply and divide numbers mentally drawing upon known facts.

--[]Pupil can divide numbers up to 4 digits by one digit number using the formal written methods of short division and interpret remainders approximately for the context.

--[]Pupil is able to multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

--[]Pupil can solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.

--[]Pupil can solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple ratios.

--[]Pupil can solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the = sign.

-Fractions, Decimals and Percentages

--[]Pupil can identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths.

--[]Pupil recognises mixed numbers and improper fractions and converts one from the other and writes mathematical statements > 1 as a mixed number (for example 2/5 + 4/5 = 6/5 = 11/5).

--[]Pupil is able to compare and order fractions whose denominators are all multiples of the same number.

--[]Pupil can add and subtract fractions with the same denominator and denominators that are multiples of the same number.

--[]Pupil can multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.

--[]Pupil can read and write decimal numbers as fractions (for example 0.71 = 71/100)

--[]Pupil is able to recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.

--[]Pupil can round decimals with two decimal places to the nearest whole number and to one decimal place.

--[]Pupil can read, write, order and compare numbers with up to 3 decimal places.

--[]Pupil can solve problems involving numbers up to 3 decimal places.

--[]Pupil is able to recognise the percent symbol (%) and understand that percent relates to number of parts per hundred and write percentages as a fraction with denominator 100 and as a decimal.

--[]Pupil can solve problems which require know in percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with the denominator of a multiple of 10 or 25.

-Statistics

--[]People can solve comparison, sum and different problems using information presented in a line graph.

--[]Pupil can complete, read and interpret information in tables including timetables

-H9: Pupils can use negative numbers in context and read, write and order numbers up to 10,000,000. They can solve problems involving addition, subtraction, multiplication and division and you say knowledge of the order of operations to carry out calculations involving the four operations. Pupils can multiply and divide fractions, giving answers in simplest forms. Pupils associate a fraction with division and can calculate decimal fractions equivalents. Pupils can construct various types of charts from data sets, including line graphs and simple pie charts.

-Place Value

--[]Pupil can read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.

--[]Pupil can round any whole number to a required degree of accuracy.

--[]Pupil can use negative numbers in context and calculate integers across zero.

-Adding, subtracting, multiplying and dividing

--[]Pupil can use their knowledge of the order of operations to carry out calculations involving the four operations.

--[]Pupil can perform mental calculations including with mixed operations and large numbers.

--[]Pupil can solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why.

--[]Pupil is able to identify common factors, common multiples and prime numbers.

--[]Pupil can use estimation to check answers to calculations and determine in the context of a problem an appropriate degree of accuracy.

--[]Pupil can multiply multi-digit numbers up to 4 digits by a two digit whole number using the formal written method of long multiplication.

--[]Pupil can divide numbers by 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.

--[]Pupils can 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.

--[]Pupil is able to perform mental calculations including with mixed operations and large numbers

--[]Pupil can solve problems involving addition, subtraction, multiplication and division.

--[]Pupils can use their knowledge of the order of operations to carry out calculations involving the four operations.

-Fractions, decimals and percentages

--[]Pupil can use common factors to simplify fractions, use common multiples to express fractions in the same denomination.

--[]Pupil can compare and order fractions including fractions >1.

--[]Pupil can add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.

--[]Pupil can multiply simple pairs of proper fractions, writing the answer in its simplest form for example $1/4 \times 1/2 = 1/8$.

--[]Pupil can divide proper fractions by whole numbers for example $1/3 \div 2 = 1/6$.

--[]Pupil is able to identify the value of each digit in numbers given to 3 decimal places.

--[]Pupil can multiply and divide numbers by 10, 101,000 giving answers up to 3 decimal places.

--[]Pupil can multiply one digit numbers with up to 2 decimal places by whole numbers.

--[]Pupil can use written division methods in cases where the answer has up to 2 decimal places.

--[]Pupil can solve problems which require answers to be rounded to specified degrees of accuracy.

--[]Pupil associates a fraction with division and calculates decimal fraction equivalents for example 0.375 for a simple fraction for example 3/8.

----[]Pupil recalls and uses equivalences between simple fractions, decimals and percentages, including in different contexts.

--[]Pupil recalls and uses equivalences between simple fractions, decimals and percentages, including in different contexts.

--[]Pupil can solve problems involving the calculation of percentages for example of measures such as 15% of 360 and the use of percentages for comparison

--[]Pupils can solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

-Statistics

--[]Pupil can construct pie charts from small datasets.

--[]Pupil can interpret pie charts and use these to solve problems.

--[]Pupil can construct line graphs.

--[]Pupil can interpret line graphs and use them to solve problems.

--[]Pupil can calculate and interpret the mean as an average.

-H10: pupils can round any number of decimal places and to one significant figure. People can order direct numbers and find HCF and LCM. People can use the four operators with integers and decimals and can add and subtract fractions and mixed numbers. People can change between fractions, decimals and percentages and find percentage of amounts of mentally and with a calculator. Pupils are introduced to probability, learning the language associated with chance and how to calculate simple probabilities. Pupils will be able to solve problems and interpret a variety of charts and graphs, including pie charts. Pupils will be able to find different averages and use them to compare simple data sets.

-Place Value

--[]Pupil can round to a given number of decimal places.

--[]Pupil can round numbers to one significant figure.

--[]Pupil can order directed (positive and negative) numbers.

-Adding and subtracting, multiplying and dividing

--[]Pupil can write numbers in prime factor form.

--[]Pupil could find highest common factor of two numbers.

- --[]Pupil can find the lowest common multiple of two numbers
- --[]Pupil can use the four operations with positive integers and decimals.
- --[]Pupil can multiply and divide by positive powers of 10.
- --[]Pupil can convert metric units.
- --[]Pupil can use order of operations for multistep problems.
- --[]Pupil can use the four operations with directed numbers.

-Fractions, decimals and percentages

--[]Pupil is able to add and subtract fractions including mixed numbers.

--[]Pupil can interchange between fractions and decimals less than one.

--[]Pupil can find fractions of an amount up to 1.

--[]Pupil can interchange between fractions, decimals and percentages up to 100%

-Probability

- --[]Pupil can use the language of probability.
- --[]Pupil can calculate simple probabilities.
- --[]Pupil is able to use the probability scale.
- --[]Pupil knows how to construct simple sample space diagrams or tables.
- --[]Pupil understands and can use set notation including Venn diagrams.
- --[]Pupil knows the sum of probabilities to 1.

-Statistics

--[]Pupil can solve problems with line charts and bar charts.

- --[]Pupil can construct and interpret pie charts of larger data sets.
- --[]Pupil can find the median of a set of data.
- --[]Pupil can order a set of data and find the median.
- --[]Pupil can calculate the mean of a set of data.
- --[]Pupil can compare simple data sets using an average and the range.

Maths – Shape, Space and Measure

-H1: Pupils respond to forwards and backwards, for example, moving forwards and backwards on request, recognising when a vehicle is moving forwards and backwards, moving a counter forward or backward on a board game. They pick out described shapes from a collection, for example, picking out all the round shapes in the classroom, finding shapes with straight edges, fitting shapes into matching holes. They use familiar words in practical situations when they compare sizes and quantities, for example, using the words 'heavy' and 'light', 'more' and 'less', 'enough' or 'not enough' to compare objects or quantities.

--[]From a collection of regular shapes, pupil can pick out shapes with common features

--[]Pupil actively moves forwards and backwards or can indicate the direction in which he/she is being moved

--[]Pupil can indicate 'heavy' and 'light', when comparing two objects where there is a marked difference

--[]In practical situations pupil is able to use the terms 'more', 'less', 'enough', 'not enough' to compare two objects or quantities

--[]Pupil sequences 3/4 pictures/symbols of daily activities

-H2: Pupils compare objects directly, focusing on one dimension such as length or height where the difference is marked and can indicate the long one or the tall one, for example, comparing two plants, placed side by side and indicate the tall one or comparing two zips and indicating the long one. They show awareness of time, through some familiarity with names of the days of the week and significant times in their day, such as meal times, bed times, for example, ordering events in

their day on a visual daily timetable, understanding and using names of days of the week, no school on Saturday or Sunday, swimming on Wednesday. They respond to mathematical vocabulary such as' straight', 'circle', 'larger' to describe the shape and size of solids and flat shapes, for example, when shopping. Pupils find boxes with straight edges to pack into the carrier bag; identify the larger circle when stacking two cans. They describe shapes in simple models, pictures and patterns, for example, stamping shapes in sand and describing them, using a set of flat shapes to make pictures or patterns, naming some of the shapes used, identifying specific shapes from pictures, simple models or patterns.

--[]Pupil compares two objects directly side by side using a common baseline and indicates which is 'longer' or 'taller'

--[]Pupil responds to mathematical vocabulary, such as 'straight', 'circle', 'larger', to describe the shape and size of shapes

--[]Pupil identifies specific shapes from pictures, simple models or patterns and can identify some of the shapes used within the whole

--[]Pupil recognises structure in their day through ordering significant events

--[]Pupil begins to use 'o'clock'

--[]Pupil begins to understand and use in practical contexts names of days of the week

--[]Pupil begins to recognise left and right

-H3: Pupils use the language of direct comparison when comparing lengths/heights, mass/weight, and capacity/volume, where the difference is marked, and can begin to indicate the longest/tallest, heaviest/lightest, most full/least full. They show an increasing awareness of time, by showing an increased vocabulary of the language of time and being able to tell the time to the hour. They show an increased familiarity with the days of the week and significant events in their day. They use everyday language to describe properties of 2D and 3D shapes, for example identifying straight and curved sides or edges and corners. They use everyday language to describe position and can follow directional language.

--[]Pupil can use the language of direct comparison

--[]Pupil uses everyday language to describe properties of 2D shapes

--[]Pupil uses everyday language to describe properties of 3D shapes

--[]Pupil constructs and describes models with 3D shapes, varying in shape, size and texture

--[]Pupil uses everyday language to describe position and objects and can follow directional language when given instructions

--[]Pupil tells the time to the hour and can correctly order events

-H4: Pupils recognise and name common 2D and 3D shapes and can sort these to a given criterion for example corners/no corners, straight edges/no straight edges. They can recognise and create repeating patterns with objects and shapes. They can describe position and direction and distinguish between straight and turning movements including whole, half, quarter and three-quarter turns. They begin to use every day non-standard and standard units to measure length/height,

mass/weight and capacity/volume. They recognise and use language relating to dates and can tell the time to the hour and half past the hour.

--2D Shape

----[]Pupil recognises and names common 2D shapes, including rectangles (including squares), circles and triangles

--3D Shape

---[]Pupil recognises and names common 3D shapes, including cuboids (including cubes), pyramids and spheres

--Sorting Shapes

---[]Pupil can sort shapes to a given criterion and their own

--Repeated Pattern

---[]Pupil recognises and creates repeating patterns with objects and shapes

--Movement

---[]Pupil describes movement, including whole, half, quarter and three-quarter turns

--Position & Direction

---[]Pupil describes position and direction using forwards, backwards, left and right vocabulary

--Position, Direction & Movement

---[]Pupil can recognise and follow directions of movement

--Direct Comparison

---[]Pupil can order three or more objects using direct comparison where there is a significant difference

--Length & Height

---[]Pupil can measure and begin to record lengths and heights, using non-standard and then manageable standard units (m and cm) within children's range of counting competence

----[]Pupil can compare, describe and solve practical problems for: lengths and heights (for example, long/short, longer/shorter, tall/short, double/half)

--Mass/Weight

---[]Pupil can measure and begin to record mass/weight, using non-standard and then standard units (kg and g) within children's range of counting competence

---[]Pupil can compare, describe and solve practical problems for: mass/weight (for example, heavy/light, heavier than/lighter than)

--Capacity & Volume

----[]Pupil can measure and begin to record capacity and volume using non-standard and then standard units (litres and ml) within children's range of counting competence

---[]Pupil can compare, describe and solve practical problems for: capacity and volume

--Time (Language)

---[]Pupil recognises and uses language relating to dates, including days of the week, weeks, months and years

--Time (Comparison)

---[]Pupil can compare, describe and solve practical problems for: time

---[]Pupil can sequence events in chronological order using language

--Time (Measure)

---[]Pupil can measure and begin to record time (hours, minutes, seconds)

--Time (Read & Write)

---[]Pupil can tell the time to the hour and half past the hour and draw the hands on a clock face to show these times

-H5: Pupils identify and describe the properties of 2D and 3D shapes and can compare and sort common shapes. They can identify 2D shapes on the surface of 3D shapes. They can order/arrange combinations of mathematical objects in patterns/sequences. They can use mathematical vocabulary to describe position, direction and movement and distinguish between rotation as a turn and in terms of right angles for quarter, half and three quarter turns (clockwise and anti-clockwise). They choose and use appropriate standard units to estimate and measure length/height (m/cm), mass/weight (kg/g), temperature (°C) and capacity/volume (litres/ml). They compare and sequence intervals of time and tell and write the time to five minutes, including quarter past/to the hour.

--2D Shape

----[]Pupil can identify and describe the properties of 2-D shapes, including the number of sides and line of symmetry in a vertical line

--3D Shape

---[]Pupil can identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces

--2D and 3D Shape

---[]Pupil can identify 2D shapes on the surface of 3D shapes

--Sorting Shapes

---[]Pupil can compare and sort common 2D and 3D shapes and everyday objects

--Repeated Pattern

---[]Pupil can order/arrange combinations of mathematical objects in patterns/sequences

--Position, Direction & Movement

---[]Pupil can use mathematical vocabulary to describe position, direction and movement

---[]Pupil can distinguish between straight and turning movements including left and right, clockwise and anti-clockwise and use these to give directions

---[]Pupil can understand the link between rotation and turns in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)

--Temperature

----[]Pupil can choose and use appropriate standard units to estimate and measure temperature (°C) to the nearest appropriate unit using thermometers (within children's place value competence)

--Length & Height

----[]Pupil can choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) to the nearest appropriate unit, using rulers (within children's place value competence)

--Mass

---[]Pupil can choose and use appropriate standard units to estimate and measure mass (kg/g) to the nearest appropriate unit, using scales (within children's place value competence)

--Capacity & Volume

---[]Pupil can choose and use appropriate standard units to estimate and measure capacity and volume (litres/ml) to the nearest appropriate unit using measuring vessels (within children's place value competence)

--Measures Comparison

---[]Pupil compares and orders lengths, mass, volume/capacity and records the results using >, < and =

--Time (Comparison)

---[]Pupil can compare and sequence intervals of time

--Time (Measure)

---[]Pupil knows the number of minutes in an hour and the number of hours in a day

--Time (Read & Write)

---[]Pupil can 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

-H6: Pupils can draw 2D shapes and make 3D shapes and recognise 3D shapes in different orientations and describe them. They use sorting diagrams to compare and sort common 2D and 3D shapes. They identify right angles and whether angles are greater than or less than a right angle. They identify horizontal and vertical lines and pairs of perpendicular and parallel lines. They describe positions on a grid labelled with letters and numbers. They measure, compare, add and subtract lengths (m/cm/mm), mass (kg/g) and volume/capacity (l/ml). They understand perimeter as a measure of distance around the boundary of a shape and measure the perimeter of simple 2D shapes. Pupils compare durations of events and tell and write the time from an analogue clock and 12 hour and 24 hour clocks, estimating and reading time with increasing accuracy to the nearest minute.

--2D Shape

---[]Pupil can draw 2D shapes and extend their use of the properties of shapes using accurate language

--3D Shape

---[]Pupil can make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them

--Sorting Shapes

---[]Pupil can use sorting diagrams to compare and sort common 2D and 3D shapes and everyday objects

--Angles

---[]Pupil recognises angles as a property of shape or a description of a turn

----[]Pupil identifies right angles, recognises that two right angles make a half turn, three make three quarters of a turn and four a complete turn

---[]Pupil identifies whether angles are greater than or less than a right angle

--Properties of Lines

---[]Pupil identifies horizontal and vertical lines and pairs of perpendicular and parallel lines

--Coordinates

---[]Pupil describes positions on a square grid labelled with letters and numbers

--Measures (Comparison & Calculation)

----[]Pupil measures, compares, adds and subtracts: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

--Temperature

----[]Pupil continues to estimate and measure temperature to the nearest degree (°C) using thermometers

--Perimeter

---[]Pupil understands perimeter is a measure of distance around the boundary of a shape

---[]Pupil measures the perimeter of simple 2D shapes

--Time (Comparison)

----[]Pupil knows the number of seconds in a minute and the number of days in each month, year and leap year

---[]Pupil compares durations of events

--Time (Measure)

----[]Pupil can record/compare time in terms of seconds, minutes, hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon, midnight

--Time (Read & Write)

---[]Pupil tells and writes the time from an analogue clock, including using Roman numerals from I to XII, and 12 hour and 24 hour clocks

---[]Pupil can estimate/read time with increasing accuracy to the nearest minute

-H7: Pupils compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes and use a variety of sorting diagrams to compare and classify shapes. They identify lines of symmetry in 2D shapes presented in different orientations and can complete a simple symmetric figure with respect to a specific line of symmetry. They identify acute and obtuse angles and compare and order angles up to two right angles by size. They describe positions on a 2D grid as coordinates in the first quadrant. They plot specific points and draw sides to complete a given polygon and describe movements between positions as translations of a given unit to the left/right and up/down. Pupils estimate, compare and calculate different measures and can convert between different units of measure. They measure and calculate the perimeter of a rectilinear figure in centimetres and metres. They know area is a measure of surface within a boundary and find area of rectilinear shapes by counting squares. Pupils can read, write and convert time between analogue and digital 12 hour and 24 hour clocks.

--Classify Shapes

---[]Pupil can compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes

--Symmetry

---[]Pupil can identify lines of symmetry in 2D shapes presented in different orientations

---[]Pupil can complete a simple symmetric figure with respect to a specific line of symmetry

--Sorting Shapes

----[]Pupil can use a variety of sorting diagrams to compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes

---[]Pupil can continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines

--Angles

---[]Pupil can identify acute and obtuse angles and compare and order angles up to two right angles by size

--Properties of Lines

---[]Pupil can continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines

--Coordinates

---[]Pupil can describe positions on a 2-D grid as co-ordinates in the first quadrant

---[]Pupil can plot specified points and draw sides to complete a given polygon

--Translation

---[]Pupil can describe movements between positions as translations of a given unit to the left/right and up/down

--Measures Comparison

---[]Pupil can estimate, compare and calculate different measures, including money in pounds and pence

--Temperature

---[]Pupil can order temperatures including those below 0°C

--Perimeter

---[]Pupil can measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres

--Area

---[]Pupil knows area is a measure of surface within a given boundary

---[]Pupil finds the area of rectilinear shapes by counting squares

--Convert Units of Measure

---[]Pupil can convert between different units of measure [e.g. kilometre to metre; hour to minute]

--Time

---[]Pupil can read, write and convert time between analogue and digital 12 and 24 hour clocks

-H8: Pupils can convert between different units of metric measure; they understand and use approximate equivalences between metric units and common imperial units. Pupils can also convert between units of time to solve problems and use all four mathematical operators to solve problems involving measure. Pupils can measure and calculate the perimeter of composite rectilinear shapes and can calculate and compare the area of rectangles. They can estimate the area of a regular shapes and estimate the volume and capacity. Pupils can distinguish between regular and irregular polygons and can use the properties of rectangles to deduce related facts and find missing lengths and angles. Pupils know angles are measured in degrees; they can draw and measure angles in degrees. Pupils can estimate and compare different types of angles, identify angles in a complete turn and on a straight line. Using appropriate language pupils can identify the position of a shape following a reflection or translation and know that the shape has not changed.

-- Units of Measurement

---[]Pupil can convert between different units of metric measure (for example, kilometre and meter; centimetre and millimetre; gram and kilogram; litre and millilitre).

----[]Pupil understands and uses approximate equivalences between metric units and common imperial units such as inches; pounds and pints.

--Measures (Comparison and Calculation)

---[]Pupil is able to use all four operations to solve problems involving measure (for example length, mass, volume and money) using decimal notation including scaling.

---[]Pupil can use all four operations to solve problems involving measure (eg money)

---[]Pupil can solve problems involving converting between units of time.

--Perimeter, area and volume

----[]Pupil can measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.

---[]Pupil can calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres and square metres and estimate the area of a regular shapes.

---[]Pupil can estimate the volume for example using 1 cm³ blocks to build cuboids and capacity eg using water.

--2D shapes

---[]Pupil can distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

---[]Pupil uses the properties of rectangles to deduce related facts and find missing lengths and angles.

--Angles

---[]Pupil knows angles are measured in degrees.

---[]Pupil can estimate and compare acute, obtuse and reflex angles.

---[]Pupil can draw given angles and measure them in degrees.

---[]Pupil can identify angles at a point and one whole turn (a total of 360°).

---[]Pupil can identify angles at a point on a straight line and half a turn (total 180°).

--Transformations

----[]People can 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.

-H9: Pupils can solve problems involving the calculation and conversion of units of measure of up to 3 decimal places. They can use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a small unit of measure to a large unit and vice versa using decimal notation up to 3 decimal places. Pupils can convert between miles and kilometres and can convert measurements of time from a small unit of measure to a larger unit and vice versa. Pupils recognise that shapes with the same area can have different perimeters and vice versa and recognised when it is possible to formulae for area and volume of shapes. They calculate the area of parallelograms and triangles, as well as calculate, estimate and compare volume of cubes and cuboids. Pupils can draw 2-D shapes using given dimensions of angles and can compare and classify geometric shapes based on their properties and sizes. They can illustrate a name parts of circles, including radius, diameter and circumference; they know that the diameter is twice the length of the radius. Pupils can find unknown angles in any triangles, quadrilaterals and regular polygons. They recognise angles where they meet at a point, or on a straight line, or a vertically opposite and find missing angles. Pupils are able to describe positions in all four quadrants on a coordinate grid. They can draw and translate simple shapes on the coordinate plane and reflect them in the axes.

--Units of Measurement

---[]Pupils can solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate

---[]Pupils can use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a small unit of measure to a larger unit and vice versa, using decimal notation up to 3 decimal places.

---[]Pupil can convert between miles and kilometres.

---[]Pupil can use, read, write and convert between standard units, converting measurements of time from a small unit of measure for a larger unit and vice versa.

--Perimeter, area and volume

---[]Pupil recognises that shapes of the same area can have different perimeters and vice versa.

---[]Pupil recognises when it is possible to use formula for area and volume of shapes.

---[]Pupil can calculate the area of parallelograms and triangles.

----[]Pupil can calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres and cubic metres, and extending to other units.

--2D shapes

---[]Pupil can draw 2-D shapes using given dimensions and angles.

---[]Pupil can compare and classify geometric shapes based on their properties and sizes.

----[]Pupil can illustrate and nine parts of circle, including radius, diameter and circumference and know that the diameter is twice the radius.

--Angles

---[]Pupil can find unknown angles in any triangles, quadrilaterals and regular polygons.

---[]Pupil can recognise angles when they meet at a point, or on a straight line or are vertically opposite and find missing angles

--Coordinates

---[]Pupil can describe positions on the full coordinate grid (all four quadrants).

---[]People can draw and translate simple shapes on the coordinate plane and reflect them in the axes.

-H10: pupils are able to calculate the area of rectangles, parallelograms and triangles. They can name and construct polygons. Pupils will know properties of different triangles and quadrilaterals. They can draw lines, angles and simple shapes accurately. Pupils will be able to recognise parallel and perpendicular lines using correct annotation. They will know and can use angle rules such as angles at a point, angles on a straight line and vertically opposite angles. Pupils will also know and use the rules for angles in triangles and quadrilaterals.

--Area

---[]Pupil can calculate the area of rectangles.

---[]Pupil can calculate the area of parallelograms.

---[]Pupil can calculate the area of triangles.

--2D Shapes

---[]Pupil can name and construct polygons.

- ---[]Pupil will know properties of different triangles.
- ---[]Pupil will know properties of different quadrilaterals.

--Lines and Angles

- ---[]Pupil can draw lines, angles and simple shapes accurately.
- ---[]Pupil can recognise parallel and perpendicular lines using the correct annotation.
- ---[]Pupil knows and uses the rule of angles at a point add to 360°
- ---[]Pupil knows and uses the rule of angles on a straight line add up to 180°
- ---[]Pupil knows and uses the rule vertically opposite angles are equal
- ---[]Pupil knows and uses the rule angles in a triangle add to 180°
- ---[]Pupil knows and uses the rule angles in a quadrilateral add up to 360°